

REPORT

ON

THE SEAL ISLANDS OF ALASKA,

BY

HENRY W. ELLIOTT.

LETTER OF TRANSMITTAL.

SMITHSONIAN INSTITUTION, *March* 31, 1880.

Hon. FRANCIS A. WALKER,

Superintendent Tenth Census.

DEAR SIR: At the suggestion of Professor Baird and Mr. Goode, I have taken much pleasure in rewriting my field-notes made upon the Seal Islands of Alaska, which I herewith inclose for the use of the Census Office, now under your direction. I also embody those maps and drawings which I think necessary to give the reader a better idea of my understanding of the subject.

Very respectfully, your friend and servant,

HENRY W. ELLIOTT.

ANALYSIS.

	Page.
A. INTRODUCTION.	
1. History and objects of the memoir	5
B. GEOGRAPHICAL DISTRIBUTION.	
2. Geographical distribution of the fur-seal	6
C. THE PRIBYLOV ISLANDS.	
3. Discovery of the Pribylov islands. [See also 31.]	8
4. Description of the Pribylov islands. [See also 25-33.]	9
D. THE OCCUPANTS OF THE ISLANDS.	
5. The natives of the islands. [See also 39 F.]	19
6. The Alaska Commercial Company. [See also 37.]	24
7. The business concerned	26
E. THE SEAL-LIFE ON THE PRIBYLOV ISLANDS.	
8. The hair-seal	28
9. Life-history of the fur-seal	29
10. The "holluschickie" or "bachelor" seals—a description	43
11. Description of the fur-seal rookeries of St. Paul and St. George	48
12. Manner of taking the seals	70
13. Manner of caring for and shipping the fur-seal skins. [See also 4.]	76
14. Economic value of the skins, oil, and flesh of the fur-seal	80
F. THE SEA-LION, <i>Eumetopias Stelleri</i>.	
15. Life-history of the sea-lion	84
16. Capture of the sea-lion	89
17. Economic uses of the sea-lion	91
G. THE WALRUS OF BERING SEA, <i>Odobanus obesus</i>.	
18. Life-history of the walrus	92
H. A BRIEF REVIEW OF OFFICIAL REPORTS UPON THE CONDUCT OF AFFAIRS ON THE SEAL-ISLANDS.	
19. Special investigations of Lieut. Washburn Maynard, U. S. N	102
20. Synopsis of Lieut. Maynard's investigations	102
21. Epitome of special reports upon the seal-islands in the archives of the Treasury Department	109
I. ILLUSTRATIVE AND SUPPLEMENTAL NOTES.	
22. The Russian seal-islands, Bering and Copper, or the Commander group	109
23. St. Matthew island and its relation to St. Paul	115
24. Digest of the data in regard to the fur-seal rookeries of the South Atlantic and Pacific, and number of skins taken therefrom	117
25. Catalogue of the mammals of the Pribylov group	124
26. Catalogue of the birds of the Pribylov group	125
27. Catalogue of the fishes of the Pribylov group	136
28. Notes on the invertebrates	137
29. Notes on the plants	138
30. Veniaminov on the Russian seal-industry at the Pribylov islands	140
31. Veniaminov's account of the discovery of the Pribylov islands	145
32. History of the organization of the Russian-American Fur Company	148
33. Meteorological abstract for the months, from September, 1872, to April, 1873, inclusive	149
34. The method of dressing the fur-seal skin	151
35. Bering, <i>not</i> Behring	151
36. The law protecting the seal-islands	153
37. The organization and regulations of the Alaska Commercial Company	154
38. Comments upon the legislation of Congress	157
39. Paragraphs of reference relative to subjects discussed in the preceding memoir, and referred to as "Note 39"	158
40. Final notes and tables relative to the value, protection, and growth of the fur-seal; and the revenue derived from that industry on the Pribylov islands	165
GLOSSARY.	
41. Definition of technical terms and Russian nomenclature, used by the author in the preceding monograph	173
42. Weights, measures, and values	175

THE SEAL ISLANDS OF ALASKA.

A. INTRODUCTION.

1. HISTORY AND OBJECTS OF THE MEMOIR.

THE WRITER'S OPPORTUNITIES FOR OBSERVATION.—During the progress of the heated controversies that took place pending the negotiation which ended in the acquisition of Alaska by our government, frequent references were made to the fur-seal. Strange to say, this animal was so vaguely known at that time, even to scientific men, that it was almost without representation in any of the best zoölogical collections of the world: even the Smithsonian Institution did not possess a perfect skin and skeleton. The writer, then as now, an associate and collaborator of this establishment, had his curiosity very much excited by those stories, and in March, 1872, he was, by the joint action of Professor Baird and the Secretary of the Treasury, enabled to visit the Pribylov islands for the purpose of studying the life and habits of these animals.

The fact is, that the acquisition of those pelagic peltries had engaged thousands of men, and that millions of dollars have been employed in capturing, dressing, and selling fur-seal skins during the hundred years just passed by; yet, from the time of Steller, away back as far as 1751, up to the beginning of the last decade, the scientific world actually knew nothing definite in regard to the life-history of this valuable animal. The truth connected with the life of the fur-seal, as it herds in countless myriads on the Pribylov islands of Alaska, is far stranger than fiction. Perhaps the existing ignorance has been caused by confounding the hair-seal, *Phoca vitulina*, and its kind, with the creature now under discussion. Two animals more dissimilar in their individuality and method of living can, however, hardly be imagined, although they belong to the same group, and live apparently upon the same food.

