

MEDICAL AND ANTHROPOLOGICAL NOTES.

LETTER OF TRANSMITTAL.

WASHINGTON, *April 29, 1882.*

SIR: I have the honor to transmit herewith a copy of medical and anthropological notes of the cruise of the revenue-cutter Corwin to Alaska and the Arctic Ocean.

Very respectfully, your obedient servant,

IRVING C. ROSSE, M. D.
(Through Revenue Marine.)

The Hon. SECRETARY OF THE TREASURY.

(7)

9900185

MEDICAL AND ANTHROPOLOGICAL NOTES.

GENERAL NOTES.

For the man of broad ideas and enthusiasm for humanity, more especially for the medical man, there exists but one people, namely, the human race, which he studies in all its varieties, physical and moral, in order not to hesitate, according to the expression of Hippocrates, in the treatment of disease. Experience and observation show, however, that no wide differences exist in the race when regarded from a biological or a medical aspect; and the infirmities of men, notwithstanding their physical inequalities and the extended range of the nosological table, are much the same the world over, no matter whether they be classified as belonging to the Caucasian, Mongolian, or Hyperborean races.

The object of this paper is to record, in a fragmentary way, some observations, as they have occurred to the writer during a late hyperborean experience, which afforded exceptional advantages for noting a few of the changes and variations that are brought about in the human economy by climatic influences and the environments of high latitudes—by the surroundings, in fact, of that part of the earth which Hippocrates places under the constellation of the Bear and beyond the Riphæan Mountains whence blows the north wind, and where the sun, says he, is near them only in the summer solstice, but warms these places only a short time; the winds which blow from warm countries reaching there but seldom and with little force.

These simple, true, and philosophical observations of the "divine old man," it may be remarked, are in striking contrast to those of Tacitus, who indulges in the usual mixture of true and false which fills the pages of the ancients when treating of geographical subjects.

Whether the early Greek conception of the people living beyond the north wind and giving rise to the Delian legends was based on any geographical relations at all, or was originally the mythical notion of the poets relative to an imaginary race, it is difficult to say—the question only raising a doubt that places us in a dilemma. Fabulous or not, we know that the subject was one of popular interest in high antiquity, giving rise to a work on the Hyperboreans in the time of Alexander the Great, and that when Virgil and Horace speak of the "Hyperboreæ oræ" and "Hyperborei campi" to indicate *most northerly*, they only made use of expressions which have served as connecting links in literature to extend the interest from the epoch of Hecatæus of Abdera down to the days of Mr. James Gordon Bennett.

Among the numerous historic men who have sought adventure in this most weird, remote, and wonderful part of the globe from the early times of Naddod the Viking and Garder, down to Markham and De Long, we hear such tales of privation, disease, and suffering that the wonder is that men should still see about the mysterious regions of the north so much that is fascinating and romantic. But as the subject is not to be treated from a sentimental or an æsthetic point of view, these prefatory remarks must yield to considerations of a more practical and commonplace character.

THE VOYAGE.

In obedience to instructions I proceeded overland to San Francisco, Cal.; and after an unavoidable delay of several days from irregularities of railway travel, which had been interrupted by the floods of the Missouri-Mississippi River, I joined the Arctic Relief steamer Corwin on May 2. An inspection showed the Corwin to be in good sanitary condition with the exception of imperfect ventilation of the berth-deck and ward-room, the means for furnishing air to these overcrowded apartments being inadequate to supply every occupant with the twenty cubic feet of fresh air every minute which the best authorities agree that a healthy man requires. The insalubrity of the

CRUISE OF STEAMER CORWIN IN THE ARCTIC OCEAN.

berth-deck was further increased by the humidity brought about by the habit of deluging the decks above and below every morning with water. At my suggestion this very reprehensible practice was happily abolished on the berth deck, scraping and dry scrubbing being substituted, and the deck was not wetted oftener than once or twice a month, and only at times when the prevalence of fine weather would justify doing so.

After procuring such a medical outfit as the exigencies of the cruise might require, and after taking the necessary precautions as to the hygienic condition of the vessel and crew, we started on our humane mission, putting to sea on May 4 and meeting with seven or eight uneventful days of pleasant weather, exceptionally so for the season. The ocean, somewhat deserving of the adjective that designates it, displayed its prettiest combinations of lapis lazuli and ultramarine tints and sunset effects as we steamed through miles of medusidæ; and had it not been for the occasional sight of whales and little black divers, with the daily fall in the thermometer, we should not have known of our approach to the north. This happy state of affairs did not continue long on reaching a higher latitude, where we were beset by pelting hail and furious storms of snow and all the discomforts of sea life, causing a *pénible navigation* in every sense of the term. The increased cold, as we neared the north, had no perceptible effect for the worse on the health of the ship's company; and it is gratifying to state that but few serious cases, either surgical or medical, occurred during the entire voyage, a happy event, undoubtedly owing to the careful precautionary measures taken to secure full efficiency and to the excellent routine and discipline.

The Corwin is a good sea vessel, being tolerably dry in bad weather, and her oscillations are easy for a small craft. At the outset of the cruise, however, we were placed in the best possible conditions for studying both subjectively and objectively the strange phenomena of that doleful tribute of suffering that so many people are obliged to pay to the sea. Unfortunately so little is known of the nature and origin of this most distressing affection, and medical science has done so little to assuage its attacks, the wonder is that more extended experiments are not made by medical men in regard to seasickness. In spite of many theories and hypotheses that have been advanced to explain the phenomena of this so-called disease, we know that its causes are purely physical: the swinging of the diaphragm, the disturbance of the equilibrium in the fluid contents of the body—just as the mercury pumps up and down in a barometer—and the consequent reflex impressibility of the ganglionic, pneumogastric, and cerebro-spinal system of nerves producing a kind of trisplanchnic neurosis, which varies in different individuals according to peculiarity of structure and susceptibility.

Experience convinces that no drug known to the pharmacopœia will prevent or cure seasickness, notwithstanding the assertions of eminent medical authority to the contrary. Resolute effort of the will and the resort to such palliatives as drinks containing an excess of carbon dioxide, iced champagne and bottled Milwaukee beer for example, and oranges, were found to be the most efficacious modes of treatment adopted in the numerous cases of this almost unmitigated evil coming under my observation.

A portion of the crew suffered from violent phlegmon of the hand, arising doubtless from the combined influences of long confinement on shipboard, sea diet, and unusual climatic conditions. This affection was not confined to our vessel alone, for it prevailed extensively among the whalemen as well. The worst cases occurred among men whose history revealed the previous existence of syphilis. To remedy the condition it was recommended that the entire ship's company be allowed a run ashore as often as practicable, and that there be added to the usual dietary a ration of cranberries, a supply of which had been laid in among other antiscorbutics. Happily, these directions were complied with as far as possible, and I had the satisfaction to witness the good results.

Another affection prevailing extensively among the crew was a cutaneous eruption attended by excessive itching, which I at first suspected to be due to the presence of pediculi; but subsequent experience showed that temporary alleviation could be brought about by the administration of calcined magnesia and the topical application of vinegar and water. I may mention incidentally that my friend Dr. Charles Smart, C. S. A., who has cruised in the Arctic as far as latitude 82° on a Peterhead whaler, says that he has often noticed the foregoing symptoms in connection with rheumatism among sailors, and also among soldiers in Arizona, who had been living for some time

CRUISE OF STEAMER CORWIN IN THE ARCTIC OCEAN.

11

on the army ration. He regards the symptoms to arise from inanition, and as the ones that usually precede an outbreak of scurvy.

A few cases of return of intermittent fever brought about by wet and fatigue, and of rheumatism—which seemed to be the prevailing ailment—the usual quota of headaches, constipation, and colic, with several cases of minor surgery, and a few cases of venereal contracted at Ounalaska, make up the sick-list so far as the crew proper is concerned.

It may not be foreign to the subject to remark that the sanitary condition of the Corwin, and indeed of other vessels in the revenue service, might be greatly improved by covering the berth-deck with a coating of shellac; and better ventilation might be secured by an arrangement similar to that found on the latest English naval vessels, where a flue passes up through the side of the ship until it opens just beneath the hammock-rail on the inside of the bulwarks, and is covered with a Venetian blind. Further advantage, especially in the way of lighting, would result from larger air-ports having a glass, convex externally and prismoidal on its inner surface, in order to facilitate the dispersion of light when the port is closed. The galley situated on the berth-deck of the Corwin was the source of excessive condensation and drip, which was always increased in the morning by shutting a small skylight when washing down decks; a proceeding seemingly inconsistent with enlightened common sense, especially when the decks have been wet the whole previous twenty-four hours from rain or the seas washing over them. The nuisance was in a measure abated by wiping the beams overhead and lighting a fire in a drying stove.

The facilities for warming were good throughout the ship, and the water supply was perhaps better than usual, owing to the fact that the water in the Arctic contains but a small percentage of organic or earthy impurities. At Ounalaska water was obtained from a small reservoir in an adjacent hill, but it had an unpleasant earthy taste. Better water was had at Saint Michael's. Here a spring wells up amid some rocks on the sea beach, and at low tide water may be obtained with great facility. Good water was procured nearly everywhere in the Arctic, notably at Chamisso Island and Choris Peninsula, and it was of unusual excellence at Cape Thompson, also at Herald and Wrangel Islands. Distilled water, supplied by the engineers, was occasionally used during the cruise, but as it was condensed from the main boiler without filtration it had that peculiar nauseating, oily flavor which rendered it unfit for potable purposes.

The articles of food, consisting of the regular rations, to which had been added pemmican and the usual antiscorbutics, such as potatoes, desiccated onions, sauerkraut, and cranberries, were of good quality and kept remarkably well, some butter in barrels being as good on our return as on the day we left. Frequent opportunities also occurred to get fish and game, the ration being varied from time to time with salmon and coregonus, auks, eider-ducks, geese, eggs (of which great quantities were found on the Diomedé Islands), seal, bear, and reindeer. These supplementary articles proved not only an appetizing change from the regular ration, but their use was followed by a sense of well-being and by improved nutrition.

The ordinary clothing was supplemented with a hooded coat of reindeer skin, seal skin trousers, and a foot covering similar to that worn by the Eskimo. Over an ordinary pair of stockings were drawn a pair of reindeer socks, with the hair turned in, the foot being next thrust into an Eskimo boot of seal skin, into the bottom of which a small quantity of straw was placed as a non-conductor, and the whole secured by thongs after the manner of a sandal. This rig answered the purposes of warmth and comfort; but the effect was anything but picturesque, as the foot resembled a disabled extremity that some bungling hospital nurse had endeavored to inclose in a poultice.

Beyond the meteorological summary obtained from the signal station at Saint Michael's, there are no extended weather observations to report in regard to any fixed geographical point, for the reason that the ship seldom remained longer than a few days at a time in any one place, and it was impossible to get any definite information from the natives, whose knowledge in this respect does not extend beyond noticing whether the snowfall is great or little during the winter.

As regards the weather during the past season there is a marked contrast when compared to that experienced on the Corwin's former voyage. The sea was freer from ice, a fact doubtless owing to the preceding mild winter and other concurrent causes, but the number of fine days was comparatively few, and a series of gales and snow-storms continued throughout the summer. Even as late as July 18 the decks were covered with snow and hail, and a bitter cold wind penetrated

our winter clothing. In striking opposition to this was the uncomfortably murky temperature of July 21, when the thermometer registered 45°. While the above is true of the weather in the more northern part of the Arctic, we found it in Kotzebue Sound, later in the season, much milder than it was at a corresponding date of the previous year. In the latter part of June at Saint Michael's we found the sun almost overpowering, although the thermometer registered but 60°. Why this incongruity should exist between the sensation of heat as experienced by the human body and the actual temperature as revealed by the thermometer, we are not prepared to say. All that we know from writers on the subject is that the sensations of heat and cold are relative and not absolute. In different latitudes, among the Andes in Peru, for instance, the opposite condition is often noticed, a disagreeable sensation of cold not indicated by the thermometer being one of the experiences of travelers in that part of the world: the cold is keen and penetrating with the thermometer standing at but 60°. An excellent distinction is that which mentions these phenomena as physical cold and physiological cold; the former indicating that revealed by the thermometer, the latter that not indicated by instruments.

Many Arctic travellers have noticed this relative sensation of cold as well as the impunity, and even a certain degree of comfort, with which they can expose themselves to a low temperature, which would be attended by serious results in a more southern clime. Dr. Hayes relates that in Greenland he went swimming in a pool of water on the top of an iceberg, and the captain of a New Bedford whaler has frequently gone swimming off the coast of Siberia. Taking advantage of one of these physiologically warm days, I took a plunge into the icy Arctic water, with no such motive, however, as that of Leander, nor did I, like Byron, have the ague after it; on the contrary, a swim of no great discomfort was followed by a pleasurable reaction.

The actual rise of temperature that follows upon stripping in a cold atmosphere or upon first entering into a cold bath, is not one of the least curious phenomena of the regulative function of the pyrogenetic mechanism. Nor is the busy activity of the metabolic tissues and the metabolism of the food within the alimentary canal, which accounts for the source of the heat of such homothermous animals as whales, seals, walrus, and the pygopodous birds, a subject to be passed by unmentioned. By what physical and chemical laws can we explain this morphological process—this physiological action of the protoplasm resulting in the evolution of kinetic energy sufficient to supply bodily heat to such animals as the seal and the whale, and enable them by remarkable adaptability to withstand the extreme cold of the Arctic? Does the *rete mirabilia* of the whale and of the duck enable them to combine a greater quantity of oxygen with hæmoglobin and thereby act as a source of heat, or is the function of the liver the chief thermogenic source? By what means does the energy-yielding material become changed into actual energy? Does the nervous system, acting as a liberating force like the throttle-valve in a steam-engine, remove hindrances or impediments to the conversion of potential into kinetic energy, or do all the internal work of the animal organism, all the mechanical labor of the internal muscular mechanism, with their accompanying frictions, and the molecular labor of the nervous and other tissues produce a certain amount of heat, and thus account for the special function of calorification?

The foregoing physiological queries, with many others, suggested themselves on hearing the statements of whalers and walrus hunters with reference to the scalding sensation produced by the spurting blood while handling the bodies of recently killed animals, and it occurred to me that a series of thermometric observations, something after the manner of the experiments of Dr. Kidder in connection with the Fish Commission, but having for their object the investigation of the manifestation of animal heat by the marine mammalia, would prove interesting and supply a scientific desideratum in addition to their novelty.

While ample opportunities occurred to make these experiments, yet it is to be regretted that the only available instrument, a clinical thermometer, was unfortunately broken early in the season. The experiments were, to say the least, so rough and inconclusive that any record of them would be of questionable value.

Another question in connection with the Arctic cold is, whether a sojourn in this region does not render one more susceptible to colds and disorders of the respiratory organs on returning to more temperate latitudes. The history of Eskimo who have spent any time in our comparatively moderate climate shows how they have suffered in this respect, and colds have been known to prevail

endemically among the healthy crews of vessels lately arrived from the Arctic. It is related of a ship of the Franklin Search Expedition, the *North Star*, which was frozen up during one of the severest Arctic winters on record, in Wostenholm Sound, that the men maintained their health perfectly during all the trials to which they were exposed; but on their return to England in the early summer, every man within a week was on the sick list with some form of bronchial or pulmonary disorder. The reporter assigns the shaving off the beard as the cause of this illness. On board the *Corwin* on her return to San Francisco in October, and at a time, too, when "the glorious climate of California" appeared at its best, no such cause existed, yet colds of the most violent kind prevailed generally among a previously healthy crew.

Before dropping the question, it may be asked whether the psychical effects of climate were not apparent in some of the subjective sensations as experienced by myself and others. Something more than auditory spectra must account for some of them.

For instance, when climbing a steep cliff, with no sound to interrupt except the scream of wild sea-birds, or ascending a mountain side amid scenery the most desolate that can well be conceived, and in a stillness so great that the arterial pulsations are audible, how is it that certain trains of the most incongruous and absurd thoughts usurp a prominence in the mind? On such an occasion, why should the strains from wedding-marches be continually running through one's head? What gives birth to the floating succession of ideas regarding the delights of prospective dinners? And why does the presence of the midnight sun cause one to forget, like Horace Greeley, whether one has dined or not? While navigating through ice and fog, often within sight of a coast that is treeless and swardless, why should one dream of the laughing aspect of tropical vegetation, and of swinging in a hammock in a garden through which the summer wind bears the fragrance of flowers? And why should a diet of pork and beans cause a man during a series of nights to dream of sumptuous dinners, and at other times in his dreams to take part in a Barmicidal feast?

Among various meteorological phenomena witnessed during the cruise were parheliads and fog bows, which were of common occurrence off Wrangel Island; and toward the latter part of our stay in the Arctic, when the sun was no longer in the summer solstice, northern lights of varying intensity appeared, a peculiarity about one of them being a white arc extending across the heavens and accompanied by curtain-like fringes of light.

Not the least curious of the atmospheric phenomena are the modifications of nervous excitability in connection with the perception of light—the wonderful optical illusions witnessed from time to time during periods of extraordinary and unequal refraction. One day in July, at Saint Michael's, I saw on looking northward an island high up in the air and inverted; some distant peaks, invisible on ordinary occasions, loomed up at one time the very shape of a tower-topped building magnified, and suddenly changing assumed the shape of immense factory chimneys. Again, off Port Clarence, was witnessed the optical phenomenon of dancing mountains and the mirage of ice fifty miles away, which caused our experienced ice pilot to say, "No use to go in here; don't you see the ice?" Again, the mountains of Bering Straits have so betrayed the imagination that they have been seen to assume the most fantastical and grotesque shapes, at one moment that of a mountain not unlike Table Mountain, off the Cape of Good Hope; then the changing diorama shows the shape of an immense anvil, followed by the likeness of an enormous gun mounted *en barbette*, the whole standing out in silhouette against the background, while looking in an opposite direction at another time a whaling vessel turned bottom upward appeared in the sky. On another occasion, in latitude 70°, when the state of the air was favorable to extraordinary refraction, a white gull swimming on the water in the distant horizon was taken for an iceberg, or more correctly a floeberg, other gulls in the distance, looming up, looked for all the world like white tents on a beach, while others resembled men with white shirts paddling a canoe. Again, two whaling ships that we knew to be sixty miles away, appeared on the distant sky as elongated afternoon shadows; minute stones and other small objects on a mountain side were so distinctly seen as to cause almost a glamour, a kind of witchery, to come over the eyesight, which, if there were no evidence to the contrary, might have been taken as one of the hallucinations that precede certain forms of insanity, where, for example, the sense of sight becomes so acute that a person reads a newspaper or tells the time of day from a small watch, on the opposite side of the street. Odd phenomena were occasionally witnessed while looking at the midnight sun, especially when he began to get low in the horizon. His disk

would sometimes appear flattened like a door-knob, or to convey a more sensuous image, like a huge crimson pegtop with purple bands. It was easy, also, to distinguish by means of a marine glass the solar spots, the eye not being overwhelmed by the light but readily accommodating itself to the rays of the summer sun, which, owing to his low declination, are nowhere so delicate as they are in the far north.