The notes, surveys, and hypotheses herewith presented are founded upon the writer's personal observations in the seal-rookeries of St. Paul and St. George, during the seasons of 1872 to 1874, inclusive, supplemented by his confirmatory inspection made in 1876. They were obtained through long days and nights of consecutive observation, from the beginning to the close of each seal-season, and cover, by actual surveys, the entire ground occupied by these animals. They have slumbered in the author's portfolio until the present moment, simply for the reason that he desired, before making a final presentation of the history of these islands and the life thereon, to visit the Russian seal-islands, the "Commanders", viz, Bering and Copper islands, which lie to the westward, 700 miles from our own, and are within the pale of the czar's dominion.

PREVIOUS OBSERVATIONS OF STELLER AND OTHERS.—In treating this subject the writer has trusted to nothing save what he himself has seen; for, until these life-studies were made by him, no succinct and consecutive history of the lives and movements of these animals had been published by any man. Fanciful yarns, woven by the ingenuity of whaling captains, in which the truth was easily blended with that which was not true, and short paragraphs penned hastily by naturalists of more or less repute, formed the knowledge that we had. Best of all was the old diary of Steller, who, while suffering bodily tortures, the legacy of gangrene and scurvy, when wrecked with Vitus Bering on the Commander islands, showed the nerve, the interest, and the energy of a true naturalist. He daily crept, with aching bones and watery eyes, over the boulders and mossy flats of Bering island, to catch glimpses of those strange animals which abode there then as they abide to-day. Considering the physical difficulties that environed Steller, the notes made by him on the sea-bears of the North Pacific are remarkably good; but, as I have said, they fail so far from giving a fair and adequate idea of what these immense herds are and do, as to be absolutely valueless for the present hour. Shortly after Steller's time, great activity sprang up in the South Atlantic and Pacific over the capture and sale of fur-seal skins taken in those localities. It is extraordinary, that though whole fleets of American, English, French, Dutch, and Portuguese vessels engaged, during a period of protracted enterprise, of over eighty years in length, in the business of repairing to the numerous rookeries of the Antarctic, returning

annually, laden with enormous cargoes of fur-seal skins; yet, as above mentioned, hardly a definite line of record has been made in regard to the whole transaction, involving, as it did, so much labor and so much capital.

FORMER PUBLICATIONS OF THE WRITER.—A brief digest of the writer's notes, relating principally to the business on the islands, was prepared and given to the Treasury Department in 1873-'74. This was printed by the Secretary, and has been the text of guidance, as to observation, employed by the agents of the government ever since. The maps and sketch-maps are herewith accordingly given to the public for the first time; the author, fearing that private and personal affairs, which now confine him, may possibly never permit his going over to the Asiatic rookeries, thinks it perhaps better that what he now knows definitely in regard to the matter should be published without longer delay.

It was with peculiar pleasure that the writer undertook, at the suggestion of Professor Baird, who is the honored and beloved secretary of the Smithsonian Institution, the task of examining into and reporting upon this subject; and it is also gratifying to add, that the statements of fact and the hypotheses evolved therefrom by him in 1874, have, up to the present time, been verified by the inflexible sequence of events on the ground itself. The concurrent testimony of the numerous agents of the Treasury Department and the government generally, who have trodden in his footsteps, amply testifies to their stability. (See note, 39, A.)

B. GEOGRAPHICAL DISTRIBUTION.

2. GEOGRAPHICAL DISTRIBUTION OF THE FUR-SEAL.

PECULIARITIES OF DISTRIBUTION.—Our first thought in studying the distribution of the fur-seals throughout the high seas of the earth, is one of wonder. While they are so widely spread over the Antarctic regions, yet, as we pass the equator going north, we find in the Atlantic above the tropics nothing that resembles them. Their range in the North Pacific is virtually confined to four islands in Bering sea, namely, St. Paul and St. George of the tiny Pribylov group, and Bering and Copper of the Commander islands, large in area, but relatively scant in seal-life.

The remarkable discrepancy which we have alluded to may be better understood when we consider that these animals require certain conditions of landing and breeding ground and climate, all combined, for their perfect life and reproduction. In the North Atlantic no suitable territory for their reception exists, or ever did exist; and really nothing in the North Pacific beyond what we have designated in Bering sea will answer the requirements of the fur-seal. When we look over the Antarctic waters, we are surprised at what might have been done, and should have been done, in those southern oceans. There we find hundreds of miles of the finest seal-breeding grounds on the western coast of Patagonia, the beautiful reaches of the Falkland islands, the great extent of Desolation island, together with the whole host of smaller islets, where these animals abounded in almost countless numbers when first discovered, and should abound to-day—millions upon millions—but which have been, through nearly a century the victims of indiscriminate slaughter, directed by most unscrupulous and most energetic men. It seems well-nigh incredible, but it is true, nevertheless, that for more than fifty years a large fleet, numbering more than sixty sail, and carrying thousands of active men, traversed this coast and circumnavigated every island and islet, annually slaughtering right and left wherever the seal-life was found. Ships were laden to the water's edge with the fresh, air-dried, and salted skins, and they were swallowed up in the marts of the world, bringing mere nominal prices—the markets glutted, but the butchery never stopping.

THE SEAL-GROUNDS IN THE SOUTHERN HEMISPHERE.—I will pass in brief review the seal-grounds of the southern hemisphere. The Galapagos islands come first in our purview; this scattered group of small rocks and islets, uninhabited and entirely arid, was, fifty years ago, resorted to by a very considerable number of these animals, *Arctocephalus australis*, together with many sea-lions, *Otaria Hookeri*; great numbers were then captured by fur-sealers, who found to their sorrow, when the skins were inspected, that pelage was poor and worthless. A few survivors, however, remain to this day.