Some of the strange acoustics experienced in this region are not unworthy of mention. A remarkable multiple echo was noticed between two mountains at Plover Bay, Siberia; another noticed by our sledge party in a cliff at Cape Onmann, Siberia, gives back more than a dozen echoes, and Baron Wrangel relates that a pistol fired near some cliffs on the River Lena is echoed a hundred times. The great distance to which small sounds are sometimes transmitted is also worthy of record. The first time this acoustic clearness of the atmosphere came under observation was at Saint Michael's, where a conversation carried on at an incredible distance could be distinctly heard. Amid the grim silence and desolation of heretofore untrodden Wrangel Island, at a time, too, when the air was acoustically opaque for that latitude, I distinctly heard our boatswain, a small man, with a voice of no great volume, giving orders two miles away, while laughter and sounds of the voice, when any one spoke above the ordinary tone, were heard with such amazing distinctness as to suggest telephonic communication. Where the conditions were so favorable to the reflection of sonorous waves, it was natural to expect the occurrence of a rarer phenomenon, an echo at sea, such as I once noticed in a fog off the Newfoundland Banks while crossing the Atlantic in a French steamer, whose fog-whistle was echoed in a surprising manner. But at no time was it observed that the nephelological state of the atmosphere overhead or the prevalence of fog banks gave rise to anything like an aerial echo.

Although as a rule no very marked differences in the deep sea and surface temperatures were observed, yet a few of the anomalies noticed are deserving of mention. For instance, near Herald Island, on July 30, the temperature at the bottom was 48° and 49°. A few days later off the Siberian coast, 100 miles to the southward, it measured 37°; while later in Bering Sea, over 600 miles to the southward, it fell to 35°.

The density of the sea water, as observed by Mr. F. E. Owen, assistant engineer of the Corwin, is shown in the accompanying table. The instruments used in obtaining the results were a thermometer and a hydrometer. Water was drawn at about 6 feet below the surface and heated to a temperature of 200° F., and the saturation or specific gravity is shown by the depth to which the hydrometer sinks in the water. As sea water commonly contains one part of saline matter to thirty-two parts of water the instrument is marked in thirty-seconds, as $\frac{1}{32}$, $\frac{2}{32}$, &c., and the densities are fractional parts of one thirty-second:

Points of observation.	Temperature.	Density.
At Saint Michael's, Bering Sea.....	50	
Off Plover Bay, Asia.....	34	
Arctic Ocean, near Bering Straits.....	32	
Arctic Ocean, near ice on Siberian coast.....	32	
Bering Sea, off Saint Lawrence Island.....	34	
Golovnine Bay, Bering Sea, July 10.....	42	
Bering Sea, between King's Island and Cape Prince of Wales, July 12.....	44	
Entrance to Kotzebue Sound, July 13.....	47	
Cape Thompson, Arctic Ocean, July 17.....	36	
Icy Cape, July 24.....	36	
Herald Island, in the ice, July 30.....	31	
Cape Wankarem, Siberia, August 5.....	33	
Wrangel Island (surface in ice) August 12.....	31	
Wrangel Island (below surface 6 feet) August 12.....	31	

The use of the dredge resulted in finding the usual bathybian forms that have been already described in works relating to Arctic voyages. In latitude 70°, longitude 170°—a spot known among the whalers as the "Post-Office"—the dredge brought up some mud of a temperature of 32°, while the water near the surface measured 34°. Microscopic examination of the mud revealed some shells of foraminifera.

In passing Bering Straits the brownish tint of the water was noticed. It resembled that often seen in the water of mill-ponds which has been discolored by decaying leaves. The phosphores-

cence of the sea was also observed in September in latitude 70°. And several patches of red snow were seen at Plover Bay and at Herald Island, but whether the tint was owing to the presence of some red protophyte or not I am unable to say.

The meteorological records kept on board the Corwin, being of use in connection with the navigation of the vessel only, are, therefore, untrustworthy so far as making any deductions from them in regard to climatology is concerned. In connection with this subject it may be inferred from the absence of glaciers above Bering Straits and the existence of huge ones in the more southern part of Alaska, compared with which the great Aletsch glacier of the Alps is a mere-pygmy, that the amount of precipitation is much less in the higher latitudes of the Pacific Arctic. But the finding of terminal and lateral moraines, rock scratches, and other evidences of former glaciation, as well as of coal, which geology says is the sun's rays in potential form, and also the fossil remains of the mammoth along with luxuriant tropical or semi-tropical vegetation, would imply the existence at a remote period of a different climatological condition, a change in which has been brought about, according to the explanation of the meteorologists, in long lapses of time through the change in the eccentricity of the earth's orbit in combination with the precession of the equinoxes and the movement of the apsides. Whether a milder climate existed in former days, enabling the mammoth to subsist on vegetable food, as suggested by Professor Owen, or whether the mammoth, in his personal locomotions while endeavoring to overcome the influence of climate, was detained in his present position by the sudden freezing, it is impossible to say. Sir Charles Lyell seems to account satisfactorily not only for the presence of these animals in the northern parts of Siberia and America, but for the permanent masses of ice known as mammoth cliffs. His explanation is as follows:

This snow is commonly blown over the edges of steep cliffs, so as to form an inclined talus hundreds of feet high; and, when a thaw commences, torrents rush from the land and throw down from the top of the cliff alluvial soil and gravel. This new soil soon becomes covered with vegetation, and protects the foundation of snow from the rays of the sun. Water occasionally penetrates into the crevices and pores of the snow; but as soon as it freezes it serves the more effectively to consolidate the mass into compact ice. It may sometimes happen that cattle grazing in a valley at the base of such cliffs, on the borders of a river, may be overwhelmed by drift snow, and at length inclosed in solid ice, and then transported toward the polar region. Or a herd of mammoths, returning from their summer pastures in the north, may have been surprised, while crossing a stream, by the sudden congelation of the waters.

In the course of the summer we fell in with most of the vessels of the whaling fleet, to several of which medical services were rendered, the cases being such as are common to seafaring men. The most notable ones were of consumption and constitutional syphilis among men who should never have been shipped in the first place. There also came under notice a case of polydipsia, in which it would have been desirable to try large doses of valerian—a medicine not among the stores—consequently the patient was unbenefited by treatment; and there occurred two deaths, one each from consumption and ascites.

One man of the escaped crew of the bark Daniel Webster, which was crushed in the ice, on being rescued, after two weeks of exposure, terror, and starvation, was completely insane, but subsequently regained his reason. It seems that the act of deserting ship in the Arctic not only taxes all the resources of manliness but the situation conduces to bringing about mental derangement. One of the oldest and most experienced Arctic whalers tells me that he has seen men from an abandoned ship so lose their wits as to cry like children, sit helpless on the ice, and refuse to move until the most rigorous measures were taken to force them. Another whaleman told me that some years ago, having to retreat from his crushed ship across the ice, two of his crew, becoming raving maniacs, finally drowned themselves; and the insane seamen of the Jeannette party is fresh in the minds of every one. The rescued crew of the Webster were on the verge of starvation when picked up, and among the nine taken on board the Corwin there prevailed for some weeks a peculiar disturbance of the digestive organs, characterized by a furred tongue, indigestion, and a sense of heaviness and pain in the epigastric region.

But the demands for medical services were more urgent among the inhabitants of several remote places where the Corwin touched, notably at Ounalaska and at Saint Michael's, the most northern station of the Alaska Commercial Company, and one of the few unprovided with a physician.

Arrived at Ounalaska and securely moored in a land-locked harbor surrounded by Alp-like hills, which presented a dreary picture of snowy desolation, we found the air uncommonly chilly and apparently disagreeable enough to give a seal bronchitis, although the inhabitants called it mild weather. An epidemic, from which a large portion of the native population of the island had died, prevailed in the little village off which we anchored, and the only physician of the place being also dangerously ill, the sick were without medical advice or attendance. During the few days of our stay every assistance in our power was rendered the sufferers, and we hope that our advent among them was the means of averting several funerals that otherwise would have taken place.

DISEASES PECULIAR TO THE ABORIGINAL POPULATION.

Clinical observation of the disease in question showed marked dyspnœa, broncophony, imperfect arterialization of the blood, cough, with expectoration, pain, insomnia, and great depression both physical and psychical; in fact the latter symptom was the most characteristic; and it seemed impossible to impart the least ray of hope to a patient who had made up his mind to die from the onset of his attack. The disease was very rapid in its course and, considering the gravity of these assembled phenomena, there was but little of the fever that usually attends pneumonitis. The main symptom calling for relief seemed to be the marked asthenia, to combat which the administration of quinia, stimulants, and milk were resorted to with beneficial effects. It may be mentioned that the administration of quinia to these natives is attended with the happiest results. The attending physician at Ounalaska informs me that most of the ailments he has to treat among them being of an adynamic character he invariably gives quinia, the effect of which, he says, is almost magical. It is very much to be regretted that time and opportunity forbade a necropsy in one of these cases, for among the different and varied forms under which pneumonitis presents itself, and this type differing from any I have heretofore seen, it is not at all incredible that there may have been something distinctive about its morbid anatomy.

What connection there may have been between the outbreak of the epidemic and the prevailing climatic and telluric influences it is impossible to say; but the well-known relations of meteorological conditions to certain diseases would lead one to infer that the previous occurrence of several earthquake shocks, or, what is more probable, a relatively mild winter, with an unusual amount of precipitation, may have been the predisposing cause; not to mention the interminable diet of fish and whale of the Aleutian, his fondness for "quass," and his inability to resist slight causes of psychical depression.

So far as it is possible to ascertain the disease seems to have been confined almost exclusively to the native population. At Ounalaska the only sufferer not a native was from the Island of Mauritius. The epidemic also prevailed extensively at Saint Paul's, Unga, Kodiak, Cook's Inlet, and Prince William Sound, a singular coincidence connected with the outbreak being its appearance at these places immediately or soon after the arrival of the first vessel in port. This circumstance so impressed itself on the native mind as to give rise to a general and strong belief in the importation of the disease.

It is not at all unlikely that sickness of the foregoing character has occurred from time to time among the Aleutians. We have a mention of at least one outbreak, where it is stated that during a few days of unusually warm weather an epidemic of bilious pneumonia made its appearance at Kodiak, one of the adjacent islands, attacking about fifty of the natives.*

The same authority reports the prevalence of intermittent fever at Cook's Inlet among a white population who lived on a bluff several hundred feet high in houses exposed to a strong breeze directly from the inlet. The reporter states that the disease might have been contracted elsewhere; but happening after a sea voyage of forty days, and in persons previously in good health, he attributes it to locality. In a conversation with Mr. Petroff, whose topographical knowledge of this part of Alaska qualifies him to give an intelligent opinion, he informed me that for many miles around the bluff in question the land is low and marshy, but he thinks it is not malarious, and quotes the opinion of Dr. Govorlivo, a Russian surgeon, who says that in summer the weather of Cook's Inlet is warm and clear; in winter the thermometer falls to 40° below freezing; rain and fog are rare, and the atmosphere is clear, bracing, and healthy. These observations, the Doctor adds, are supported by Admiral Tebenkoff.

* Pacific Medical and Surgical Journal, 1870, vol. iv, p. 337.

Another observer, Assistant Surgeon John Brooke, U. S. A., in a report to the War Office, 1870-'74, speaking of the execrable climate of a part of Alaska in the same latitude, as Kodiak, remarks:

It might naturally be supposed that, in such a climate, acute rheumatism and acute pulmonary inflammations would be very common; but such is not the case. During a tour of nearly fifteen months I have seen but one case of typical acute rheumatism, and not a single case of uncomplicated pneumonia or pleuritis. Cases of sub-acute rheumatism, however, and pains and aches of a few days' duration, are very frequent. Pulmonary phthisis is not uncommon, and forms a large percentage of the cases of disease even among the native Indians.

* * * * *
Cases of sickness not infrequently occur in which there is a general adynamic condition of the system, without definable disease, a condition which is doubtless due to the depressing influences of almost continuous wet, and cool, and cloudy weather; a monotonous diet, in which fresh fruits and vegetables play an insignificant part; the almost entire absence of out-door amusements, and the want of opportunities for sufficient exercise in the open air.

The subject cannot be dismissed without some further historical mention, for which, by the way, I am largely indebted to Mr. Petroff, who has obtained his information from original Russian sources not generally accessible to the ordinary reader. From 1800 to 1820 no special diseases existed in the Russian colonies exclusive of scurvy and syphilis. At the end of 1819 a fever accompanied by a reddish eruption broke out, from which forty-two deaths occurred at Kodiak and twenty-five at Sitka. No physicians were in the colonies at that time, except those accompanying the ships of the company from St. Petersburg. It seems that subsequently two hospitals were established in 1844, one at Sitka of forty beds, and one at Kodiak of ten beds; and in 1862 the company had in its service three physicians, eleven stewards, five surgeons and apothecaries' assistants, two midwives and two assistants. From 1840 to 1860 a most fatal epidemic in the form of an exanthematous fever prevailed at Ounalaska. The same disease in 1848 prevailed at Uniga, Sitka, and the Alaska Peninsula, three hundred natives having died therefrom. The reporter further says that the great mortality was owing to loss of courage and refusal to take medicine. Tikhmenief, in his historical review of the Russian colonies, says that the prevailing diseases among the native population of Alaska are consumption, ulcers, scurvy, and syphilis, they being indebted to the Russians for the importation of the latter. He also mentions the occurrence of epidemic pneumonia in 1852 at Sitka, Kodiak, and the missionary establishment at Bristol Bay. At the first-mentioned place the disease occurred principally among children. In 1853 there were sixty-four cases of scurvy at Sitka, of which nine died; and in 1855 an epidemic typhoid fever like yellow fever occurred. It was believed to have been imported by a ship which had come around the globe from Russia. The mortality, however, does not appear to have been excessive, for out of three hundred and forty-one cases there were but thirteen deaths. The same year there was also an epidemic of pneumonia, three hundred and ninety-eight cases having occurred at Sitka and Kodiak with sixty deaths. In 1860 epidemic measles attacked both adults and children, causing eighty-one deaths in the whole colonies.

From a report of the Russian American Company on the sanitary condition of New Archangel and other posts from May 1, 1861, to May 1, 1862, it is learned that for 1861 and the first third of 1862 and those of previous years there existed both in the number and character of the cases a marked difference that was very gratifying. The mean daily number of patients in the New Archangel Hospital was ten persons, besides the fact is worthy of attention that scorbutic and syphilitic diseases had almost entirely disappeared. In April, 1862, there was not a single case of the latter disease. Dr. Markoffski ascribes this circumstance to many judicious measures taken for the extirpation of these diseases by the chief director of the colony, as well as to the greatly improved treatment of such patients. The number of patients admitted to the New Archangel Hospital was 663, of whom 626 recovered and 8 died. In the Kodiak Hospital there were 360 admissions, with 330 recoveries and 7 deaths. At Afognak typhus fever appeared but was promptly suppressed. Inoculation (?) is reported to have been carried out generally and successfully in the colonies. A medical and sanitary inspection of the northern districts in 1861 showed the accommodations of the unmarried workmen of the coal expedition to be in excellent condition; the hearty and healthy appearance of the men showing that they had been well cared for, notwithstanding the difficult under-ground character of their work; and the surgery is reported to have been in good condition. Dr. Markoffski also makes a favorable report for Michalowski (Saint Michael's) and speaks of the new *Kasharn* as light, spacious, and very comfortable; and of the lazarette and surgery as well provided and in good order.

No epidemics are mentioned, except one of gastric fever, the result of immoderate eating, which prevailed on Saint George's Island. It yielded to treatment. The houses of this island are reported to be in a satisfactory condition, sanitary conditions being observed as far as possible, also order and cleanliness; and the Kashim (or club-house) comes in for favorable mention.

On the Island of Saint Paul the regulations established for cleanliness are reported to have been generally obeyed. Inoculation (?) was generally carried out, and almost all the children were vaccinated except at Ikogmut Mission, where the natives refused to adopt this method of protection; but it is stated that this obstinacy may be overcome by time or accidental circumstances such as the prevalence of an epidemic.

A disease called the "black measles" appeared at Kodiak and the adjoining islands in 1875, from which the Alaska Herald of August 3, 1875, reports the following deaths to July of that year:

Kodiak.....	40
Wood Island.....	50
Afognak.....	20
Yelona.....	10
Eagle Harbor.....	10
Total.....	130

The natives of the Pribylof Islands, being better housed than those on the Aleutian Islands, appear of late to have fared better as regards health than their more southern neighbors. The wonder is, though, after visiting these islands, that so little sickness exists among a population most of whom live but a few hundred yards away from the carcasses of thousands of seals in all stages of decomposition. On the island of Saint Paul, for instance, where the climate is as humid and disagreeable as possible, the carcasses of the 80,000 seals that are slaughtered yearly are left to decay in the open air in the immediate vicinity of the village, and the stench therefrom is anything but pleasant. One night the Corwin anchored under the lee of the island, about a mile off shore, and the stench was so great as to preclude sleep during the night.

A stroll ashore on Saint Paul afforded a fine opportunity to study comparative anatomy, especially of the marine mammalia; for in addition to the millions of live seals to be seen hauled up on the rookeries, we walked through the green, slimy ooze, the remains of thousands of seals slain years ago, occasionally sinking over our ankles in a substance resembling adipocere; picked our way through the scattered anatomy of last year's seal and walrus; witnessed the remains of the 1,500 seals killed but yesterday and of the 1,200 killed the day before.