Along and off the coast of Chili and Bolivia are the St. Felix and Juan Fernandez islands, the latter place being one of the most celebrated rookeries known to Antarctic sealers. The west coast of Patagonia and a portion of that of Terra del Fuego was, in those early days of seal-hunting, and is to-day, the finest connected range of seal-rookery ground in the south. Here was annually made the concentrated attack of that sealing fleet referred to; and one can readily understand how thorough must have been the labor, as he studies the great extent and deep indentation of this coast, its thousand and one islands and islets, and when he sees to-day that there is scarcely a rookery of fur-seals known to exist there. The Falkland islands, just abreast of the straits of Magellan, were also celebrated, and a favorite resort, not only of the sealers, but of the whale-fleets of the world. They are recorded, in the brief mention made by the best authority, as fairly swarming with fur-seals when they were opened up by Captain Cook. There is to-day, in the place of the millions that once existed, an insignificant number, taken notice of only now and then.

The Georgia islands and the Sandwich group, all a succession of rocky islands and reefs awash—the South Orkneys, the Shetlands, the Auckland group, Campbell's island, Emerald island, and a few islets lying just to the southward of New Zealand—have all been places of lively and continued butchery; the fur-seals ranging in desperation from one of those places to the other as the seasons progressed, and the merciless search and slaughter continued. These pinnipeds, however, never went to the southward of 62° south latitude.

In considering the western Antarctic hemisphere, I must not forget also to mention, that the fur-seal was in early times found up the east coast of South America, here and there in little rookeries, as far north as cape St. Roque; but the number was unimportant, when brought into contrast with that belonging to those localities which I have designated. A small cliff-bound rookery to-day exists at cape Corientes. This is owned and farmed out by the Argentine republic, and we are informed that in spite of all their care and attention they have neither increased nor have they diminished from their original insignificance; from this rookery only three to five thousand were and are annually taken. It appears as if the fur-seals had originally passed to Bering sea from the parent stock of the Patagonia region, up along the coast of South America, a few tarrying at the dry and heated Galapagos islands, the rest speeding on to the northward, disturbed by the clear skies and sandy beaches of the Mexican coast, on and up to the great fish-spawning shores of the Aleutian islands and Bering sea. There, on the Pribylov group and the bluffly Commander islands, they found that union of cool water, well-adapted landing, and moist, foggy air which they had missed since they left the storm-beaten coasts far below.

In the Antarctic waters of the eastern hemisphere seals were found at Tristan da Cunha, principally on Little Nightingale island, to the southward of it; on Gough's island; on Bouvet's island; Prince Edward and Marion islands; the Crozette group, all small rocks, as it were, over which violent storms fairly swept; then we observe the great rookeries of Kerguelen land, or Desolation island—where perhaps nine-tenths of all the oriental fur-seals congregated—thence over to a small and insignificant islet known as the Royal Company, south of Good Hope. This list includes all the known resting-places of the fur-seal in those waters.

FORMER ABUNDANCE IN THE SOUTHERN HEMISPHERE: EXTENT OF EXTERMINATIONS.—In the light of the foregoing remarks, is it not natural, when we reflect upon the immense area and the exceedingly favored conditions of ground and climate frequented by the fur-seals of the Southern ocean, to say that their number must have been infinitely greater as they were first apprehended, surpassing all adequate description, when compared to those which we now regard as the marvel and wonder of the age—the breeding rookeries of the Pribylov group?

• It is a great pity that this work of extermination and senseless destruction should have progressed as it has to the very verge of total extinction, ere any one was qualified to take note of and record the wonderful life thus eliminated. The Falkland islands and Kerguelen land, at least, might have been placed under the same restrictions and wholesome direction which the Russians established in the North seas, the benefits of which accrue to us to-day, and will forever, as matters are now conducted. Certainly it is surprising that the business thought, the hardheaded sense, of those early English navigators, should not have been equal to that of the Russian Promyshleniks, who were renowned as the most unscrupulous and the greediest of gain-getters.

POSSIBILITIES FOR PROTECTION.—The Falkland islands offer natural conditions of protection by land far superior to those found on the Pribylov or Commander groups. They have beautiful harbors, and they lie in the track of commerce, advantages which are not shared by our islands; at Desolation island, perhaps, the difficulties are insuperable on account of the great extent of coast, which is practically inaccessible to men and nearly so to the seals; but the Falkland islands might have been farmed out by the British government at a trifling outlay and with exceeding good result; for, millions upon millions of the fur-seals could rest there to-day, as they did a hundred years ago, and be there to-morrow, as our seals do and are in Bering sea. But the work is done. There is nothing down there, now, valuable enough to rouse the interest of any government; still, a beginning might be made, which possibly forty or fifty years hence would rehabilitate the scourged and desolated breeding-grounds of the South seas. We are selfish people, however, and look only to the present, and it is, without question, more than likely that should any such proposition be brought before the British parliament it would be so ridiculed and exaggerated by demagogues and ignorant jesters as to cause its speedy suppression; hence, in our opinion, it is not at all likely that the English government, or any of the other governments controlling these many islands of the Southern ocean, which we have named, will ever take a single step in the right direction, as far as the encouragement of the fur-seal to live and prosper in those regions is concerned. When we look at our northern waters we speedily recognize the fact, that between North America and Europe, across the Atlantic and into the Arctic, there is not a single island or islet or stretch of coast that the fur-seal could successfully struggle for existence on. These facts will become entirely clear when the chapter on the habit of this animal is reached.

ISOLATION OF THE NORTH PACIFIC ROOKERIES.—In the North Pacific, in prehistoric times, a legend from Spanish authority states, that fur-seals were tolerably abundant on the Santa Barbara and Guadaloupe islands, off the coast of California, and the peninsula to the southward. A few were annually taken from these islands, up to 1835 and some were wont to sport on those celebrated rocks off the harbor of San Francisco, known as the Farralones; but no tradition locates a seal-rookery anywhere else on the northwest coast, or anywhere else in all Alaska and its islands, save the Pribylov group: while across and down the Asiatic coast, only the Commander islands and a little

rock* in the Kurile chain have been and are resorted to by them. The crafty savages of that entire region, the hairy *Ainos* of Japan, and the Japanese themselves, have for a hundred years searched and searched in vain for such ground.

COMMERCIAL IMPORTANCE OF THE ALASKA ROOKERIES.—To recapitulate, with the exception of these seal-lands of Bering sea, there are none elsewhere in the world of the slightest importance to-day; the vast breeding-grounds bordering on the Antarctic have been, by the united efforts of all nationalities—misguided, short-sighted, and greedy of gain—entirely depopulated; only a few thousand unhappy stragglers are now to be seen throughout all that southern area, where millions once were found, and a small rookery protected and fostered by the government of a South American state, north and south of the mouth of the Rio de la Plata. When, therefore, we note the eagerness with which our civilization calls for sealskin fur, the fact that, in spite of fashion and its caprices, this fur is and always will be an article of intrinsic value and in demand, the thought at once occurs, that the government is exceedingly fortunate in having this great amphibious stock-yard far up and away in the quiet seclusion of Bering sea, from which it shall draw an everlasting revenue, and on which its wise regulations and its firm hand can continue the seals forever.

C. THE PRIBYLOV ISLANDS.

3. DISCOVERY OF THE PRIBYLOV ISLANDS.

SEARCH OF RUSSIAN EXPLORERS FOR SEA-OTTERS AND SEALS.—All writers on the subject of Alaskan exploration and discovery, agree as to the cause of the discovery of the Pribylov islands in the last century. It was due to the feverish anxiety of a handful of Russian fur-gatherers, who desired to find new fields of gain when they had exhausted those last uncovered. Altasov, and his band of Russians, Tartars, and Kossacks, arrived at Kamtchatka, toward the close of the seventeenth century, and they first found of all men, the beautiful, costly, rare fur of the sea-otter. The animal bearing this pelage abounded then on that coast, but by the middle of the eighteenth century they and those who came after them had entirely extirpated it from that country. Then the survivors of Bering's second voyage of observation, in 1741-'42, and Tscherikov brought back an enormous number of skins from Bering island; then Michael Novodiskov discovered Attoo, and the contiguous islands, in 1745; Paikov came after him and opened out the Fox islands, in the same chain, during 1759; then succeeded Stepan Glotov, of infamous memory, who determined Kakiak in 1763, and the peninsula of Alaska followed in order by Krenitsin, 1768. During these long years, from the discovery of Attoo until the last date mentioned above, a great many Russian associations fitted out at the mouth of the Amoor river, and the Okotsk sea, and prospected therefrom this whole Aleutian archipelago in search of the sea-otter. There were perhaps twenty-five or thirty different companies, with quite a fleet of small vessels, and so energetic and thorough were they in their search and capture of the sea-otter, that along by 1772 and 1774 the catch in this group had dwindled down from thousands and tens of thousands at first, to hundreds and tens of hundreds at last. As all men do when they find that that which they are engaged in is failing them, a change of search and inquiry was in order, and then the fur-seal, which had been noted but not valued much, every year as it went north in the spring through the passes and channels of the Aleutian chain, then going back south again in the fall, became the source of much speculation as to where it spent its time on land and how it bred. Nobody had ever heard of its stopping one solitary hour on a single rock or beach throughout all Alaska or the northwest coast. The natives, when questioned, expressed themselves as entirely ignorant, though they believed, as they believe in many things of which they have no knowledge, that these seals repaired to some unknown land in the north every summer and left every winter. They also reasoned then, that when they left the unknown land to the north in the fall, and went south into the North Pacific, they traveled to some other strange island or continent there, upon which in turn to spend the winter. Naturally the Russians preferred to look for the supposed winter resting-places of the fur-seal, and forthwith a hundred schooners and shallops sailed into storm and fog to the northward occasionally, but generally to the southward, in search of this rumored breeding-ground. Indeed, if the record can be credited, the whole bent of this Russian attention and search for the fur-seal islands was devoted to that region south of the Aleutian islands, between Japan and Oregon.

PRIBYLOV'S DISCOVERY OF THE ISLANDS WHICH BEAR HIS NAME.—Hence it was not until 1786, after more than eighteen years of unremitting search by hardy navigators, that the Pribylov islands were discovered. It seems that a rugged Muscovitic "stoorman", or ship's "mate", Gehrman Pribylov by name, serving under the direction and in the pay of one of the many companies engaged in the fur-business at that time, was much moved and exercised in his mind by the revelations of an old Aleutian shaman at Oonalashka, who pretended to recite a legend of the natives, wherein he declared that certain islands in the Bering sea had long been known to Aleuts.†

Pribylov commanded a small sloop, the "St. George", which he employed for three successive years in constant, though fruitless, explorations to the northward of Oonalashka and Oonimak, ranging over the whole of

* Robbins reef.

† This legend is translated by the author, and published in the Appendix.

Bering sea from the straits above. His ill-success does not now seem strange, when we understand the currents, the winds, and fogs of those waters. Why, only recently the writer himself has been on one of the best-manned vessels that ever sailed from any port, provided with good charts and equipped with all the marine machinery known to navigation, and that vessel has hovered for nine successive days off the north point and around St. Paul island, sometimes almost on the reef, and never more than ten miles away, without actually knowing where the island was! So Pribylov did well, considering, since at the beginning of the third summer's tedious search, in June, 1786, his old sloop ran up against the walls of Tolstoi Mees, at St. George, and when, though the fog was so thick that he could see scarce the length of his vessel, his ears were regaled by the sweet music of seal-rookeries wafted out to him on the heavy air. He knew then that he had found the object of his search, and he at once took possession of the island in the Russian name and that of his craft.