From information furnished by Special Agent Otis, it is learned that the prevailing diseases are of a pulmonary and cutaneous character, but the mortality returns of a late year show three deaths each from scrofula and cerebro-spinal meningitis. Since 1869, out of a population of about 300, the increase has been but slight, the births and deaths having about balanced each other. The mortality per thousand being nearly three times greater than that among more civilized communities under more favorable conditions, and the Aleutian women, as a rule, being unprolific, it is hardly reasonable to look for any decided increase in the population except under changed and more favorable conditions.

Mr. George Kennan, the genial author of "Tent Life in Siberia," has kindly furnished a translation of the chapter from Veniamenoff's History of the Aleutian Islands, relative to "Diseases and their Treatment," from which the following notes are taken:

"It appears that in the early days of the Russian occupation the Aleutians had some crude notions of human anatomy, which they acquired from the dissection of the dead bodies of their slaves, and they also had considerable knowledge of medicine and surgery the practice of which, being prohibited and suppressed by the Russians, is now entirely lost. Among the diseases most common to them were a skin disease known as 'seep;' itch, boils, diarrhoea, and fever—the latter called 'common' because no one escaped it—and consumption of two kinds generally considered incurable. The first variety was simply a decay of the lungs attended by such symptoms as cough, spitting of blood, and shortness of breath; the second, proceeding from decay of the liver, was accompanied by griping of the intestines and rapid emaciation.

"They were also acquainted with another disease which they called the 'inward disease.' Scurvy and venereal disease were formerly unknown to them.

"Their principal therapeutic measures consisted in patience and strict diet, the patient being allowed only a gargle and two spoonfuls of water in the twenty-four hours. Dangerous wounds were treated by prolonged fasting, as they considered food and drink extraordinarily dangerous for the patient, and creating a liquid in the wound which caused inflammation and even death. The writer states that this method of treatment is still pursued, and thinks that even now it saves many from death. Accidental wounds from fox-traps were quite common, the barbed iron teeth usually taking effect in or near the knee-joint. At Ounalaska out of forty or fifty cases but two are known to have died. In gunshot wounds, aside from diet, they used for cleansing and keeping unds alive the fat of fishes and various land animals, especially fat from the head of the fox. Over deep wounds they sifted burnt teeth reduced to powder and applied a fresh mouse-skin every day. Swellings and rheumatisms they treated with various fomentations and ointments, or by poultices made of roots. Other external diseases they hardly treated at all, except by employing the universal medicines, diet and patience.

"In fevers they employed decoctions of bitter herbs and guarded the patient carefully from the external air. Herbs were also used in consumption of the first kind, but if the expectoration proved troublesome, the patient was submitted further to the operation of 'pricking.' In both kinds of consumption the Aleut doctors supposed the bad symptoms to proceed from bad blood, or a ferment, or spirit. The operation just mentioned was performed by thrusting stone lancets on both sides immediately under the ribs, and was done by the most skillful surgeons only, because it required accurate knowledge of the internal parts and of just how much of the spirit to let out, as there was danger of letting it all out and thus sending the patient to the other world. The operation, also used as a remedy for 'internal disease,' was considered the most approved treatment for colic, and patients expressed themselves as having received decided benefit therefrom. 'Puncture' in critical conditions was resorted to as the last and sole remedy. It was also used in many other diseases, for example in diseases of the eyes, where the skin was pricked between the eyes or on the nape of the neck. In fact, this operation was done on all parts of the body, and an instance was known of an Aleut having submitted to it forty times, various parts of his body having been punctured. The operators were men famous for their skill, and imparted their knowledge to the best-beloved of their children or nephews; for this reason the art is of late become almost lost. Common bleeding from the arm and leg was employed to reduce large swellings and correct morbid conditions of the blood; also to combat sluggishness or weakness, headache, and loss of appetite.

"For diarrhoea astringent roots and diet were employed or the root of the 'makarsha.' Another treatment in 'internal diseases,' generally resorted to by old women, consisted in a sort of manipulation of the belly while the patient was lying on his back. It was used principally against griping pains, and elicited high praise from the men who have experienced the treatment."

EFFECTS OF ALCOHOL.

The principal vices among these people, who are generally mild and inoffensive, seem to be a fondness for games of chance and an uncontrollable craving for alcoholic drinks—an appetite which, by the way, two seasons of personal observation and experience in the Arctic convince me is something of a physiological necessity. The taste, however, seems to be an acquired one by the aborigines, for I saw a man at Nounivak Island to whom the taste was foreign, and on tasting both brandy and whiskey he made a wry face and spat them out with evident disgust.

Late authorities testify strongly in favor of the benefit to be derived from moderate indulgence in drink during an Arctic sojourn. In looking over a *précis* of the evidence taken by the Parliamentary Committee appointed to inquire into the adequacy of the provision in the way of food, medicines, and medical comforts furnished to the Nares Arctic Search Expedition, we learn that Sir Edward Parry attributed the greatest antiscorbutic effect to beer; and Dr. Colan, R. N., fleet surgeon (Alert), says it is the opinion of all the men he has read about who spoke about beer in the Arctic regions. Dr. Barnes believes beer decidedly antiscorbutic and recommends it should be given. Sir George Nares says abstainers are no better off than others as regards scurvy. Captain Markham says he would as soon take a man of temperate habits on an expedition as an abstainer; the two total abstainers of his sledge suffered severely, and he himself felt better after he took to drinking his rum. Sir L. McClintock says there is no advantage in teetotalers; Mr. Alexander

Gray, that there is no advantage in health in abstainers on board whalers, while Dr. A. Envall, who accompanied Nordenskiöld, condemns excess, but says he believes spirituous liquors to be of great use in small and moderate quantities. Further mention may be made to Professor Nordenskiöld and Lieutenant Palander, who in 1873 undertook a sledging journey from their winter quarters in Spitzbergen, in latitude 79° 53' north, and were away sixty-six days. During the whole journey, there was no scurvy, though the party had no lime juice. The diet consisted of pemmican, biscuit, salt pork, butter, coffee in abundance, and a little spirits daily. All returned in excellent health. Comparison may be made between the Alert, of the Nares Expedition, aboard which scurvy prevailed notwithstanding the careful daily administration of lime juice, and H. M. S. Assistance, in 1850-'51. In the Assistance there was beer brewed on board, while the Alert had no such advantage. No scurvy prevailed on board the former ship. Captain Markham, speaking of the prevention of scurvy in any future expedition wintering in high latitudes, says that the dietetic causes may be reduced to a minimum by varying the diet with condensed milk, butter, eggs, beer, and wine. He also observes in regard to the adequacy and completeness of outfit that former expeditions had the means of brewing beer on board, while the Nares Expedition had no such advantage.

Markham moreover says that Captain Hall, of the *Polaris*, who died of apoplexy, was a teetotaler and was much annoyed at seeing others drink.

Whatever conclusions may be deduced from the foregoing, it is evident that there is an absolute consensus of opinion both among executive and medical officers of late Arctic Expeditions in regard to the judicious use of alcoholic beverages. It only remains to add that personal experience and observation convince that there is an indescribable something in the Arctic atmosphere that produces what is called the northern craving for drink, even among persons who care nothing for it in temperate latitudes. Being of abstemious habits, I would not for the world say anything to favor intemperance, but facts warrant in testifying to the undeniable good effects of whiskey when served out to the crew after unusual fatigue and exposure; and I know of no place, circumstance, or condition under which such beverages as beer and claret are more palatable or more valuable from a hygienic point of view than when taken at meals during an Arctic voyage.

Illicit traders, taking advantage of this northern craving for drink, have of late years been in the habit of supplying the most villainous compounds, in exchange for small quantities of which the improvident Eskimo gives his choicest furs. Some captured specimens of these prohibited articles, bearing the respective labels of *Bay Rum*, *Jamaica Ginger*, *Pain Killer*, and *Florida Water*, with a view to defrauding the revenue, proved on examination to be nothing but cheap alcohol of a highly inflammable nature to which a little coloring matter had been added. Loath as I am to give the least encouragement to intemperance, being rather an advocate of temperance, I cannot help thinking that it would be a step in the right direction, and one productive of good, if instead of the present prohibitory measures the fur companies were allowed to sell small quantities of beer and claret. In addition to their value as antiscorbutics, their use would be eminently better for the natives from a moral point of view than the present use of "quass," a vile native decoction made from sugar and flour, both of which articles the traders have a right to dispose of in unlimited quantities.

To the alleged introduction of spirituous liquors is said to be due the famine and excessive mortality among the natives of Saint Lawrence Island, one thousand of whom it is estimated have died in the last three years. Several visits to this island revealed the fact that it is fast becoming depopulated. The first village at which we landed was entirely deserted; at a second not a living being was to be seen, but in and around the houses were counted fifty-four dead bodies, all adults. Many laid unburied on the adjacent hills, while others had died in bed, where they still remained. A third village, which must have been a very old settlement, judging from the thousands of walrus skulls strewn in every direction and from the character of the kitchen-middens, was also depopulated. It was a Golgotha in every sense of the word. A great many dead were found here, laid promiscuously out of doors, and in one house we found sixteen bodies. Among these remains were those of several children, a fact which tended to remove previous suspicions of cannibalism on the part of the sufferers. At these villages was made a fine collection of Inuit crania and other ethnological curiosities for the Smithsonian Institution. Finally we visited at the northwest extremity of the island a settlement where lived several hundred Eskimo. They informed us that two hundred

people of the village had died of famine, as near as we could make out from a very imperfect interpretation, and that food became so scarce they were obliged to eat dried walrus skins and their dogs, having but one dog left, when happily the capture of a whale afforded timely relief. A number of these fur and feather-clad aborigines, having their heads shaved after the manner of Zurbaran's pictures of monks in the middle ages, were clamorous in importuning for whiskey, and the chief of the village refused to sell us a few reindeer skins unless we gave him liquor in exchange, this too while the poor remaining dog, looking wistfully up into his face, seemed to be a living warning not to try as a remedy the hair of the dog that had bitten the village.

To attribute the late cause of death among these people entirely to intemperance admits of some doubt. It seems impossible for them, owing to lack of means, to have procured enough drink to last more than a few days, or at least during the short stay of any trading vessel that may have arrived. Then again it is probable that some epidemic influence was the main factor, if we may rely upon the statement of a whaling captain who visited the island during the time so many were dying. He tells me that the disease was what he calls "measles or black tongue." Admitting the prevalence of sickness of this kind among an improvident and shiftless people, starvation must follow as an inevitable and necessary result: Similar conditions having prevailed among the Asiatic Eskimo of Plover Bay and East Cape, many of whom have died in the last few years, it would, perhaps, be nearer the truth to say that the mortality in question was due to the combined influences of intemperance, sickness, and starvation.

EFFECTS OF CLIMATE.

At Saint Michael's, almost under the Arctic Circle, I found that pulmonary troubles and the constitutional effects of syphilis prevailed among the small population to an alarming extent. Here also, as in most every northern place we touched at, the wicked thirst for rum exercised a dominating influence. The winters are long and cold, with high winds and gales and a great deal of snow; the thermometer falls to -45° , and the winter previously to our coming was so severe that owing to the great and long continued cold Eskimo dogs and wild geese are reported to have frozen to death. The accompanying meteorological summaries from the records of the Signal Office give a more detailed account of the weather:

METEOROLOGICAL SUMMARY.

July, 1879, to end of June, 1880.	BAROMETER.				THERMOMETER.				Mean relative humidity.	WIND.			AMOUNT OF RAIN AND MELTED SNOW.		
	Mean.	Range.			Mean.	Range.				Prevailing direction.	Maximum velocity during month.	Total.	Amount in inches.	Number of days on which rain or snow fell.	Number of auroras.
		Highest.	Lowest.	Difference.		Maximum.	Minimum.	Difference.							
1879.															
July.....	29.850	30.244	29.124	1.120	53.4	68	36	32	82.6	North....	Miles. 57	7.473	.65	16	0
August.....	29.731	30.186	29.237	.899	50.2	62	35	27	88.8	North....	53	8.870	.83	18	0
September.....	29.622	30.097	29.323	.764	45.1	58	19	39	88.3	North....	49	7.878	.64	21	0
October.....	29.748	30.544	29.290	1.254	26.1	42	13	39	94.7	South....	76	12.380	.25	16	1
November.....	29.747	30.498	29.011	1.487	17.4	36	-12	48	98.5	South....	74	10.712	.03	11	4
December.....	30.175	30.797	29.383	1.414	6.0	36	-32	68	99.7	North....	68	7.917	.07	10	3
1880.															
January.....	30.037	31.012	28.934	2.078	-19.	15	-45	60	100	North....	64	4.671	0	9	3
February.....	29.884	30.652	29.083	1.569	.4	?	-41	?	96.1	South....	75	11.456	?	17	0
March.....	29.992	30.682	29.125	1.557	8.3	?	-37	?	96.0	South....	69	12.598	?	20	0
April.....	29.874	30.665	29.229	1.436	19.3	?	-27	?	87.8	N. E.....	49	7.042	.10 (?)	14	0
May.....	29.963	30.499	29.517	.982	28.0	?	-1	?	97.0	North....	52	6.808	.21	11	0
June.....															

GENERAL REMARKS.

1879: July.—Cold and damp; rain or fog nearly every day.
 August.—Cold and rainy.
 September.—Winter commenced the last of the month; remarkably early.
 October.—Almost a continuous series of gales all the month.
 November.—Series of gales the last of the month.
 December.—Mild temperatures and gales the last half of month, ending abruptly in severely cold weather.
 Station: Saint Michael's, Alaska.
 1880: January.—Remarkably high barometer the first of month; long continued cold weather with high winds the last.
 February.—A continuous series of gales accompanied by snow all the month.
 March.—Extraordinarily large snow fall during the month; but the accompanying gales, as in February, prevented measurement.
 April.—Very cold; unusually fine weather toward the last of month, but low temperatures still prevailed.
 May.—Winter continued unbroken until the 18th inst., when it became suddenly warm, and the water-fowl began arriving.

CRUISE OF STEAMER CORWIN IN THE ARCTIC OCEAN.

METEOROLOGICAL SUMMARY.

Date.	BAROMETER.										THERMOMETER.					WIND.					Number of days on which rain or snow fell.	Number of auroras.			
	Mean of—					Range.					Mean of—					Range.									
	Telegraphic observations.					Local observations.					Telegraphic observations.					Local observations.									
	Corrected for temperature, instrumental error, and elevation.		Corrected for temperature and instrumental error only.			Difference.					A. M. P. M.		Midnight.			Difference.									
	A. M.	P. M.	Midnight.	A. M.	P. M.	Midnight.	Highest.	Lowest.	Difference.	Local observations.	A. M.	P. M.	Midnight.	Maximum.*	Minimum.	Difference.	Neon to 6 p. m. †	6 p. m. to midnight. †	Midnight to 6 a. m. †	6 a. m. to noon. †	Total.	Maximum velocity during month.	Amount of rain or melted snow (inches and hundredths.)		
1890.																									
July	29.879	29.886	29.868	29.847	29.854	29.886	30.333	29.392	0.941	52.6	46.9	54.3	54.5	37	Blank	86.8	N.	.....	.....	.....	.....	6,548	29	.65	0
August	29.770	29.789	29.772	29.754	29.740	29.723	30.254	29.306	0.943	52.3	48.6	53.5	55.2	35	do	88.6	E.	.....	.....	.....	.....	7,653	67	4.05	0
September	29.614	29.616	29.620	29.614	29.634	29.587	29.582	29.927	0.881	41.2	36.0	41.7	42.0	29	do	90.6	N.	.....	.....	.....	.....	9,083	68	5.61	1
October	29.659	29.854	29.853	29.821	29.819	29.825	30.490	29.183	1.297	28.3	27.2	28.2	28.8	3	do	95.7	N.	.....	.....	.....	.....	10,802	67	2.38	5
November	29.881	29.873	29.897	29.872	29.838	29.838	30.643	29.227	1.416	24.4	21.6	25.0	24.0	—7	do	96.1	S.	.....	.....	.....	.....	9,954	64	1.48	5
December	29.905	29.914	29.937	29.891	29.875	29.857	30.798	29.073	1.725	11.3	10.5	11.7	11.2	—43	do	98.8	E.	.....	.....	.....	.....	8,771	59	1.31	2

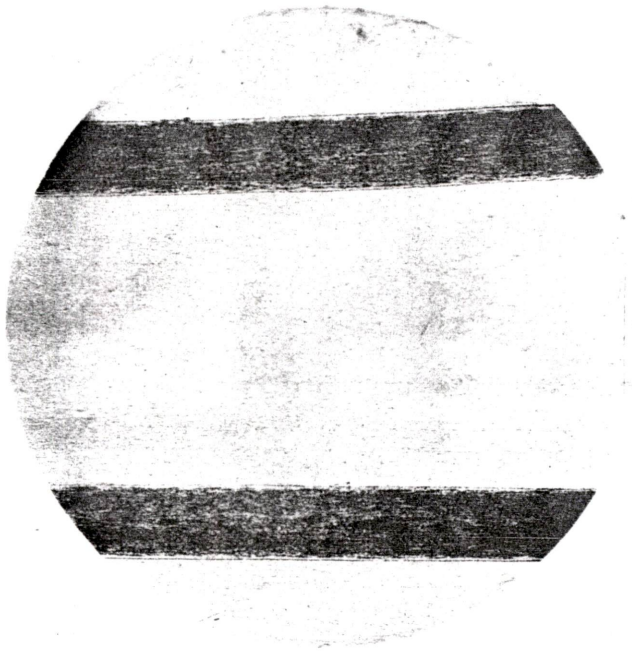
* Maximum thermometer broken.

† This data is incomplete.