His secret could not long be kept. He had left some of his men behind him to hold the island, and when he returned to Oonalashka they were gone. And, when the next season had fairly opened, a dozen vessels were watching him and trimming in his wake. Of course they all found the island, and in that year, July, 1787, the sailors of Pribylov, on St. George, while climbing the bluffs and straining their eyes for a relief-ship, descried the low coast and scattered cones of St. Paul, thirty-six miles to the northwest of them. When they landed at St. George, not a sign nor a vestige of human habitation was found thereon; but during the succeeding year, when they crossed over to St. Paul, and took possession of it, in turn, they were surprised at finding on the south coast of that island, at a point now known as English bay, the remains of a recent fire. There were charred embers of driftwood, and places where grass had been scorched; there was a pipe, and a brass knife handle, which I regret to say have long passed beyond the cognizance of any ethnologist. This much appears in the Russian records.

4. DESCRIPTION OF THE PRIBYLOV ISLANDS.

The Pribylov islands lie in the heart of Bering sea, and are among the most insignificant landmarks known in that ocean. They are situated 192 miles north of Oonalashka, 200 miles south of St. Matthews, and about the same distance westward of cape Newenham on the mainland.

CLIMATE.—The islands of St. George and St. Paul are from twenty-seven to thirty miles apart, St. George lying southeastward of St. Paul. They are far enough south to be beyond the reach of permanent ice-floes, upon which polar bears could have made their way to the islands, though a few of these animals were, doubtless, always present. They laid also distant enough from the inhabited Aleutian districts and the coast of the mainland to have remained unknown to savage men. Hence they afforded the fur-seal the happiest shelter and isolation, for their position seems to be such as to surround and envelop them with fog-banks that fairly shut out the sun nine days in every ten, during the summer and breeding-season.

In this location, ocean-currents from the great Pacific, warmer than the normal temperature of that latitude, trending up from southward, ebb and flow around the islands as they pass, giving rise, during the summer and early autumn, to constant, dense, humid fog and drizzling mists, which hang in heavy banks over the islands and the sea-line, seldom dissolving away to indicate a pleasant day. By the middle or end of October, strong, cold winds, refrigerated on the Siberian steppes, sweep down across the islands, carrying off the moisture and clearing up the air. By the end of January, or early in February, they usually bring, by their steady pressure, from the north and northwest, great fields of broken ice, sludgy floes, with nothing in them approximating or approaching glacial ice. They are not very heavy or thick, but still as the wind blows they compactly cover the whole surface of the sea, completely shutting in the land, and for months at a time hushing the wonted roar of the surf. In the exceptionally cold seasons that succeed each other up there every four or five years, for periods of three and even four months—from December to May, and sometimes into June—the islands will be completely environed and ice-bound. On the other hand, in about the same rotation, occur the exceptionally mild winters. Not even the sight of an ice-floe is recorded during the whole winter, and there is very little skating on the shallow lakes and lagoons peculiar to St. Paul and St. George. This, however, is not often the case.

The breaking-up of winter-weather and the precipitation of summer (for there is no real spring or autumn in these latitudes), usually commences about the first week in April. The ice begins to leave or dissolve at that time, or a little later, so that by the 1st or 5th of May, the beaches and rocky sea-margin beneath the mural precipices are generally clear and free from ice and snow, although the latter occasionally lies, until the end of July or the middle of August, in gullies and on leeward hill-slopes, where it has drifted during the winter. Fog, thick and heavy, rolls up from the sea, and closes over the land about the end of May; this, the habitual sign of summer, holds on steadily to the middle or end of October again.

The periods of change in climate are exceedingly irregular during the autumn and spring, so-called, but in summer the cool, moist, shady, gray fog is constantly present. To this certainty of favored climate, coupled with the perfect isolation and the exceeding fitness of the ground, is due without doubt, that preference manifested by the warm-blooded animals which come here every year, in thousands and hundreds of thousands, to breed, to the practical exclusion of all other ground.

A large amount of information in regard to the climate of these islands has been collected and recorded by the signal service, United States army, and similar observations are still continued by the agents of the Alaska Commercial Company. I simply remark here, that the winter which I passed upon St. Paul island (1872-'73) was one of great severity, and, according to the natives, such as is very seldom experienced. Cold as it was, however, the lowest marking of the thermometer was only 12° Fahr. below zero, and that lasted but a few hours during a single day in February, while the mean of that month was 18° above. I found that March was the coldest month. Then the mean was 12° above, and I have since learned that March continues to be the meanest month of the year. The lowest average of a usual winter ranges from 22° to 26° above zero; but these quiet figures are simply inadequate to impress the reader with the exceeding discomfort of the winter in that locality. It is the wind that tortures and cripples out-door exercise there, as it does on all the sea-coast and islands of Alaska. It is blowing, blowing, from every point of the compass at all times; it is an everlasting succession of furious gales, laden with snow and sleety spiculae, whirling in great drifts to-day, while to-morrow the "boorga" will blow from a quarter directly opposite, and reverse its rift-building of the day preceding.