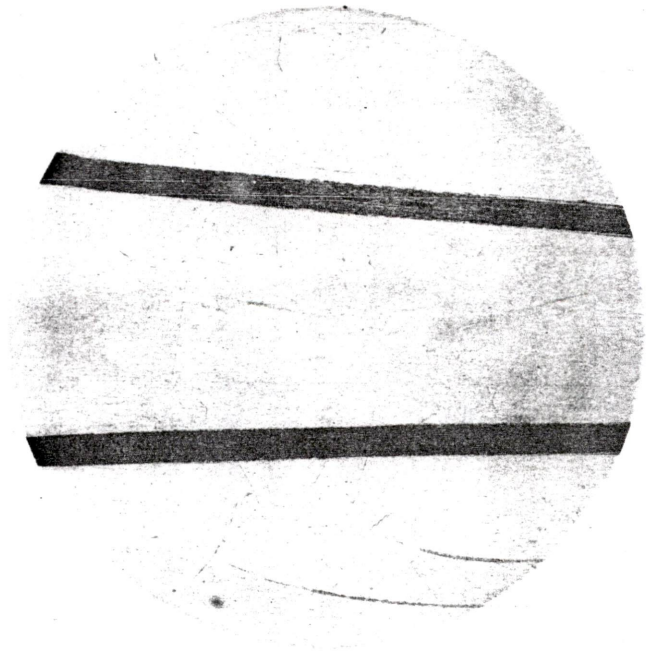
FORT SAINT MICHAEL'S, ALASKA.

Copied from records on file at the office of the Chief Signal Officer, United States Army, Washington, D. C., on February 1, 1882.

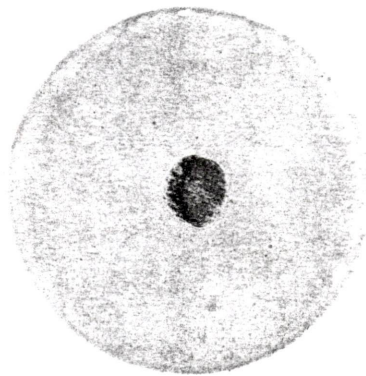
[SHAL.]



HAIR: SAINT LAWRENCE ESKIMO.
(75 diameters.)



HAIR: SAINT LAWRENCE ESKIMO.
(75 diameters.)



HAIR: TRANSVERSE SECTION: SAINT LAWRENCE ESKIMO.
(75 diameters.)

In addition to the frequent disorders of the respiratory organs, rheumatism and affections of the alimentary canal are quite common. The latter are principally due to overloading the stomach after a long fast, and indigestion from this cause is so frequent that it is no uncommon thing to find an Eskimo suffering for several days from all the remorse of a guilty stomach. The women, too, are at times violently hysterical, and in this respect do not differ much from their more civilized sisters.

AFFECTIONS OF THE EYE.

Diseases of the eye and its appendages are quite numerous, and among them I noticed several cases of opacity of the crystalline lens and of the cornea, and of fatty and pigmental degeneration. Ophthalmia tarsi in its chronic form and granular inflammation of the conjunctiva are common along with amblyopia and asthenopia, and it is not at all unlikely that a specialist might exhaust the ophthalmological vocabulary in describing the diseases he might observe.

Among these numerous eye diseases, however, I observed but two cases of total blindness; one in a man at Saint Lawrence Island and another at Saint Michael's in a native from the interior. Mr. Petroff, whose duties as census agent have afforded him great facilities for observing the interior population, informs me that blindness is almost universal among the older people, most of whom get blind on reaching the age of fifty. This blindness, common also to the lower animals, was once observed by him in a bear at Prince William Sound. The bear, with several others was seen approaching his party on the beach, and the singular actions of this particular bear attracting attention, from the uncertain way in which he walked and was pushed about by the noses of the other bears, it was singled out and shot, when an examination showed the previous existence of total blindness, which of course accounted for the odd movements of the animal.

These eye affections are not caused by smoke as has been erroneously supposed: they are mostly the result of snow blindness, in which the sensibility of the end-organs, the rods and cones, is diminished or exhausted by the prolonged illumination from the constant sunlight and the glare from broad expanses of brightly glistening snow. The rarefaction of the arctic atmosphere, the insufficient and impoverished condition of the blood brought about by bad feeding and the strumous diathesis, may likewise be mentioned as predisposing causes.

It may not be digressing from the subject to cite an observation of Mr. Edwards, surgeon to Sir Edward Parry's second expedition, who has noticed in the Eskimo what he believed to be a rudimentary nictitating membrane resembling that which protects the eyes of some animals. The peculiarity he points out as common to many individuals of Melville Peninsula, and consists in the inner corner of the eye being covered by a duplication of the adjacent loose skin. This fold is lightly stretched over the edges of the eyelids, covering the carunculus lachrymalis, which in Europeans is exposed, and forms, as it were, a third lid of crescentic shape. This singularity was ascertained to be very remarkable in childhood, less so toward the adult age, and then frequently disappearing altogether, the proportion in which it existed in grown up persons being small compared with that observed among the young.*

An interesting question in this connection is the form of the fibres of the cones and rods in the retina of the Eskimo. It is known that in animals, the habits of which are nocturnal, such as owls and bats, the cones are wholly wanting, and rods alone are present; so a variation may have occurred in the eye of the Eskimo in this particular as one of the results of his conflict with his circumstances. But this is mere speculation, and the incorrect observation of Mr. Edwards, when viewed in the light of more recent ophthalmological knowledge, would seem to be nothing more nor less than a congenital defect, owing to the laxity of the skin at the root of the nose and of the folds on a level with the inner canthus of the eye known as epicanthus, which often disappears with the development of the bones of the nose, and is remediable by an operation or the application of electricity to the muscles of the face.

Although applications from the Eskimo for "eye-medicine" were quite frequent, yet I was unable to find out much regarding the means taken by them to treat or prevent eye diseases. In the quaint old book of Hans Egede, a missionary who spent twenty five years among the Greenlanders, is an account of an operation that he has seen Eskimo perform for removing a film from

* Edinburgh Philosophical Journal, vol. 36, 1844.

the eye with a hooked needle and a knife, which from the description appears to be the same as the modern operation for pterygium. No operative procedure of the kind came under observation; but it was noticed that the use of a shade for protection was quite common, also eye-blinkers made of wood in which was cut a slit after the manner of the stenopaic slit of oculists used to correct astigmatism.

From imperfect observation and the difficulty experienced in communicating intelligently with the Eskimo I was unable to determine whether acritochromacy existed among them to any great extent. That this functional trouble does exist we know from Nordenskiöld, who ascertained the fact after actual experiment. Many of them, however, possess eye-sight that is perfectly wonderful, being endowed with the acuity of vision peculiar to nomads and hunters who spend a great deal of time in the open air, which enables them to descry distant objects only discernible to ordinary eyes by means of a spy-glass.

At several places I saw Eskimo using spy-glasses and opera-glasses, with the use of which they were perfectly familiar. As far north as Point Barrow, the northwestern extremity of America, I saw an old fellow with a pair of opera-glasses of French manufacture, which he carried carefully protected in a skin bag hung around his neck. Another pair was in possession of a man at Cape Kruzenstern, who showed how they were useful to him in stalking reindeer.

ARCTIC MOSQUITOES.

Mosquitoes were found to be quite troublesome at Saint Michael's. How strange that the busy drone of these little dipterous insects, recalling the solicitations for a *pour boire* in a French café, should importune one's ears at a spot so far north beyond the domain of the ordinary "globe trotter" and unknown to tourists! The little pests are more widely distributed than the Innuite race or the reindeer, to both of whom they cause great annoyance during the short Arctic summer. Frail as they are in body they have reached as far north as man has penetrated, having been found by the Nares Expedition, and unlike other insects they seem to have no relations to the external conditions by which they are surrounded, being in fact cosmopolitan and having no zoological province. Not only are they unconfined to any limited or definite area, their distribution in time is contemporaneous with if not antecedent to man, as their fossil remains have been found in the Tertiary beds of the Lower White River, Colorado; and an instance is even recorded of their affording material for Eskimo wit at Lieutenant Schwatka's expense, who was facetiously styled by these people "the big mosquito."

Mr. Seeborn, a naturalist who visited Northern Siberia to study the birds, writes:

But there is one great drawback to visiting this charming country, and that is the reason why it is so frequented by birds—the myriads of mosquitoes. Life without a veil I believe would be perfectly unendurable. I was obliged to wear thick leather gloves, and on many occasions, when shooting, if I was too long in taking aim, I had to shake the barrel to get the mosquitoes off, and then take another aim quickly before they lighted again, otherwise I could not see the bird at all.

Arctic mosquitoes as encountered by us surpassed anything I have ever seen in New Jersey, for instance, where it is said they collect at times in such clouds around village church steeples as to be mistaken for smoke and cause an alarm of fire. Although they were worse than anything that I ever experienced at such places as Tybee Island, Georgia, the New Orleans quarantine station, or on the Rio Grande River, they differ from the southern insect in several respects. In the first place they are more pilose and more plumose, and have not so much nimbleness and activity, in consequence of which they are unable to get out of the way quickly and can easily be killed almost by the handful; but they seem to be just as venomous and persistent as their southern congeners.

Owing to their excessive annoyance, at times it was found to be almost impossible to use the instruments in taking observations when the position of a spot on shore was to be determined. On one occasion at a desolate spot on the top of Chamisso Island, about 200 feet above the sea level, we found an astronomical station, which had been established by parties from English ships in search of Sir John Franklin, and near it was a notice telling something about a bottle buried so many feet to the magnetic north. Curiosity, of course, prompted to get it by all means, but the mosquitoes coming in such myriads actually caused the search to be abandoned. Many of the men of the Corwin's crew were seriously incommoded by their bites and stings on exposed parts of the body, one man's neck and face being so swollen from this cause that he was temporarily deprived of eyesight.

MEDICAL AND SURGICAL REMARKS.

No serious epidemics have occurred at Saint Michael's since 1840, when small-pox was introduced by the Russians. This is probably the northern limit of that disease on the Pacific American coast. Of 550 cases occurring at Saint Michael's and Kolmakovsky 200 died, and a famine ensued because of the death of so many of the hunters and providers.*

This post having been for a long time in possession of the Russians before the Alaskan purchase, numerous half-breeds are found in the vicinity, for whom the so-called strumous diathesis seems to have the preference. That diseases of the latter character have prevailed for some time may be assumed from examination of an aboriginal skull exhumed from the neighboring graveyard at Saint Michael's. There is shown extensive necrosis of the bones composing the apex of the skull, also of the temporal and occipital bones and the left half of the inferior maxilla.

It appears that variola prevailed among the Alaskans previously to the Russian occupation, for several early Spanish navigators mention having noticed the marks of small-pox among the natives of Sitka Bay and Port Bucareli on Prince William Sound. The first mention is made by Don Francisco Antonio Maurelle, who explored the coast in 1775. "Journal of a Voyage in 1775 to explore the coast of America northward of California," published in English, Edinburgh, 1802. The other reference is "Relacion del Viaga Heche por los Goletas dutil y Mexicana en el año de 1792, Madrid, 1801."

Hagemeister (Report on Russian Colonies, 1820) says that the first vaccine matter was brought to Alaska in 1808 by the ship *Neva*, and the surgeon, Mardhorst, who introduced vaccination, instructed the agents of the company in performing the operation. From Tikhmenieff we learn that 400 natives and 1 Russian died of small-pox at Sitka in 1836, and the disease being carried to Kodiak the following year, in March, it caused the death of 737 people.

On the Alaskan Peninsula vaccination seems to have afforded protection from the disease, for but 27 deaths occurred out of 243 cases. At Ounalaska there were 180 cases, of which 130 died. At Cook's Inlet, the natives refusing to be vaccinated, the mortality is reported to have been greater, but no figures are given. The last cases occurred there in 1840. The reappearance of small-pox was noticed at Sitka in 1862, and it traveled northward, but vaccination is alleged to have lessened the mortality of previous epidemics.

On reaching Saint Lawrence Bay, Siberia, a native was taken aboard at his own request with a view to utilize his services, as he spoke a little English. This fellow had a fatuous expression of countenance and a choreic affection which kept up an intermittent twitching of his head. After several days he suffered from constipation and insomnia, for which the usual remedies were administered, with the effect best described in the patient's own phraseology when questioned at morning sick call: "Lass night big sick; to-day small sick; all same bime by good." However, the bustle and stir on board a steam-vessel, with the unusual surroundings, caused a return of the insomnia, and the fellow's state of mind was not improved by seeing our collection of aboriginal crania nor by the chaff and gibes of the men in the fore-castle, who made him believe that he was to be taken to San Francisco in a box as an anatomical curiosity, all of which causes tended to produce an illusion of the imagination that exercised a despotism over his weak and uncultivated intellect. High authority asserts that all suicides originate either from insanity or moral cowardice. Here undoubtedly is an instance in which the disorder of the relations between mental and physical functions was of such a nature as to destroy the current presumptions founded on these relations as existing in health—the man stabbed himself and jumped into the sea. Happily he was fished aboard with great promptness, a boat being alongside at the time. An inspection showed a penetrating wound of the chest just under the left nipple, the knife having entered several inches; blood and air escaped from the wound every time the patient coughed, and the hand placed over the surface of the chest showed extensive effusion of blood into the thoracic cavity with the peculiar mucous bubbling or gurgling of traumatopnœa. With such a formidable array of symptoms the patient ought to have perished promptly from asphyxia, notwithstanding the application of an occlusive dressing to the wound, a tight roller bandage around the chest, and the administration of the usual stimulant and opiate. After considerable delirium, followed by orthopnœa, it was

* Tikhmenieff: Historical Review of the Russian Colonies. Vol. I, p. 311-13.

surprising to notice the presence of favorable symptoms and ultimate improvement. In a few days the patient was landed at Plover Bay, Siberia, where he recovered sufficiently to start on foot for his home over a rugged mountain way 150 miles distant.

Some weeks thereafter the Corwin happening to stop in at Plover Bay, I inquired of a native, remarkable for his whaleman's English and apothegmatical way of putting things, whether my patient had got well, to which he replied, "Yes; small well." I learned subsequently from a whaling vessel, on board which this man had made a visit at Saint Lawrence Bay, that he had entirely recovered from his wound, but still labored under the delusion that his life had been attempted by the captain of the Corwin.

One case of hermetical sealing of a wound of the foregoing description does not prove much, to be sure, and it is hardly necessary to advocate a subject that has been the occasion of much discussion; but it does seem that the occlusive treatment, which has been sanctioned and practiced by such masters as Guy de Chauliac, John de Vigo, Paré, Graefe, of Berlin, and others, has its virtues, notwithstanding a different and unwarrantable assumption put before the public in a late official publication.

Wounds seem to heal uncommonly well in the Arctic, a fact doubtless owing to the highly ozonized condition of the atmosphere and the absence of disease germs and organic dust. It is noticeable both in man and animals. At King's Island I saw a whale's rib in which reunion had taken place after a fracture probably caused by a bomb lance, and I have also seen a bear with several reunited ribs which had been fractured by a musket ball that had previously passed through the skull. A fossil rib of a reindeer, taken from the mammoth cliff in Kotzebue Sound, likewise showed reunion after a fracture.

Several extraordinary recoveries from scalp wounds, more extensive in character than anything of the kind I have ever seen in hospital or described in surgical works, came under my observation. One occurred off the Siberian coast in an old Eskimo who denuded a large portion of the *os frontis* from a fall on the ice. Careful approximation of the edges of the wound and the application of a retentive bandage were followed by rapid healing unaccompanied by complications. But the two most notable ones were in Eskimo, who in encounters with bears had been pawed and terribly lacerated about the head and face—a favorite amusement of this animal when he gets a man in his clutches. The first fellow's scalp, neck, and face, in the region of the parotid gland, were extensively mutilated; the second was similarly torn, with the additional loss of his left eye, and fracture of his inferior maxilla. Both men, though much deformed, had recovered without surgical assistance, and the wounds were well cicatrized.

Occasional gunshot wounds, usually the result of accident, are also met with among the Eskimo. At Saint Lawrence Bay I saw an old man who had been struck by a ball which entered the left side of his face just under the zygomatic process, and, passing downwards, had emerged from the neck, in the vicinity of the right carotid artery.

Among other things observed surgically were three cases of angular ankylosis of the knee joint, two occurring in adults and one in a boy; a case of paraplegia, due to traumatic causes; a case of periostitis of the bones of the forearm, another of necrosis of the superior maxilla; several of tumors occurring on the neck, and one case of hemorrhoids. The latter affection and boils are quite common, according to Mr. Nelson, who has spent some time at Saint Michael's. Mr. Petroff tells me that he has seen among the Innuut population of the interior extensive serpiginous ulcers, which yielded readily to treatment; and has also noticed a great many instances of disabled extremities from the effects of frost-bite. Among the more northern Eskimo, however, it appears that frost-bites are extremely rare. I have never seen an instance, and this observation seems to accord with the experience of others. More rare still is the occurrence of malformation, deformity, or idiotcy. Whether the Spartan rule obtains relative to the destruction of weak or deformed infants, I am unable to say. However that may be, I can recall but a single instance in which there was observed anything approaching to deformity, and that was a girl with a supernumerary digit.

Skin diseases, principally of the vesicular and squamous varieties, were found to prevail extensively, a fact not to be wondered at, since they are just the diseases the medical man would expect to see developed in subjects among whom are recognized the conditions most favorable to

their origin. The existence of the darts, scrofulous, rheumatic, and even syphilitic diseases, along with personal uncleanliness, must necessarily result in such lesions of the skin as eczema, psoriasis, ichthyosis, pityriasis, and tinea favosa, all of which I saw among the Eskimo. Although affections of the scalp were quite common, especially in children, I noticed but one case of baldness, which leads me to doubt the statement of several medical men to the effect that wearing fur caps is one of the causes of loss of the hair. If this were true every Eskimo pate ought to be as bald as the palm of the hand.

It is also doubtless true that the numerous catarrhs and bronchial and pulmonary troubles are only internal manifestations of the diatheses previously mentioned. When the Corwin was along the Siberian coast in June and July not a man on board had a cold, yet nearly all the natives we met with were suffering from coughs and colds. The same thing was observed by our sledge party who went up the coast, and Lieutenant Schwatka informs me that rheumatic and pulmonary complaints were the principal ones noticed by him. Notwithstanding Mr. Kennan's mention of a reindeer picket in an atmosphere of -60° , it is indeed questionable whether Eskimo can endure cold as well as well-fed white men. Though clad in furs, I have often seen them shivering from cold, when our crew, with only the ordinary winter clothes of sailors, experienced no discomfort.

Among their more common ailments are boils and epistaxis, the latter having been noticed by former travelers, and Mr. Nelson informs me that it is quite common among the fur traders of the Upper Yukon, who attribute it to a plethoric condition brought about by an almost exclusive diet of animal food.

Our hyperborean nosology would be incomplete without some mention of nervous diseases, which late authorities assume to be one of the sequela of civilization. They would, perhaps, come nearer the truth to ascribe them, as Dr. Draper has done, to the introduction and extension of that senseless and filthy habit, the use of tobacco. Mr. Petroff informs me that hysteria, epilepsy, and paralysis are common diseases among the interior tribes, who also believe in and practice Shamanism. Instances of excessive nervousness have come under my notice, one of a man so shaky that his infirmity was a source of merriment to his companions. I treated one patient for insomnia and another for epilepsy. I saw also two cases of chorea, one each of paraplegia and of cerebral hemorrhage with hemiplegic symptoms (both at Point Barrow), one of suicidal mania, and I know of at least three deaths from cerebro-spinal meningitis.

To what cause a late authority would assign the existence of these diseases I am unable to say, but enough has been seen to convince that nervous diseases are not confined to civilized communities, as many persons believe; and, indeed, a distinguished medical author, who sees in spiritualism a form of nervous derangement, might, after observing Shamanism and its results, be in possession of enough neurological material for a new chapter in his work on that subject.

GENERAL REMARKS ON THE NORTHERN INHABITANTS.

But it is from an anthropological point of view that the Eskimo coming under observation proved most interesting. The term Eskimo may be held to include all the Innuit population living on the Aleutian Islands, the islands of Bering Sea, and the shores both of Asia and America north of about latitude 64° . In this latitude on the American coast the ethnical points that difference the North American Indian from the Eskimo are distinctly marked. It cannot, however, be said that the marks of distinction are so plain between the American Eskimo and the so-called Tsuchtschi of the Asiatic coast. I have been unable to see anything more in the way of distinction than exists between Englishmen and Danes, for instance, or between Norwegians and Swedes. Indeed, it may be said that much of the confusion and absurdity of classification found in ethnographic literature may be traced to a tendency to see diversities where few or none exist. To the observant man of travel who has given the matter any attention, it seems that the most sensible classification is that of the ancient writers who divide humanity into three races, namely, white, yellow, and black. Cuvier adopted this division, and the best contemporary British authority, Dr. Latham, also makes three groups, although he varies somewhat in details from Cuvier. In accordance with the nomenclature of Latham, the Eskimo may be spoken of as Hyperborean Mongolidæ of essentially carnivorous and ichthyophagous habits, who have not yet emerged from the hunting and fishing stage.

PHYSICAL APPEARANCES.

Their physical appearance and structure having been already described by others, it is unnecessary to mention them here, except incidentally and by way of noting a few peculiarities that seem to have been heretofore overlooked or slightly touched upon by other writers. Although as a rule they are of short build, averaging about five feet seven inches, yet occasional exceptions were met with among the natives of Kotzebue Sound, many of whom were tall and of commanding appearance. At Cape Kruzenstern a man was seen who measured six feet six inches in height. This divergence from the conventional Eskimo type, as usually described in the books, may have been caused by intermarriage with an inland tribe of larger men from the interior of Alaska, who come to the coast every summer for purposes of trade.

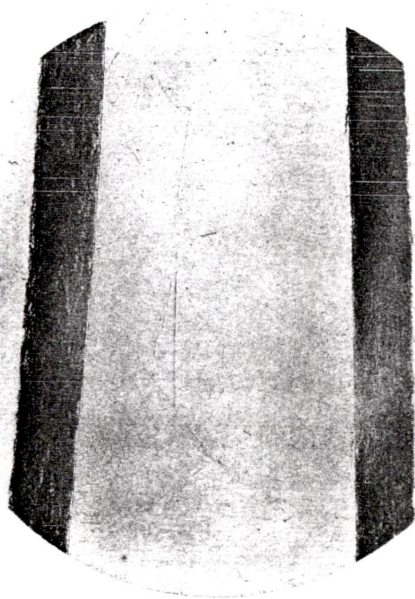
The complexion, rarely a true white, but rather that of a Chinaman, with a healthy blush suffusing each cheek, is often of a brownish-yellow and sometimes quite black, as I have seen in several instances at Tapkan, Siberia. Nor was the broad and flat face and the small nose without exception. In the vicinity of East Cape, the easternmost extremity of Asia, a few Eskimo were seen having distinctive Hebrew noses and a physiognomy of such a Jewish type as to excite the attention and comment of the sailors composing our crew; others were noticed having a Milesian cast of features and looked like Irishmen, while others resembled several old mulatto men I know in Washington. However, the Mongoloid type in these people was so pronounced that our Japanese boys on meeting Eskimo for the first time took them for Chinamen; on the other hand the Japs were objects of great and constant curiosity to the Eskimo, who doubtless took them for compatriots, a fact not to be wondered at, since there is such a similarity in the shape of the eyes, the complexion, and hair. In regard to the latter it may be remarked that scarcely anything on board the *Corwin* excited greater wonder and merriment among the Eskimo than the presence of several persons whom Professor Huxley would classify in his Xanthocroic group because of their fiery red hair.

The structure and arrangement of the hair having lately been proposed as a race characteristic upon which to base an ethnical classification, I took pains to collect various specimens of Inuit hair, which in conjunction with Dr. Kidder, U. S. N., I examined microscopically and compared with the hair of fair and blue-eyed persons, the hair of negroes, and as a matter of curiosity with the reindeer hair and the hair-like appendage found on the fringy extremity of the baleen plates in the mouth of a "bowhead" whale. Some photomicrographs of these objects are shown in the accompanying illustrations.

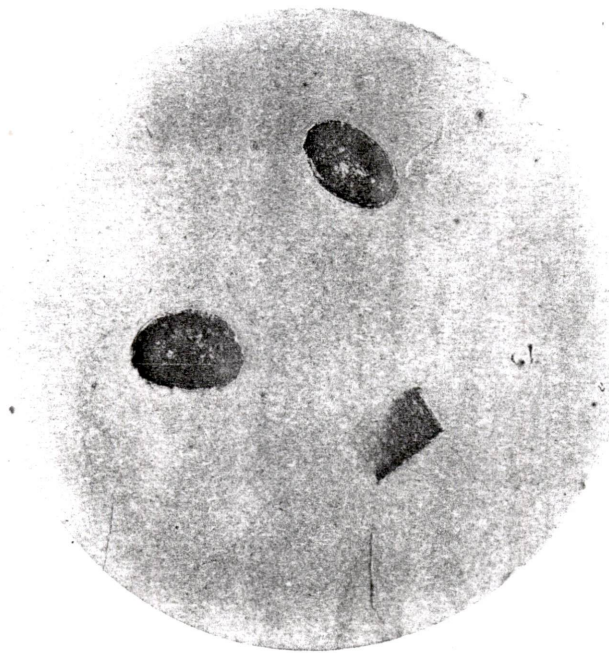
To the man willing and anxious to make more extended research into the matter of race characteristics, I venture to say that a northern experience will afford him ample opportunity for supplementing Mr. Murray's paper on the Ethnological Classification of Vermin; and he may further observe that the Eskimo, whatever may be his religious belief or predilection, apparently observes the prohibitions of the Talmud in regard both to filth and getting rid of noxious entomological specimens that infest his body and habitation.

Whatever modification the bodily structure of the Eskimo may have undergone under the influence of physical and moral causes, when viewed in the light of transcendental anatomy, we find that the mode, plan, or model upon which his animal frame or organs are founded is substantially that of other varieties of men.

Some writers go so far, in speaking of the Eskimo's correspondence, mental and physical, to his surroundings as to mention the seal as his correlative, which, in my opinion, is about as sensible as speaking of the reciprocal relations of a Cincinnati man and a hog. Unlike the seal, which is pre-eminently an amphibian and a swimmer, the Eskimo has no physical capability of the latter kind, being unable to swim and having the greatest aversion to water except for purposes of navigation. He wins our admiration from the expert management at sea of his little shuttle-shaped canoe, which is a kind of marine bicycle, but I doubt very much the somersaults he is reported to be able to turn in them. In fact, after offering rewards of that all-powerful incentive, tobacco, on numerous occasions, I have been unsuccessful in getting any one of them to attempt the feat, and when told that we had heard of their doing it they smiled rather incredulously. The Eskimo is clearly not a success in a cubistic or saltatorial line, as I have had ample opportunities to observe. They seem to be unable to do the simplest gymnastics, and were filled with the greatest delight



HAIR: ALEUTIAN ESKIMO.
(75 diameters.)



HAIR: TRANSVERSE SECTION: ALEUTIAN ESKIMO.
(75 diameters.)

and astonishment at some exhibitions we gave them on several occasions. Receiving a challenge to run a foot-race with an Eskimo, I came off easy winner, although I was handicapped by being out of condition at the time; a challenge to throw stones also resulted in the same kind of victory; I shouldered and carried some logs of drift-wood that none of them could lift, and on another occasion the captain and I demonstrated the physical superiority of the Anglo-Saxon by throwing a walrus lance several lengths farther than any of the Eskimo who had provoked the competition. As a rule they are deficient in biceps, and have not the well-developed muscles of athletic white men. The best muscular development I saw was among the natives of Saint Lawrence Island, who, by the way, showed me a spot in a village where they practiced athletic sports, one of these diversions being lifting and "putting" heavy stones, and I have gracefully to acknowledge that a young Eskimo got the better of me in a competition of this kind. It is fair to assume that one reason for this physical superiority was the inexorable law of the survival of the fittest, the natives in question being the survivors of a recent prevailing epidemic and famine.

ESKIMO APPETITES.

As far as my experience goes the Eskimo have not the enormous appetites with which they are usually accredited. The Eskimo who accompanied Lieutenant May, of the Nares Expedition, on his sledge journey, is reported to have been a small eater, and the only case of scurvy, by the way; the Eskimo employed on board the Corwin as dog drivers and interpreters were as a rule smaller eaters than our own men, and I have observed, on numerous occasions, among the Eskimo I have visited, that instead of being great gluttons they are on the contrary moderate eaters. It is, perhaps, the revolting character of their food—rancid oil, a tray of hot seal entrails, a bowl of coagulated blood, for example—that causes overestimation of the quantity eaten. Persons in whom nausea and disgust are awakened at tripe, putrid game, and moldy and maggoty cheese affected by so-called epicures, not to mention the bad oysters which George I preferred to fresh ones, would doubtless be prejudiced and incorrect observers as to the quantity of food an Eskimo might consume. From some acquaintance with the subject I, therefore, venture to say that the popular notion regarding the great appetite of the Eskimo is one of the current fallacies. The reported cases were probably exceptional ones happening in subjects who had been exercising and living on little else than frozen air for perhaps a week. Any vigorous man in the prime of life who has been shooting all day in the sharp, crisp air of the Arctic will be surprised at his gastronomic capabilities; and personal knowledge of some almost incredible instances among civilized men might be related, were it not for fear of being accused of transcending the bounds of veracity.

ORIGIN AND DEVELOPMENT.

There is so much about certain parts of Alaska to remind one of Scotland, that we wonder why some of the more southern Eskimo have not the intrepidity and vigor of Scotchmen, since they live under almost the same topographical conditions amid fogs and misty hills. Perhaps if they were fed on oatmeal, and could be made to adopt a few of the Scotch manners and customs, religious and otherwise, they might, after infinite ages of evolution, develop some of the qualities of that excellent race. It is probably not so very many generations ago that our British progenitors were like these original and primitive men as we find them in the vicinity of Bering Straits. Here the mind is taken back over centuries, and one is enabled to study the link of transition between the primitive men of the two continents at the spot where their geographical relations lead us to suspect it. Indeed the primitive man may be seen just as he was thousands of years ago, by visiting the village perched, like the eyry of some wild bird, about 200 feet up the side of the cliff at East Cape on the Asiatic side of the Straits. This bold, rocky cliff, rising sheer from the sea to the height of 2,100 feet, consists of granite with lava here and there, and the indications point to the overflow of a vast ice sheet from the north, evidences of which are seen in the trend of the ridges on the top and the form of the narrow peninsula joining the cliff to the mainland. From the summit of the cape the Diomedes, Fairway Rock, and the American coast are so easily seen that the view once taken would dispel any doubts as to the possibility of the aboriginal denizens of America having crossed over from Asia, and it would require no such statement to corroborate the opinion

as that of an officer of the Hudson Bay Company, then resident in Ungava Bay, who relates that in 1839 an Eskimo family crossed to Labrador from the northern shore of Hudson's Straits on a raft of drift-wood. Natives cross and recross Bering Straits to-day on the ice and in primitive skin canoes, not unlike Cape Cod dories, which have not been improved in construction since the days of prehistoric man. Indeed the primitive man may be seen at East Cape almost as he was thousands of years ago. Evolution and development, with the exception of fire-arms, seem to have halted at East Cape. The place with its cave-like dwellings and skin-clad inhabitants, among whom the presence of white men creates the same excitement as the advent of a circus among the colored population of Washington, makes one fancy that he is in some grand prehistoric museum and that he has gone backward in time several thousand years in order to get there.

While we may do something towards tracing the effects of physical agents on the Eskimo back into the darkness that antedates history, yet his geographical origin and his antiquity are things concerning which we know but little. Being subjects of first-class interest deserving of grave study and so vast in themselves, they cannot be touched upon here except incidentally. Attempting to study them is like following the labyrinthal ice mazes of the Arctic in quest of the North Pole, and only ends in a wild-goose chase.

We may, however, venture the assertion that the Eskimo is of autochthonic origin in Asia, but is not autochthonous in America. His arrival there and subsequent migrations are beyond the reach of history or tradition. Others, though, contend from the analogy of some of the western tribes of Brazil, who are identical in feature to the Chinese, that the Eskimo may have come from South America; and the fashion of wearing labrets, which is common to the indigenous population both of Chili and Alaska, has been cited as a further proof.

Touching the subject of early migrations Mr. Charles Wolcott Brooks, whose sources of information have been exceptionally good, reports in a paper to the California Academy of Sciences a record of sixty Japanese junks, which were blown off the coast and by the influence of the Kuro-Shiwo were drifted or stranded on the coast of North America, or on the Hawaiian or adjacent islands. As merchant ships and ships of war are known to have been built in Japan prior to the Christian era, a great number of disabled junks containing small parties of Japanese must have been stranded on the Aleutian Islands and on the Alaskan coast in past centuries, thereby furnishing evidence of a constant infusion of Japanese blood among the coast tribes.

Leaving aside any attempt to show the ethnical relations of these facts, the question naturally occurs whether any of these waifs ever found their way back from the American coast. On observing the course of the great circle of the Kuro-Shiwo and the course of the trade winds, one inclines to the belief that such a thing is not beyond the range of possibility. Indeed, several well-authenticated instances are mentioned by Mr. Brooks; and in connection with the subject he advances a further hypothesis, namely, the American origin of the Chinese race, and shows in a plausible way that—

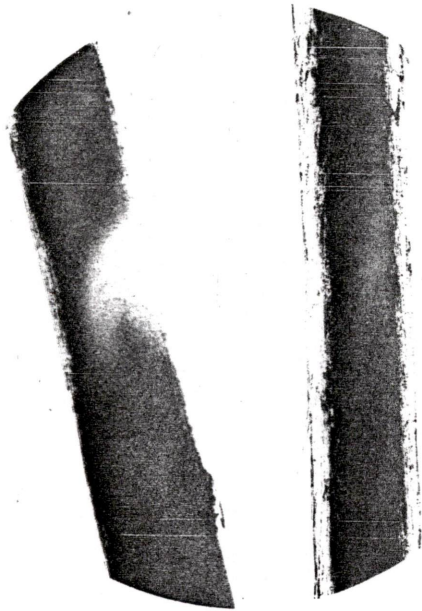
"The ancestry of China may have embarked in large vessels as emigrants, perhaps from the vicinity of the Chincha Islands, or proceeded with a large fleet, like the early Chinese expedition against Japan, or that of Julius Cæsar against Britain, or the Welsh Prince Madog and his party, who sailed from Ireland and landed in America A. D. 1170; and, in like manner, in the dateless antecedure of history, crossed from the neighborhood of Peru to the country now known to us as China."

If America be the oldest continent, paleontologically speaking, as Agassiz tells us, there appears to be some reason for looking to it as the spot where early traces of the human race are to be found, and the fact would seem to warrant further study and investigation in connection with the indigenous people of our continent, thereby awakening new sources of inquiry among ethnologists.

LINGUISTIC PECULIARITIES.

The sienite plummet from San Joaquin Valley, California, goes back to the distant age of the Drift; and the Calaveras skull, admitting its authenticity, goes back to the Pliocene epoch, and is older than the relics or stone implements from the drift gravel and the European caves.

It is doubtful, though, whether these sources enable us to make generalizations equal in value to those afforded by the study of vocabularies. It is alleged that linguistic affinities exist between some of the tribes of the American coast and our Oriental neighbors across the Pacific. Mr. Brooks,



BALEEN FRINGE.
(75 diameters.)



REINDEER HAIR.
(75 diameters.)

whom I have already quoted, reports that in March, 1860, he took an Indian boy on board the Japanese steam-corvette Kanrin-maru, where a comparison of Coast-Indian and pure Japanese was made at his request by Funkuzawa Ukitchy, then admiral's secretary; the result of which he prepared for the press and published with a view to suggest further linguistic investigation. He says that quite an infusion of Japanese words is found among some of the Coast tribes of Oregon and California, either pure or clipped, along with some very peculiar Japanese "idioms, constructions, honorific, separative, and agglutinative particles;" that shipwrecked Japanese are invariably enabled to communicate understandingly with the Coast Indians, although speaking quite a different language, and that many shipwrecked Japanese have informed him that they were enabled to communicate with and understand the natives of Atka and Adakh Islands of the Aleutian group.

With a view to finding out whether any linguistic affinity existed between Japanese and the Eskimo dialects in the vicinity of Bering Straits, I caused several Japanese boys, employed as servants on board the Corwin, to talk on numerous occasions to the natives, both of the American and Asiatic coasts; but in every instance they were unable to understand the Eskimo, and assured me that they could not detect a single word that bore any resemblance to words in their own language.