Without being cold enough to suffer, one is literally confined and chained to his room from December until April by this æolian tension. I remember very well that, during the winter of 1872-'73, I was watching, with all the impatience which a man in full health and tired of confinement can possess, every opportunity to seize upon quiet intervals between the storms, in which I could make short trips along the tracks over which I was habituated to walk during the summer; yet, in all that hyemal season I got out but three times; and then only by the exertion of great physical energy. On a day in March, for example, the velocity of the wind at St. Paul, recorded by one of the signal service anemometers, was at the rate of 88 miles per hour, with as low a temperature as -4° ! This particular wind-storm, with snow, blew at such a velocity for six days without an hour's cessation, while the natives passed from house to house crawling on all-fours: no man could stand up against it, and no man wanted to. At a much higher temperature—say at 15° or 16° above zero—with the wind blowing only 20 or 25 miles an hour, it is necessary, when journeying, to be most thoroughly wrapped up, to guard against freezing.

As I have said, there are here virtually but two seasons—winter and summer. To the former belongs November and the following months up to the end of April, with a mean temperature of 20° to 28° ; while the transition of summer is but a very slight elevation of that temperature, not more than 15° or 20° . Of the summer months, July, perhaps, is the warmest, with an average temperature between 46° and 50° in ordinary seasons. When the sun breaks out through the fog, and bathes the dripping, water-soaked hills and flats of the island in its hot flood of light, I have known the thermometer to rise to 60° and 64° in the shade, while the natives crawled out of the fervent and unwonted heat, anathematizing its brilliancy and potency. Sunshine does them no good; for, like the seals, they seem under its influence to swell up at the neck. A little of it suffices handsomely for both Aleuts and pinnipedia, to whom the ordinary atmosphere is much more agreeable.

It is astonishing how rapidly snow melts here. This is due, probably, to the saline character of the air, for when the temperature is only a single degree above freezing, and after several successive days in April or May, at 34° and 36° , grass begins to grow, even if it be below melting drifts, and the frost has penetrated the ground many feet beneath. I have said that this humidity and fog, so strongly and peculiarly characteristic of the Pribylov group, was due to the warmer ocean-currents setting up from the coast of Japan, and trending to the Arctic through Bering's straits, and deflected to the southward into the North Pacific, laving, as it flows, the numerous passes and channels of the great Aleutian chain; but I do not think, nor do I wish to be understood as saying, that my observation in this respect warrants any conclusion as to so large a gulf-stream flowing to the north, such as mariners and hydrographers recognize upon the Atlantic coast. I do not believe that there is anything of the kind equal to it in Bering sea. I think, however, that there is a steady set-up to northward from southward around the seal-islands, which is continued through Bering's straits, and drifts steadily off up to the northeast, until it is lost beyond Point Barrow. That this pelagic circulation exists, is clearly proven by the logs of the whalers, who, from 1845 to 1856, literally filled the air over those waters with the smoke of their "try-fires", and plowed every square rod of that superficial marine area with their adventurous keels. While no two, perhaps, of those old whaling captains living to-day, will agree as to the exact course of tides,* for Alaskan tides do not seem to obey any law, they all affirm the existence of a steady current, passing up from the south to the northeast, through Bering's straits. The flow is not rapid, and is doubtless checked at times, for short intervals, by other causes, which need not be discussed here. It is certain, however, that there is warm water enough, abnormal to the latitude, for the evolution of the characteristic fog-banks, which almost discomfited Pribylov, at the time of his discovery of the islands, nearly one hundred years ago, and which have remained ever since.

Without this fog the fur-seal would never have rested there as he has done; but when he came on his voyage of discovery, ages ago, up from the rocky coasts of Patagonia, mayhap, had he not found this cool, moist temperature of St. Paul and St. George, he would have kept on, completed the circuit, and returned to those congenial antipodes of his birth.

* The rise and fall of tide at the seal-islands I carefully watched one whole season at St. Paul. The irregularity, however, of ebb and flow, is the most prominent feature of the matter. The highest rise in the spring tides was a trifle over four feet, while that of the neap tides not much over two. Owing to the nature of the case, it is impossible to prepare a tidal calendar for Alaska, above the Aleutian islands, which will even faintly foreshadow a correct registration in advance.

CLOUDS.—Speaking of the stormy weather brings to my mind the beautiful, varied, and impressive nephelological display in the heavens overhead here during October and November. I may say, without exaggeration, that the cloud effects which I have witnessed from the bluffs of this little island, in those seasons of the year, surpass anything that I had ever seen before. Perhaps the mighty masses of cumuli, deriving their origin from warm exhalations out of the sea, and swelled and whirled with such rapidity, in spite of their appearance of solidity, across the horizon, owe their striking brilliancy of color and prismatic tones to that low declination of the sun due to the latitude. Whatever the cause may be, and this is not the place to discuss it, certainly no other spot on earth can boast of a more striking and brilliant cloud-display. In the season of 1865-'66, when I was encamped on this same parallel of latitude in the mountains eastward of Sitka and the interior, I was particularly attracted by the exceeding brilliancy, persistency, and activity of the aurora; but here on St. Paul, though I eagerly looked for its dancing light, it seldom appeared; and when it did, it was a sad disappointment, the exhibition always being insignificant when compared in my mind with that flashing of my previous experience. A quaint old writer,* a hundred years ago, when describing Norway and its people, called attention to what he considered a very plausible theory as to the cause of the aurora; he cited an ancient sage, who believed that the change of the winds threw the saline particles of the sea high into the air, and then, by aerial friction, "fermentation" took place, and the light was evolved! I am sure that the saline particles of Bering sea were whirled into the air during the whole of that winter of my residence there, but no "fermentation" occurred, evidently, for rarely indeed did the aurora greet my eyes. In the summer season there is considerable lightning; you will see it streak its zigzag path mornings, evenings, and even noondays, but from the dark clouds and their swelling masses upon which it is portrayed no sound returns; a *fulgur brutum*, in fact. I remember hearing but one clap of thunder while in that country. If I recollect aright, and my Russian served me well, one of the old natives told me that it was no mystery, this light of the aurora, for, said he, "we all believe that there are fire-mountains away up toward the north, and what we see comes from their burning throats, mirrored back on the heavens".