The study of the linguistic peculiarities which distinguish the population around Bering Straits offers an untrodden path in a new field; but it is doubtful whether the results, except to linguists like Cardinal Mezzofanti, or philologists of the Max Müller type, would be at all commensurate with the efforts expended in this direction; since it is asserted that the human voice is incapable of articulating more than twenty distinct sounds, therefore whatever resemblances there may be in the particular words of different languages are of no ethnic value. Although these may be the views of many persons not only in regard to the Eskimo tongue but in regard to philology in general, the matter has a wonderful fascination for more speculative minds.

Much has been said about the affinity of language among the Eskimo—some asserting that it is such as to allow mutual intercourse everywhere—but instances warrant us in concluding that considerable deviations exist in their vocabularies if not in the grammatical construction. For instance, take two words that one hears oftener than any others: On the Alaskan coast they say "na-koo-ruk," a word meaning "good," "all right," &c.; on the Siberian coast "ma-zink-ah," while a vocabulary collected during Lieutenant Schwatka's expedition gives the word "mah-muk'-poo" for "good." The first two of these words are so characteristic of the tribes on the respective shores above the straits that a better designation than any yet given to them by writers on the subject would be *Nakoorooks* for the people on the American side and *Mazinkahs* for those on the Siberian coast. These names, by which they know each other, are in general use among the whalers and were adopted by every one on board the Corwin.

Again, on the American coast "Am-a-luk-tuk" signifies plenty, while on the Siberian coast it is "Num-kuck-ee." "Tee-tee-tah" means needles in Siberia, in Alaska it is "mitkin." In the latter place when asking for tobacco they say "te-ba-muk," while the Asiatics say "salopa." That a number of dialects exists around Bering Straits is apparent to the most superficial observer. The difference in the language becomes apparent after leaving Norton Sound. The interpreter we took from Saint Michael's could only with difficulty understand the natives at Point Barrow, while at Saint Lawrence Island and on the Asiatic side he could understand nothing at all. At East Cape we saw natives who, though apparently alike, did not understand one another's language. I saw the same thing at Cape Prince of Wales, the western extremity of the New World, whither a number of Eskimo from the Wankarem River, Siberia, had come to trade. Doubtless there is a community of origin in the Eskimo tongue, and these verbal divergencies may be owing to the want of written records to give fixity to the language, since languages resemble living organisms by being in a state of continual change. Be that as it may, we know that this people has imported a number of words from coming in contact with another language, just as the French have incorporated into their speech "le steppour," "l'outsider," "le high life," "le steeple chase," "le jockey club," &c.—words that have no correlatives in French—so the Eskimo has appropriated from the whalers words which, as verbal expressions of his ideation, are undoubtedly better than anything in his own tongue. One of these is "by and by," which he uses with the same frequency that a Spaniard does his favorite *mañana por la mañana*. In this instance the words express the

state of development and habits of thought—one the lazy improvidence of the Eskimo, and the other the "to-morrow" of the Spaniard, who has indulged that propensity so far that his nation has become one of yesterday.

The change of the Eskimo language, brought about by its coming in contact with another, forms an important element in its history, and has been mentioned by the older writers, also by Gilder, who reports a change in the language of the Iwillik Eskimo to have taken place since the advent among them of the white men. Among other peculiarities of their phraseology occurs the word "tanuk" signifying whiskey, and it is said to have originated with an old Eskimo employed by Moore as a guide and dog driver when he wintered in Plover Bay. Every day about noon that personage was in the habit of taking his appetizer and usually said to the Eskimo, "Come, Joe, let's take our tonic." Like most of his countrymen, Joe was not slow to learn the meaning of the word, and to this day the firm hold "tanuk" has on the language is only equaled by the thirst for the fluid which the name implies. Among the Asiatic Eskimo the word "um-muck" is common for "rum," while "em-mik" means water. Even words brought by whalers from the South Sea Islands have obtained a footing, such as "kow-kow" for food, a word in general use, and "pow" for "no," or "not any." They also call their babies "pick-a-nee-nee," which to many persons will suggest the Spanish word or the southern negro idiom for "baby." The phrase "pick-a-nee-nee kowkow" is the usual formula in begging food for their children. An Eskimo, having sold us a reindeer, said it would be "mazinkah kowkow" (good eating), and one windy day we were hauling the seine, and an Eskimo seeing its empty condition when pulled on to the beach, said "Pow' fish; bimeby 'pow' wind, plenty fish."

The fluency with which some of these fellows speak a mixture of pigeon English and whaler's jargon is quite astonishing, and suggests the query whether their fluency results from the aggressiveness of the English or whether it is an evidence of their aptitude? It seems wonderful how a people we are accustomed to look upon as ignorant, benighted, and undeveloped, can learn to talk English with a certain degree of fluency and intelligibility from the short intercourse held once a year with a few passing ships. How many "hoodlums" in San Francisco, for instance, learn anything of Norwegian or German from frequenting the wharves? How many "wharf rats" or stevedores in New York learn anything of these languages from similar intercourse? Or, for that matter, we may ask, How many New York pilots have acquired even the smallest modicum of French from boarding the steamers of the Compagnie Générale Transatlantique?

From a few examples it will be seen that the usage followed by the Eskimo in its grammatical variations rests on the fixity of the radical syllable and upon the agglomeration of the different particles intended to modify the primitive sense of this root, that is to say upon the principle of agglutinative languages. One or two instances may suffice to show the agglutinate character of the language. Canoe is "o-me-uk;" ship, "o-me-uk-puk;" steamer, "o-me-uk-puk-ignelik;" and this composite mechanical structure reaches its climax in steam-launch, which they call "o-me-uk-puk-ignelik-pick-a-nee-nee."

For snow and ice in their various forms there are also many words, which show further the polysynthetic structure of the language—a fact contrary to that primitive condition of speech where there are no inflections to indicate the relations of the words to each other. It will not do to omit "O-kee-chuk" from this enumeration—a word signifying trade, barter, or sale, and one most commonly heard among these people. When they wish to say a thing is bad they use "A-shu-ruk," and when disapproval is meant they say "pe-chuk." The latter word also expresses general negation. For instance, on looking into several unoccupied houses a native informs us "Innuik pechuk," meaning that the people are away or not at home; "Allopar" is cold, and "allopar pechuk" is hot. Persons fond of tracing resemblances may find in "Ignik" (fire) a similarity to the Latin *ignis* or the English "ignite," and from "Un-gi-doo-ruk" (big, huge) the transition down to "hunky-dory" is easy. Those who see a sort of complemental relation to each other of linguistic affinity and the conformity in physical characters may infer from "Mikey-doo-rook" (a term of endearment equivalent to "Mavourneen" and used in addressing little children) that the inhabitants within the Polar Circle have something of the Emerald Isle about them. But no, they are not Irish, for when they are about to leave the ship or any other place for their houses they say "to-hum;" consequently they are Yankees.

I do not wish to be thought frivolous in my notions regarding the noble science of philology ; but when one considers the changes that language is constantly undergoing, the inability of the human voice to articulate more than twenty distinct sounds, and the wonderful amount of ingenious learning that has been wasted by philologists on trifling subjects, one is disposed to associate many of their deductions with the savage picture writing on Dighton Rock, the Cardiff Giant, and the old wind-mill at Newport.

ESKIMO DIETETICS.

Attempts to trace or discover the origin of races through supposed philological analogies do not possess the advantage of certainty afforded by the study of the means by which individuals of the race supply the continuous demands of the body with the nutriment necessary to maintain life and health.

Everybody has heard of the seal, bear, walrus, and whale in connection with Eskimo dietetics, and doubtless the stomachs of most persons would revolt at the idea of eating these animals, the taste for which, by the way, is merely a matter of early education or individual preference, for there is no good reason why they should not be just as palatable to the northern appetite as pig, sheep, and beef are to the inhabitants of temperate latitudes. As food they renew the nitrogenous tissues, reconstruct the parts, and restore the functions of the Eskimo frame, prolong his existence, and produce the same animal contentment and joy as the more civilized viands of the white man's table. There are more palatable things than bear or eider-duck, yet I know many persons to whom snails, olive oil, and *paté de fois gras* are more repugnant. A tray full of hot seal entrails, a bowl of coagulated blood, and putrid fish are not very inviting or lickerish to ordinary mortals, yet they have their analogue in the dish of some farmers who eat a preparation of pig's bowels known as "chitterlings," and in the blood-puddings and Limburger cheese of the Germans. Blubber-oil and whale are not very dainty dishes, yet consider how many families subsist on half-baked saleratus biscuits, salted pork, and oleomargarine.

On the mess table of the fur company's establishment at Saint Paul Island, seal meat is a daily article of consumption, and from personal experience I can testify as to its palatability, although it reminded one of indifferent beef rather overdone. Hair seal and bear steaks were on different occasions tried at the mess on board the *Corwin*, but everybody voted eider-duck and reindeer the preference. It is not so very long since that whale was a favorite article of diet in England and Holland, and Arctic whalers still, to my personal knowledge, use the freshly tried oil in cooking ; for instance, in frying cakes, for which they say it answers the purpose as well as the finest lard, while others breakfast on whale and potatoes prepared after the manner of codfish balls. The whale I have tasted is rather insipid eating, yet it appears to be highly nutritious, judging from the well-nourished look of natives who have lived on it, and the air of greasy abundance and happy contentment that pervades an Eskimo village just after the capture of a whale. Being ashore one day with our pilot, we met a native woman whom he recognized as a former acquaintance, and on remarking to her that she had picked up in flesh since he last saw her, she replied that she had been living on whale all the winter, which explained her plumpness.

It must not be supposed, however, that the whale, seal, and walrus constitute the entire food supply of the Arctic. There is scarcely any more toothsome delicacy than reindeer, the tongue of which is very dainty and succulent. There is one peculiarity about its flesh—in order to have it in perfection it must be eaten very soon after being killed ; the sooner the better, for it deteriorates in flavor the longer it is kept. Indeed, the Eskimo do not wait for the animal heat to leave the carcass, as they eat the brains and paunch hot and smoking.

While our gastronomic enthusiasm did not extend this far, we dined occasionally on fresh trout from a Siberian mountain lake, young wild ducks as fat as squabs, and reindeer, any of which delicacies could not be had in the same perfection at Delmonico's or any similar establishment in New York for love or money. There is scarcely any better eating in the way of fish than *coregonus*—a new species discovered at Point Barrow by the *Corwin*—and certainly no more dainty game exists than the young wild geese and ptarmigan to be found in countless numbers in Hotham Inlet. At the latter place, doubtless the warmest inside the Straits, are found quantities of cranberries about the size of a pea, which not only make a delicious accessory to roasted goose,

but act as a valuable antiscorbutic. These berries, and a kind of kelp, which I have seen Eskimo eating at Tapkan, Siberia, seem to be the only vegetable food they have. The large quantities of eggs easily procurable, but in most cases doubtful, also constitute a standard article of diet among these people, who have no scruples about eating them partly hatched. They seemed never to comprehend our fastidiousness in the matter and why our tastes differed so much from theirs in this respect. They will break an egg containing an embryonic duck or goose, extract the bird by one leg and devour it with all the relish of an epicure. Gull's eggs, however, are in disrepute among them, for the women—who, by the way, have the same frailties and weakness as their more civilized sisters—believe that eating gulls' eggs causes loss of beauty and brings on early decrepitude. The men, on the other hand, are fond of seal eyes, a tid-bit which the women believe increases their amorousness, and feed to their lords after the manner of "Open your mouth and shut your eyes."

Game is as a rule very tame, and during the moulting season, when the geese are unable to fly, it is quite possible to kill them with a stick. At one place, Cape Thompson, Eskimo were seen catching birds from a high cliff with a kind of scoop-net, and I saw birds at Herald Island refuse to move when pelted with stones, so unaccustomed were they to the presence of man. In addition to being very tame, game is plentiful, and not an uncommon sight, off the Siberian coast, were flocks of eider-ducks darkening the air and occupying several hours in passing overhead. It was novel sport to see the natives throw a projectile known as an "apluketat" into one of these flocks with astonishing range and accuracy, bringing down the game with the effectiveness of a shotgun.

Game keeps so well in the Arctic that an instance is known of its being perfectly sweet and sound on an English ship after two years' keeping, and whalers kill a number of pigs, which they hang in the rigging and keep for use during the cruise. It is also noticeable that leather articles do not mildew as they generally do at sea, some shoes kept in a locker on board the *Corwin* having retained their polish during the entire cruise.

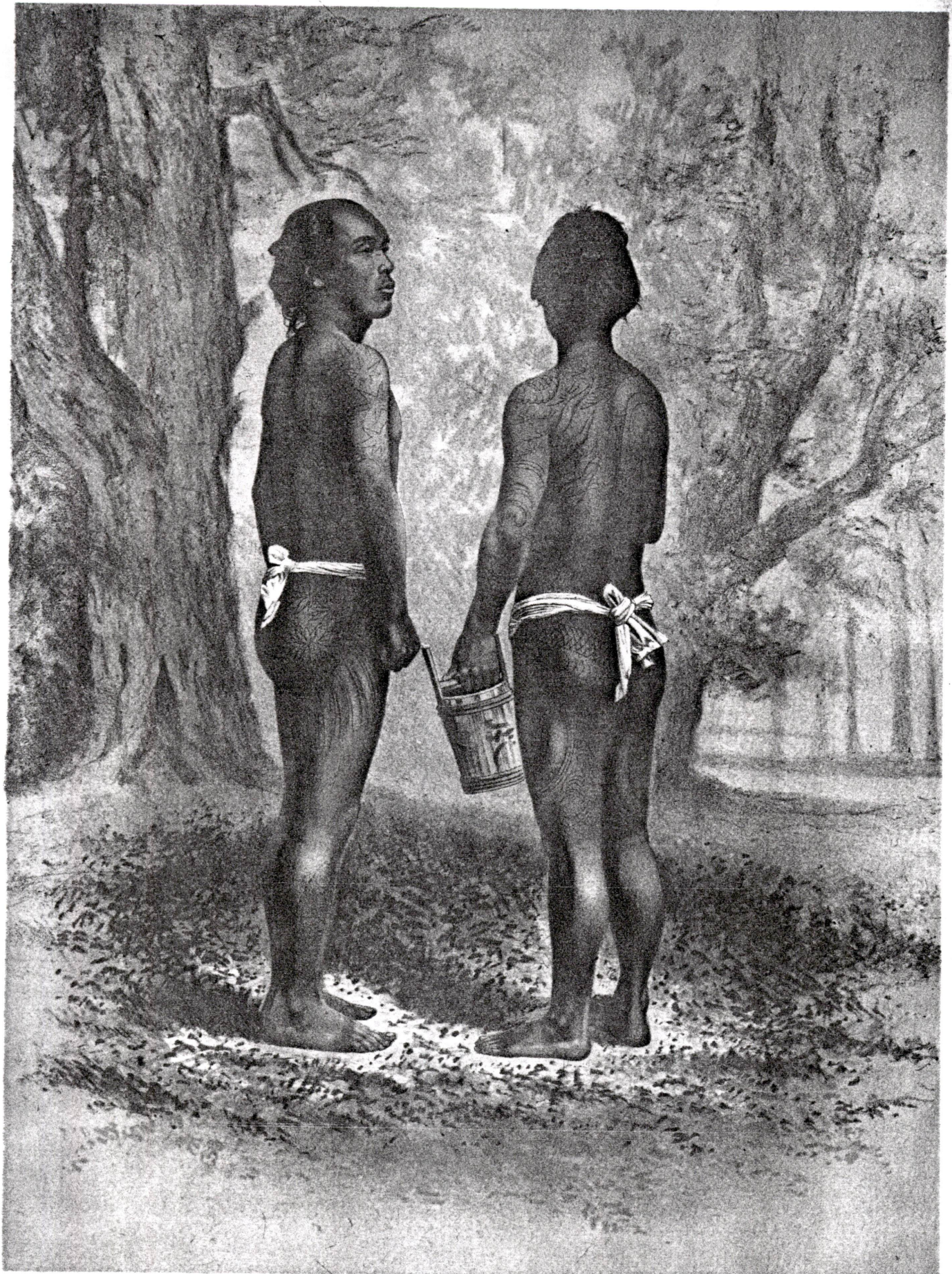
The food of the Eskimo satisfies their instinctive craving for a hydrocarbon, but they do not allow themselves to be much disturbed or distracted in its preparation, as most of it is eaten raw. They occasionally boil their food, however, and some of them have learned the use of flour and molasses, of which they are very fond.

Their aversion to salt is a very marked peculiarity, and they will not eat either corned beef or pork on this account. It may be that physiological reasons exist for this dislike.

SOCIAL AND DOMESTIC RELATIONS.

Omitting other ethnographic facts relative to the Eskimo, which might be treated in a systematic way except for their triteness, we pass from the means of the renewal of the animal economy to its reproduction. Courtship and marriage, which, it is said, are conducted in the most unsentimental manner possible, are for that reason not to be discussed; and for obvious reasons many of the prenatal conditions cannot here be dwelt upon. Having never witnessed the act of parturition in an Eskimo my knowledge of the subject is merely second-hand, and consequently not worth detailing. It appears, though, that parturition is a function easily performed among them, and that it is unattended by the post-partem accidents common to civilization. As a rule the women are unprolific, it being uncommon to find a family numbering over three children, and the mortality among the new born is excessive, owing to the ignorance and neglect of the ordinary rules of hygiene. They seem, however, to be kind to their children, who in respect to crying do not show the same peevishness as seen in our nurseries; indeed, the social and demonstrative good nature of the race seems to crop out even in babyhood, as I have often witnessed under such circumstances as a baby enveloped in furs in a skin canoe which lay along side the ship during a snow storm; its tiny hands protruding held a piece of blubber, which it sucked with apparent relish, the unique picture of happy contentment. It was quick to feel itself an object of attraction, and its chubby face returned any number of smiles of recognition.

The manner of carrying the infant is contrary to that of civilized custom. It is borne on the back under the clothes of the mother, which form a pouch, and from which its tiny head is generally visible over one or the other shoulder, but on being observed by strangers it shrinks like a



snail or a marsupian into its snug retreat. When the mother wants to remove it she bends forward, at the same time passing her left hand up the back under her garments, and seizing the child by the feet, pulls it downward to the left; then, passing the right hand under the front of the dress, she again seizes the feet and extracts it by a kind of pedalic delivery. Another common way of carrying children is astride the neck. The subject is one that the Chuckchii artist often carves in ivory.

The play-impulse manifests itself among these people in various ways. They have such mimetic objects as dolls, miniature boats, &c. I have seen a group of boys, sailing toy boats in a pond, behave under the circumstances just as a similar group has been observed to do at Provincetown, Cape Cod, and the same act, as performed in the Frog Pond of the Boston Common, may be called only a differentiated form of the same tendency. Their dolls, of ivory and clothed with fur, seem to answer the same purpose that they do in civilized communities—namely, the amusement of little girls—for at one place where we landed a number of Eskimo girls, stopping play on our approach, sat their dolls up in a row, evidently with a view to give the dolls a better look at the strange visitors. Spinning tops, essentially Eskimo and unique in their character, are held in the hand while spinning; on the Siberian Coast foot ball is played, and among other questionable things acquired from contact with the whalers, a knowledge of card playing exists. We were very often asked for cards, and at one place where we stopped and bartered a number of small articles with the natives they gave evidence of their aptitude at gaming. The game being started, with the bartered articles as stakes, one fellow soon scooped in everything, leaving the others to go off dead broke amid the ridicule of some of our crew, and doubtless feeling worse than dead, for among no people that I have seen, not even the French, does ridicule so effectually kill.

PERSONAL ORNAMENTATION.

Among the means taken by these people to produce personal ornamentation that of tattooing the face and wearing a labret is the most noticeable. The custom of tattooing having existed from the earliest historical epochs is important not only from an ethnological but from a medical and pathological point of view, and even in its relation to medical jurisprudence in cases of contested personal identity.

Without going into the history of the subject, it may not be irrelevant to mention that tattooing was condemned by the Fathers of the Church, Tertullian among others, who gives the following rather singular reason for interdicting its use among women: "Certi sumus Spiritum Sanctum magis masculis tale aliquid subscribere potuisse si feminis subscripsisset."*

In addition to much that has been written by French and German writers, the matter of tattoo-marks has of late claimed the attention of the law courts of England, the chief-justice, Cockburn, in the Tichbourne case, having described this species of evidence as of "vital importance," and in itself final and conclusive. The absence of the tattoo-marks in this case justified the jury in their finding that the defendant was not and could not be Roger Tichbourne, whereupon the alleged claimant was proved to be an impostor, found guilty of perjury, and sentenced to penal servitude. †

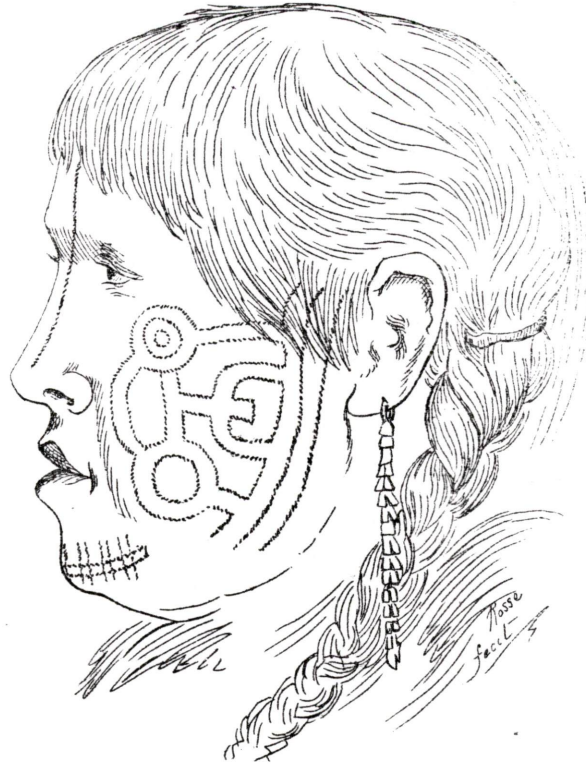
The accompanying representations, showing extensive markings on different parts of the body, are from photographs obtained in Japan.

Why the ancient habit of tattooing should prevail so extensively among some of the primitive tribes as it does, for instance, in the Polynesian Islands and some parts of Japan, and we may say as a survival of a superstitious practice of paganism among sailors and others, is a psychological problem difficult to solve. Whether it be owing to perversion of the sexual instinct, which is not unlikely, or to other cause, it is not proposed to discuss. Be that as it may, the prevalence of the habit among the Eskimo is confined to the female sex, who are tattooed on arriving at the age of puberty. The women of Saint Lawrence Island, in addition to lines on the nose, forehead, and chin, have uniformly a figure of strange design on the cheeks, which is suggestive of cabalistic import. It could not be ascertained, however, whether such was the case. The lines drawn on the chin were exactly like the ones I have seen on Moorish women in Morocco. Another

* De Virginitibus velandis. Lutetiae Parisiorum, 1675f°, p. 178.

† See Guy's Hospital Report, XIX, 1874; also "Histoire Médicale du Tatouage," in Archives de Médecine Navale, Tom. 11 et 12, Paris, 1869.

outlandish attempt at adornment was witnessed at Cape Blossom in a woman who wore a bunch of colored beads suspended from the septum of her nose. These habits, however, hardly seem so revolting as the use of the labret by the "Mazinka" men on the American coast, of



Style of personal ornamentation adopted by the women of Saint Lawrence Island.

whom it is related that a sailor seeing one of them for the first time, and observing the slit in the lower lip through which the native thrust his tongue, thought he had discovered a man with two mouths. The use of the labret, like many of the attempts at primitive ornamentation, is very old, it having been traced by Dall along the American Coast from the lower part of Chili to Alaska. Persons fond of tracing vestiges of savage ornamentation amid intellectual advancement and æsthetic sensibility far in advance of the primitive man, may observe in the wearers of bangles and ear-rings the same tendency existing in a differentiated form.

DIVERSIONS.

I doubt whether Shakespeare's dictum in regard to music holds good when applied to the Eskimo, for they have but little music in their souls, and among no people is there such a noticeable absence of "treason, stratagem, and spoil." A rude drum and a monotonous chant consisting only of the fundamental note and minor third, are the only things in the way of music among the more remote settlements of which I have any knowledge. Mrs. Micawber's singing has been described as the table-beer of acoustics. Eskimo singing is something more. The beer has become flat by the addition of ice. One of our engineers, who is quite a fiddler, experimented on his instrument with a view to see what effect music would have on the "savage breast," but his best efforts at rendering Madame Angot and the Grande Duchesse were wasted before an unsympathetic audience, who showed as little appreciation of his performance as some people do when listening to Wagner's "Music of the Future."

Where they have come in contact with civilization, their musical taste is more developed. At Saint Michael's I was told that some of their songs are so characteristic that it is much to be regretted that some of them cannot be bottled up in a phonograph and sent to a musical composer.

On the coast of Siberia I heard an Eskimo boy sing correctly a song he had learned while on board a whaling vessel, and on several of the Aleutian Islands the natives play the accordion quite well, have music-boxes, and even whistle strains from Pinafore.

From music to dancing the transition is obvious, no matter whether the latter be regarded in a Darwinian sense as a device to attract the opposite sex or as the expression of joyous excitement. This manifestation of feeling in its bodily discharge, which Moses and Miriam and David indulged in, which is ranked with poetry by Aristotle, and which old Homer says is the sweetest and most perfect of human enjoyments, is a pastime much in vogue among the Eskimo, and it required but little provocation to start a dance at any time on the Corwin's decks when a party happened to be on board. Their dancing, however, had not the cadence of "a wave of the sea," nor was there the harmony of double rotation circling in a series of graceful curves to strains like those of Strauss or Gungl. On the contrary, there was something saltatorial and jerky about all the dancing I saw both among the men and women. It is the custom at some of their gatherings, after the hunting season is over, for the men to indulge in a kind of terpsichorean performance, at the same time relating in Homeric style the heroic deeds they have done. At other times the women, more *décolleté* than our beauties at the German, for they strip to the waist, do all the dancing, and the men take the part of spectators only in this choregraphical performance.

ART INSTINCT.

The aptitude shown by Eskimo in carving and drawing has been noticed by all travellers among them. Some I have met with show a degree of intelligence and appreciation in regard to charts and pictures scarcely to be expected from such a source. From walrus ivory they sculpture figures of birds, quadrupeds, marine animals, and even the human form, which display considerable individuality notwithstanding their crude delineation and imperfect detail. I have also seen a fair carving of a whale in plumbago. Evidences of decoration are sometimes seen on their canoes, on which are found rude pictures of walruses, &c., and they have a kind of picture-writing by means of which they commemorate certain events in their lives, just as Sitting Bull has done in an autobiography that may be seen at the Army Medical Museum.

When we were searching for the missing whalers off the Siberian Coast some natives were come across with whom we were unable to communicate except by signs, and wishing to let them know the object of our visit, a ship was drawn in a note-book and shown to them with accompanying gesticulations, which they quickly comprehended, and one fellow, taking the pencil and note-book, drew correctly a pair of reindeer horns on the ship's jib-boom—a fact which identified beyond doubt the derelict vessel they had seen. At Point Hope an Eskimo, who had allowed us to take sketches of him, desired to sketch one of the party, and taking one of our note-books and a pencil, neither of which he ever had in his hand before, produced the accompanying likeness of Professor Muir:



At Saint Michael's there is an Eskimo boy who draws remarkably well, having taught himself by copying from the Illustrated London News. He made a correct pen-and-ink drawing of the Corwin, and another of the group of buildings at Saint Michael's, which, though creditable in many respects, had the defect of many Chinese pictures, being faulty in perspective. As these drawings equal those in Dr. Rink's book, done by Greenland artists, I regret my inability to reproduce them here. As evidences of culture they show more advancement than the carvings of English rustics that a clergyman has caused to be placed on exhibition at the Kensington Museum.

Sir John Ross speaks highly of his interpreter as an artist; Beechy says that the knowledge of the coast obtained by him from Innuvit maps was of the greatest value, while Hall and others show their geographical knowledge to be as perfect as that possible of attainment by civilized men unaided by instruments. I had frequent opportunities to observe these Eskimo ideas of chartography. They not only understood reading a chart of the coast when showed to them, but would make tracings of the unexplored part, as I knew a native to do in the case of an Alaskan river, the mouth only of which was laid down on our chart.

Manifestation of the plastic art, which is found among tribes less intelligent, is rare among the

Eskimo. In fact, the only thing of the kind seen was some rude pottery at Saint Lawrence Island, the design of which showed but crude development of ornamental ideas. The same state of advancement was shown in some drinking cups carved from mammoth ivory and a dipper made from the horn of a mountain sheep.

COMBATIVENESS.

In one of the acts of Shakespeare's *Seven Ages* the Eskimo plays a very unimportant rôle. Perhaps in no other race is the combative instinct less predominant; in none is quarreling, fierceness of disposition, and jealousy more conspicuously absent, and in none does the desire for the factitious renown of war exist in a more rudimentary and undeveloped state. Perhaps the constant fight with cold and hunger is a compensation which must account for the absence of such unmitigated evils as war, taxes, complex social organization, and hierarchy among the curious people of the icy north. The pursuits of peace and of simple patriarchal lives, notwithstanding the fact that much in connection therewith is wretched and forbidding to a civilized man, seem to beget in these people a degree of domestic tranquillity and contentment which, united to their light-hearted and cheery disposition, is an additional reason for believing the sum of human happiness to be constant throughout the world.

MENTAL CHARACTER AND CAPACITY.

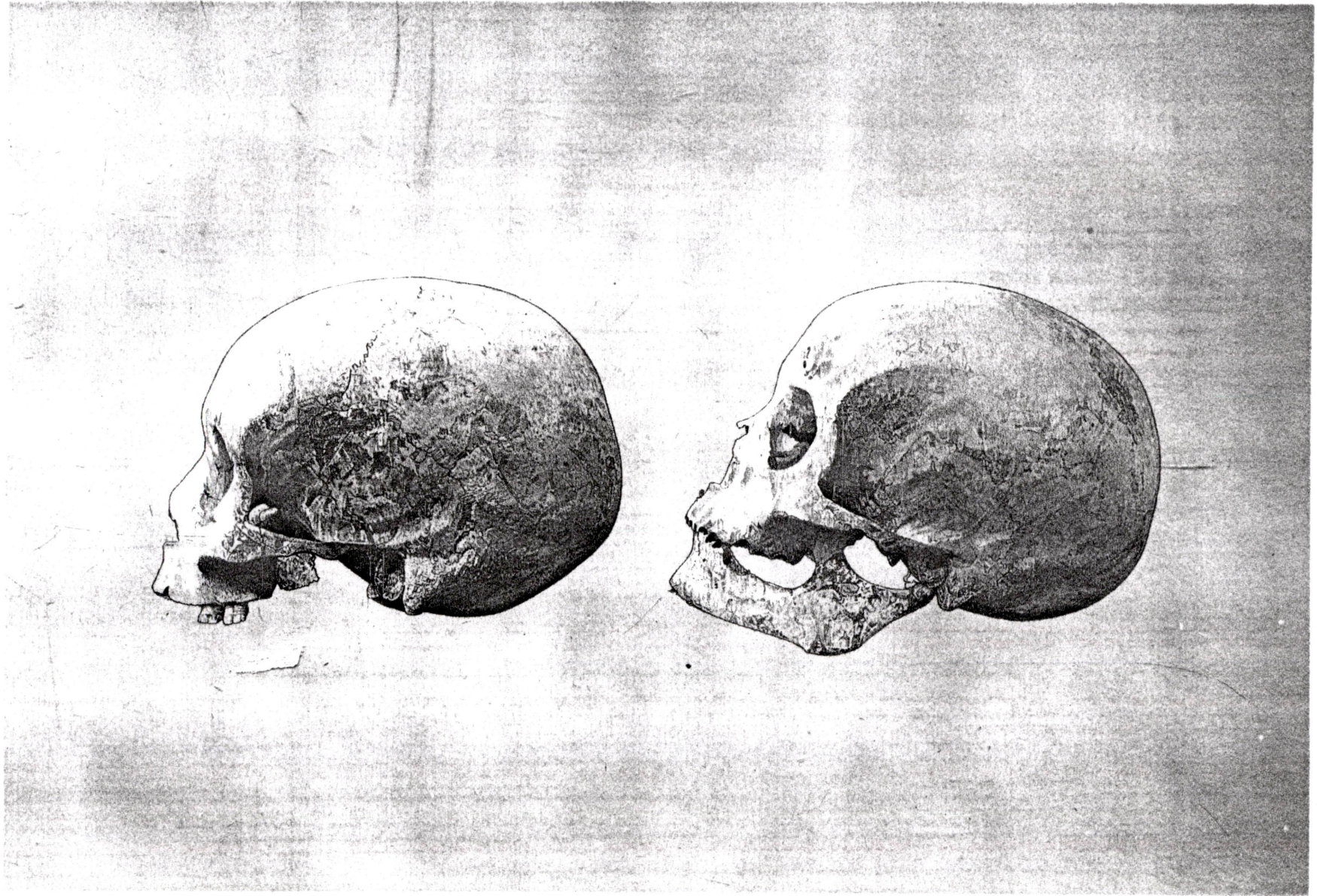
The intellectual character of the Eskimo, judging from the information which various travellers have furnished, as well as my personal knowledge, produces more than a feeble belief in the possibility of their being equal to anything they choose to take an interest in learning. The Eskimo is not "muffled imbecility," as some one has called him, nor is he dull and slow of understanding, as Vitruvius describes the northern nation to be "from breathing a thick air"—which, by the way, is thin, elastic, and highly ozonized—nor is he, according to Dr. Beke, "degenerated almost to the lowest state compatible with the retention of rational endowments." On the contrary, the old Greenland missionary, Hans Egede, writes: "I have found some of them witty enough and of good capacity;" Sir Martin Frobisher says they are "in nature very subtle and sharp-witted;" Sir Edward Parry, while extolling their honesty and good nature, adds, "Indeed, it required no long acquaintance to convince us that art and education might easily have made them equal or superior to ourselves;" Sauer tells of a woman who learned to speak Russian fluently in rather less than twelve months, and Beechy and others have acknowledged the intelligent help they have received from Eskimo in making their explorations.

Before going further, it may not be amiss to speak in a general way of the bony covering which protects the organ whose function it is to generate the vibrations known as thought. Of one hundred crania, collected principally at Saint Lawrence Island, a number were examined by me at the Army Medical Museum, through the courtesy of Dr. Huntington, with the result of changing and greatly modifying some of the previous notions of the conventional Eskimo skull as acquired from books on craniology. Perhaps after the inspection and examination of a large collection of crania it may be safe to pronounce upon their differential character; but whether the differences in configuration are constant or only occasional manifestations admits of as much doubt as the exceptions in Professor Sophocles's Greek grammar, which are often coextensive with the rule.*

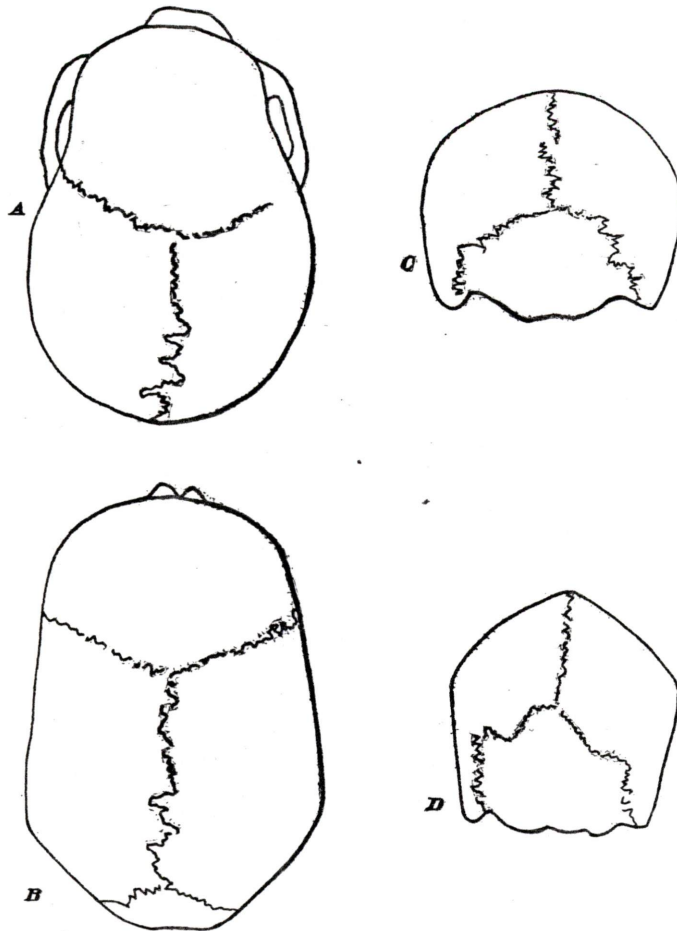
The typical Eskimo skull, according to popular notion, is one exhibiting a low order of intelligence, and characterized by small brain capacity, with great prominence of the superciliary ridges, occipital protuberance, and zygomatic arches, the latter projecting beyond the general contour of the skull like the handles of a jar or a peach basket; and lines drawn from the most projecting part of the arches and touching the sides of the frontal bone are supposed to meet over the forehead, forming a triangle, for which reason the skull is known as pyramidal.