GEOLOGICAL STRUCTURE.—The formation of these islands, St. Paul and St. George, was recent, geologically speaking, and directly due to volcanic agency, which lifted them abruptly, though gradually, from the sea-bed. Little spouting craters then actively poured out cinders and other volcanic breccia upon the table-bed of basalt, depositing below as well as above the water's level as they rose; and subsequently finishing their work of construction through the agency of these spout-holes or craters, from which water-puddled ashes and tufa were thrown. Soon after the elevation and deposit of the igneous matter, all active volcanic action must have ceased, though a few half-smothered outbursts seem to have occurred very recently indeed; for on Bobrovia or Otter island, six miles southward of St. Paul, is the fresh, clearly blown-out throat, with the fire-scorched and smoked, smooth, sharp-cut, funnel-like walls of a crater. This is the only place on the seal-islands where there are any evidences of recent discharges from the crater of a volcano.

Since the period of the upheaval of the group under discussion, the sea has done much to modify and even enlarge the most important one, St. Paul, while the others, St. George and Otter, being lifted abruptly above the power of water and ice to carry and deposit sand, soil, and boulders, are but little changed from the condition of their first appearance.

VEGETATION.—The Russians tell a rather strange story in connection with Pribylov's landing. They say that both the islands were at first without vegetation †, save St. Paul, where there was a small "talneek", or willow, creeping along on the ground; and that on St. George nothing grew, not even grass, except on the place where the carcasses of dead animals rotted. Then, in the course of time, both islands became covered with grass, a great part of it being of the sedge kind, *Elymus*. This record of Veniaminov, however, is scarcely credible; there are few, surely, who will not question the opinion that the seals antedated the vegetation, for, according to his own statements, those creatures were there then in the same immense numbers that we find them to-day. The vegetation on these islands, such as it is, is fresh and luxuriant during the growing season of June and July and early August, but the beauty and economic value of trees and shrubbery, of cereals and vegetables, is denied to them by climatic conditions. Still I am strongly inclined to believe that, should some of those hardy shrubs and spruce trees indigenous at Sitka or Kadiak, be transplanted properly to any of the southern hill-slopes of St. Paul most favored by soil, drainage, and bluffs for shelter from saline gales, they might grow, though I know that, owing to the lack of sunlight, they would never mature their seed. There is, however, during the summer, a beautiful spread of grasses, of flowering annuals, biennials, and perennials, of gaily-colored lichens and crinkled mosses ‡, which have always afforded me great delight whenever I have pressed my way over the moors and up the hillsides of the rookeries.

There are ten or twelve species of grasses of every variety, from close, curly, compact mats to tall stalks—tussocks of the wild wheat, *Elymus arenaria*, standing in favorable seasons waist high—the "wheat of the north"—together with over one hundred varieties of annuals, perennials, spagnum, cryptogamic plants, etc., all flourishing in their respective positions, and covering nearly every point of rock, tufa, cement, and sand that a plant can grow

* Pontoppidan.

† Veniaminov: *Zapieskie Oonalashkenskaho Otdayla*, etc., 1842.

‡ The mosses at Kamminista, St. Paul, are the finest examples of their kind on the islands; they are very perfect and beautiful in many species.

upon, with a living coat of the greenest of all greens—for there is not sunlight enough there to ripen any perceptible tinge of ochre-yellow into it—so green that it gives a deep blue tint to gray noonday shadows, contrasting pleasantly with the varying russets, reds, lemon-yellows, and grays of the lichen-covered rocks, and the brownish purple of the wild wheat on the sand-dune tracts in autumn, together, also, with innumerable blue, yellow, pink, and white phænogamous blossoms, everywhere interspersed over the grassy uplands and sandy flats. Occasionally, on looking into the thickest masses of verdure, our common wild violet will be found, while the phloxes are especially bright and brilliant here. The flowers of one species of gentian, *Gentiana verna*, are very marked in their beauty; also those of a nasturtium, and a creeping pea-vine on the sand-dunes. The blossom of one species of the pulse family is the only one here that emits a positive, rich perfume; all the others are more suggestive of that quality than expressive. The most striking plant in all the long list is the *Archangelica officinalis*, with its tall seed-stalks and broad leaves, which grows first in spring and keeps green latest in the fall. The luxuriant rhubarb-like stems of this umbellifer, after they have made their rapid growth in June, are eagerly sought for by the natives, who pull them and crunch them between their teeth with all the relish that we experience in eating celery. The exhibition of ferns at Kamminista, St. Paul, during the summer of 1872, surpassed anything that I ever saw: I recall with vivid detail the exceedingly fine display made by these crenulated and waving fronds, as they reared themselves above the rough interstices of the rocky ridges. From the fern roots, and those of the gentian, the natives here draw their entire stock of vegetable medicines. This floral display on St. Paul is very much more extensive and conspicuous than that on St. George, owing to the absence of any noteworthy extent of warm sand-dune country on the latter island.

When an unusually warm summer passes over the Pribylov group, followed by an open fall and a mild winter, the Elymus ripens its seed, and stands like fields of uncut grain, in many places along the north shore of St. Paul and around the village, the snow not falling enough to entirely obliterate it; but it is seldom allowed to flourish to that extent. By the end of August and the first week of September of normal seasons, the small edible berries of *Empetrum nigrum* and *Rubus chamaemorus* are ripe. They are found in considerable quantities, especially at "Zapadnie", on both islands, and, as everywhere else throughout the circumpolar latitudes, the former is small, watery, and dark, about the size of the English or black currant; the other resembles an unripe and partially decayed raspberry. They are, however, keenly relished by the natives, and even by the American residents, being the only fruit growing upon the islands.