The first specimen, examined from a vertical view, shows something of the typical character as figured in A, and when viewed posteriorly there is noticed a flattening of the parietal walls with an elongated vertex as shown in D; while a second specimen, represented by B, shows none of the foregoing characteristics, the form being elongated and the parietal walls so far overhanging as to conceal the zygomatic arches in the vertical view, so that if lines be drawn as previously men-

* See Retzius, *Finska Kranier*, Stockholm: 1878.



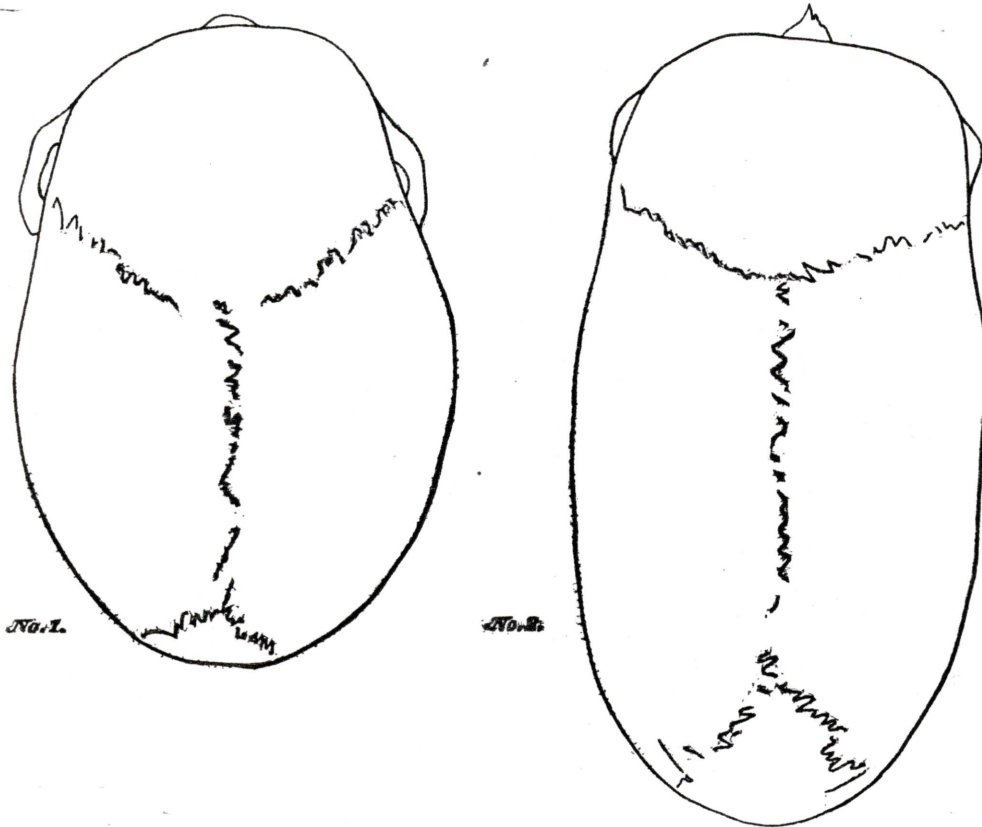
tioned, instead of forming a triangle they may, like the asymptotes of a parabola, be extended to infinity and never meet:



For purposes of comparison a number of orthographic outlines, showing the contour of civilized crania from a vertical point of observation, are herewith annexed. No. 1 is that of an eminent mathematician who committed suicide; No. 2, a prominent politician during the civil war; No. 3, a banker; and No. 4, a notorious assassin. Nos. 5 and 6 are negro skulls. Further comparison may be made with the Jewish skull, as represented in No. 7, in which the nasal bones project so far beyond the general contour as to form a bird-like appendage:

A collection of Aleutian heads, as seen from a vertical point of observation, when I looked down from the gallery of the little Greek church at Ounalaska, presented at first sight certain collective characters by which they approach one another. But anatomists know that a careful comparison of any collection will show extremely salient differences. In fact, individual differences, so numerous and so irregular as to prevent methodical enumeration, constitute the stumbling-block of ethnic craniology. Take, for instance, a number of the skulls under consideration: in proportions they will be found to present very considerable variations among themselves. The skulls figured by A and B are respectively brachycephalic and dolichocephalic. The former has an internal capacity of 1,400, the latter 1,214 cubic centimeters; but the facial angle of each is 80° , and in one Eskimo cranium it runs up to 84° . If the facial angle be trustworthy, as a measure of the degree of intelligence, we have shown here a development far in excess of the negro, which is placed at 70° , or of the Mongolian at 75° , and exceeding that observed by me in many German

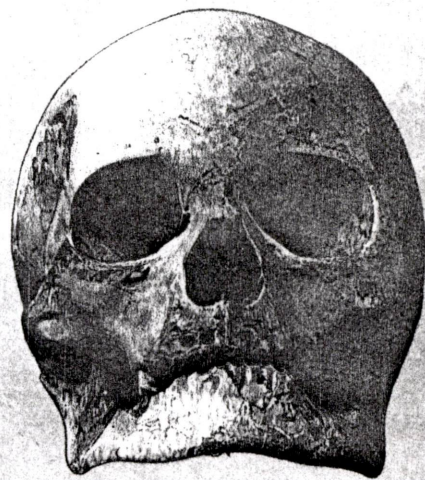
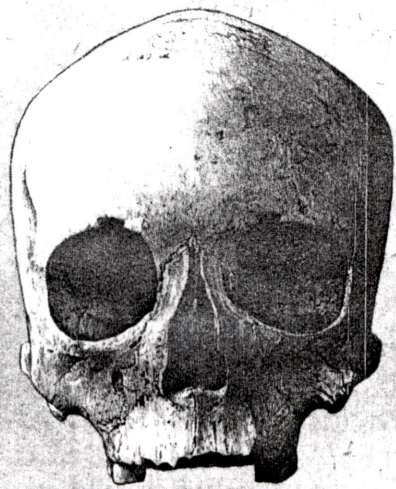
skulls, which do not as a rule come up to the 90° of Jupiter Tonans or of Cuvier, in spite of the boasted intelligence of that nationality.

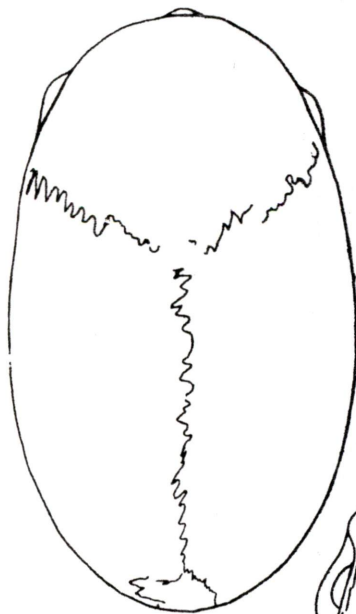


In none of the skulls of the collection is there observable the heavy superciliary ridges alleged to be common in lower races, but which exist in many of the best-formed European crania—shall we say as anomalies or as individual variations? Nor is the convexity of the squamo-parietal suture such as characterizes the low-typed cranium of the chimpanzee or of the Mound Builder. On the contrary, the orbits are cleanly made and the suture is well curved. Besides, a low degree of intelligence is not shown by observing the index of the foramen magnum, which is about the same as that found in European crania; and the same may be said of the internal capacity of the cranium. To illustrate the latter remark is appended a tabular statement made up from Welcker, Broca, Aitken, and Meigs:

	Cubic centimeters.
Australian	1, 228
Polynesian	1, 230
Hottentot	1, 230
Mexican	1, 296
Malay	1, 328
Ancient Peruvian	1, 361
French	1, 403 to 1, 461
German	1, 448
English	1, 572

An average of the Eskimo skulls, some of which measure as much as 1,650 and 1,715 c. c., will show the brain capacity to be the same as that of the French or of the Germans. None of them, however, approaches the anomalous capacities of two Indian skulls on exhibition at the Army Medical Museum, one of which shows 1,785 c. c., and the other the unprecedented measurement of 1,920 c. c.

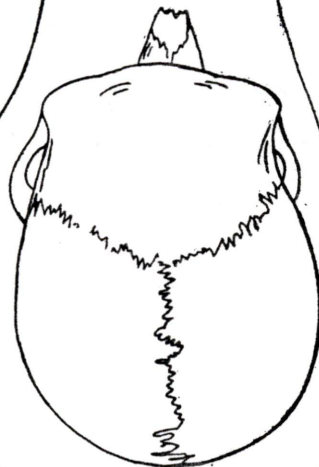




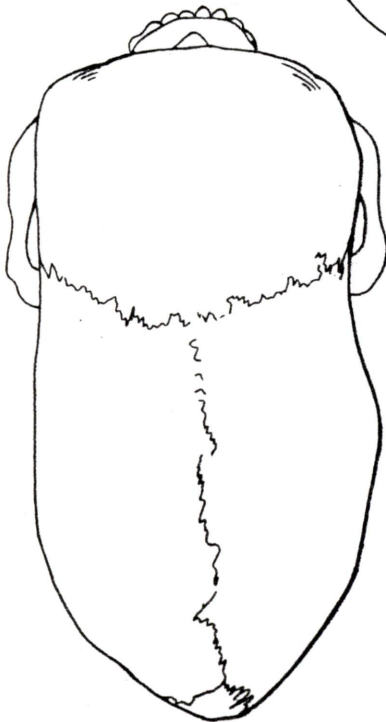
No. 3.



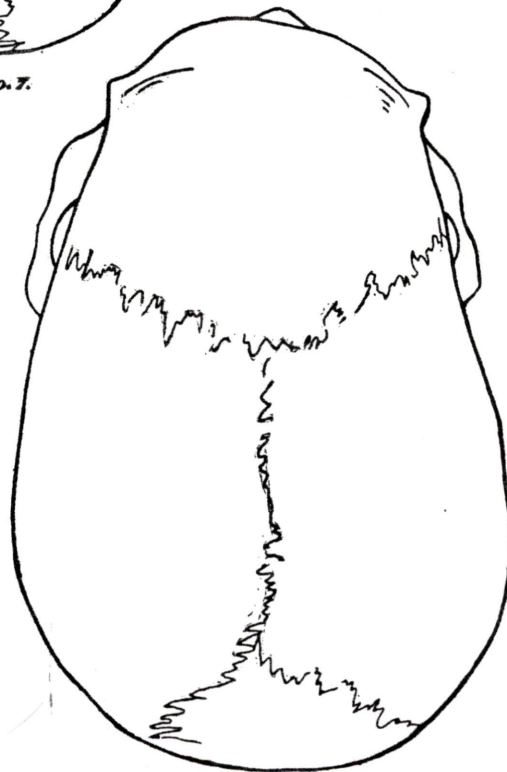
No. 4.



No. 7.



No. 5.



No. 6.

If the foregoing means for estimating the mental grasp and capacity for improvement be correct, then we must accord to the most northern nation of the globe a fair degree of brain energy—potential though it be. Aside from the mere physical methods of determining the degree of intelligence it is urged by some writers, among them the historian Robertson, that tact in commerce and correct ideas of property are evidence of a considerable progress toward civilization. The natural inference from this is that they are tests of intellectual power, since mind is a combination of all the actual and possible states of consciousness of the organism, and an examination of the Eskimo system of trade draws its own conclusion. Their fondness for trade has been known for a long time, as well as the extended range of their commercial intercourse. They trade with the Indians, with the fur companies, the whalers, and among themselves across Bering Straits. Many of them are veritable Shylocks, having a thorough comprehension of the axiom in political economy regarding the regulation of the price of a thing by the demand.

THE MORAL SENSE AND THE RELIGIOUS INSTINCT.

With the aptitudes and instincts of our common humanity Eskimo morals, as manifested in truth, right, and virtue, also admit of remark. Except where these people have had the bad example of the white man, whose vices they have imitated not on account of defective moral nature but because they saw few or no virtues, they are models of truthfulness and honesty. In fact their virtues in this respect are something phenomenal. The same cannot be said, however, for their sexual morals, which as a rule are the contrary of good. Even a short stay among the hyperboreans causes one to smile at Lord Kames's "frigidity of the North Americans" and at the fallacy of Herder who says, "the blood of man near the pole circulates but slowly, the heart beats but languidly; consequently the married live chastely, the women almost require compulsion to take upon them the troubles of a married life," &c. Nearly the same idea, expressed by Montesquieu, and repeated by Byron in "happy the nations of the moral north," are statements so at variance with our experience that this fact must alone excuse a reference to the subject. So far are they from applying to the people in question, that it is only necessary to mention, without going into detail, that the women are freely offered to strangers by way of hospitality, showing a decided preference for white men, whom they believe to beget better offspring than their own men. In this connection one is soon convinced that salacious and prurient tastes are not the exclusive privilege of people living outside of the Arctic Circle; and observation favors the belief in the existence of pederasty among Eskimo, if one may be allowed to judge from circumstances, which it is not necessary to particularize, and from a word in their language signifying the act.

Since morality is the last virtue acquired by man and the first one he is likely to lose, it is not so surprising to find outrages on morals among the undeveloped inhabitants of the north as it is to find them in intelligent Christian communities among people whose moral sense ought to be far above that of the average primitive man in view of their associations and the variations that have been so frequently repeated and accumulated by heredity; and where there is no hierarchy nor established missionaries it is still more surprising to find any moral sense at all among a people whose vague religious belief does not extend beyond Shamanism or Animism, which to them explains the more strange and striking natural phenomena by the hypothesis of direct spiritual agency.

It must not be understood by this, however, that these people have no religion, as many travellers have erroneously believed; that would be almost equivalent to stating that races of men exist without speech, memory, or knowledge of fire. A purely ethnological view of religion which regards it as "the feeling which falls upon man in the presence of the unknown," favors the idea that the children of the icy north have many of the same feelings in this respect as those experienced by ourselves under similar conditions, although there is doubtless a change in us produced by more advanced thought and nicer feeling. On the other hand, how many habits and ideas that are senseless and perfectly unexplainable by the light of our present modes of life and thought can be explained by similar customs and prejudices existing among these distant tribes. Is there no fragment of primitive superstition or residue of bygone ages in the supposed influence of the "Evil Eye" in Ireland, or in the habit of "telling the bees" in Germany? Is there not something of intellectual fossildom in the popular notion about Friday and thirteen at table, and

in the ancient rite of exorcising oppressed persons, houses, and other places supposed to be haunted by unwelcome spirits, the form for which is still retained in the Roman ritual? And is not our enlightened America "the land of spiritualists, mesmerism, soothsaying, and mystical congregations"?

When the native of Saint Michael's invokes the moon, or the native of Point Barrow his crude images previously to hunting the seal, in order to bring good luck, is not the mental and emotional impulse the same as that which actuates more civilized men to look upon "outward signs of an inward and spiritual grace," or not to start upon any important undertaking without first invoking the blessing of Deity? And are not the rites observed by the natives on the Siberian coast, when the first walrus is caught, the counterpart of our Puritan Thanksgiving Day?

Perhaps the untutored Eskimo has the same fear of the dangerous and terrible, the unknown, the infinite, as ourselves, and parts with life just as reluctantly; but it cannot be said that our observation favors the fact of his longevity, although long life seems to prevail among some of the circumpolar tribes, the Laps, for instance, who, according to Scheffer, in spite of hard lives enjoy good health, are long lived, and still alert at eighty and ninety years.—(De Medecina Laponum.)

Owing to his hard life, the conflict with his circumstances, and his want of foresight, the Eskimo soon becomes a physiological bankrupt, and his stock of vitality being exhausted, his bodily remains are covered with stones, around which are placed wooden masks and articles that have been useful to him during life, as I have seen at Nounivak Island, or they are covered with drift wood as observed in Kotzebue Sound, or as at Tapkan, Siberia, where the corpse is lashed to a long pole and is taken some distance from the village, when the clothes are stripped off, placed on the ground and covered with stones. The cadaver is then exposed in the open air to the tender mercies of crows, foxes, and wolves. The weapons and other personal effects of the decedent are placed near by, probably with something of the same sentiment that causes us to use chaplets of flowers and immortelles as funeral offerings—a custom that Schiller has commemorated in "Bringet hier die letzten Gaben."

The future destiny of these people is a question in which the theologian and politician are not less interested than the man of science. Some observers seem to think that their numbers are diminishing under the evil influence of so-called civilization. But as every race participates in the same moral nature, and the entire history of humanity, according to Herder, is a series of events pointing to a higher destiny than has yet been revealed, there is no reason why the sum of human happiness, under proper auspices, should not be increased among the Inuit race. Archdeacon Kirkby, a Church-of-England clergyman who has lately visited them in a missionary capacity as far as Boothia, speaks in the highest terms of their intelligence and capacity for improvement. Here then is a brilliant opportunity for some one full of propagandism and charity to imitate the acts of the modern Apostles, and extend the influence of civilization to the gay, lively, curious, and talkative hyperboreans whose home is under the midnight sun and on the borders of the Icy Sea.