AGRICULTURE AND ITS POSSIBILITIES.—A great many attempts have been made, both here and at St. George, to raise a few of the hardy vegetables. With the exception of growing lettuce, turnips, and radishes on the island of St. Paul, nothing has been or can be done. On St. George, on the south shore, and at the foot of a mural bluff, is a little patch of ground of less than one-sixteenth of an acre, that appears to be so drained and so warmed by the rarely-reflected sunlight from this cliff, every ray of which seems to be gathered and radiated from the rocks, as to allow the production of fair turnips; and at one season there were actually raised potatoes as large as walnuts. Gardening, however, on either island involves so much labor and so much care, with so poor a return, that it has been discontinued. It is a great deal better, and a great deal easier, to have the "truck" come up once a year from San Francisco on the steamer.

INSECTS.—There is one comfort which nature has vouchsafed to civilized man on these islands. There are very few indigenous insects. A large flesh-fly, *Bombylius major*, appears during the summer and settles in a striking manner upon the backs of the loafing natives, or strings itself in rows of millions upon the long grass-blades which flourish over the killing grounds, especially on the leaf-stalks of the Elymus, causing this vegetation, on the whole slaughtering-field and vicinity, to fairly droop to earth as if beaten down by a tornado of wind and rain. It makes the landscape look as though it had molded in the night, and the fungoid spores were blue and gray. Our common house-fly is not present; I never saw one while I was up there. The flesh-flies which I have just mentioned never came into the dwellings unless by accident: the natives say they do not annoy them, and I did not notice any disturbance among the few animals which the resident company had imported for beef and for service.

Then, again, this is perhaps the only place in all Alaska where man, primitive and civilized, is not cursed by mosquitoes. There are none here. A gnat, that is disagreeably suggestive of the real enemy just referred to, flits about in large swarms, but it is inoffensive, and seeks shelter in the grass. Several species of beetles are also numerous here. One of them, the famous green and gold "carabus", is exceedingly common, crawling everywhere, and is just as bright in the rich bronzing of its wing-shields as are its famous prototypes of Brazil. One or two species of *Ichneumon*, a *Cymindis*, several representatives of the *Aphidiphaga*, one or two of *Dytiscida*, three or four *Cicindelidæ*—these are nearly all that I found. A single dragon-fly, *Perla bicaudata*, flitted over the lakes and ponds of St. Paul. The, to our eyes, familiar form of the bumble-bee, *Bombus borealis*, passing from flower to flower, was rarely seen; but a few are here resident. The *Hydrocorisa* occur in great abundance, skipping over the water in the lakes and pools everywhere, and a very few species of butterflies, principally the yellow *Nymphalidæ*, are represented by numerous individuals.

LAND MAMMALS.—Aside from the seal-life on the Pribylov islands, there is no indigenous mammalian creature, with the exception of the blue and white foxes, *Vulpes lagopus*, and the lemming, *Myodes obensis*. The latter is

restricted, for some reason or other, to the island of St. George, where it is, or at least was, in 1874, very abundant. Its burrows and paths, under and among the grassy hummocks and mossy flats, checkered every square rod of land there covered with this vegetation. Although the island of St. Paul is but 29 or 30 miles to the northwest, not a single one of these active, curious little animals is found on it, nor could I learn from the natives that it had ever been seen there. The foxes are also restricted to these islands; that is, their kind, which are not found elsewhere, except the stray examples on St. Matthew seen by myself, and those which are carefully domesticated and preserved at Attoo, the extreme westernmost land of the Aleutian chain. These animals find comfortable holes for their accommodation and retreat on the seal-islands, among the countless chinks and crevices of the basaltic formation. They feed and grow fat upon sick and weakly seals, also devouring many of the pups, and they vary this diet by water-fowl and eggs* during the summer, returning for their subsistence during the long winter to the bodies of seals upon the breeding-grounds and the skinned carcasses left upon the killing-fields. Were they not regularly hunted from December until April, when their fur is in its prime beauty and condition, they would swarm like the lemming on St. George, and perhaps would soon be obliged to eat one another. The natives, however, thin them out by incessant trapping and shooting during the period when the seals are away from the islands.

The Pribylov group is as yet free from rats; at least, none have got off from the ships. There is no harbor at either of these islands, and the ships lie out in the roadstead, so far from land that these pests do not venture to swim to the shore. Mice were long ago brought to shore in ships' cargoes, and they are a great nuisance to the white people as well as the natives throughout the islands. Hence cats also are abundant. Nowhere perhaps in the wide world are such cats to be seen as these. The tabby of our acquaintance, when she goes up there and lives upon the seal-meat spread everywhere under her nose, is metamorphosed, by time of the second generation, into a stubby feline ball; in other words, she becomes thickened, short, and loses part of the normal length of her tail; also her voice is prolonged and resonant far beyond the misery which she inflicts upon our ears here. These cats actually swarm about the natives' houses, never in them much, for only a tithe of their whole number can be made pets of; but they do make night hideous beyond all description. They repair for shelter, often, to the chinks of precipices, and bluffs, but, although not exactly wild, yet they cannot be approached or cajoled. The natives, when their sluggish wits are periodically thoroughly aroused and disturbed by the volume of cat-calls in the village, sally out and by a vigorous effort abate the nuisance for the time being. The most extravagant caterwauling alone will or can arouse this Aleutian ire.

STOCK AND POULTRY-RAISING.—On account of the severe climatic conditions it is of course impracticable to keep stock here with any profit or pleasure. The experiment has been tried faithfully. It is found best to bring beef-cattle up in the spring on the steamer, turn them out to pasture until the close of the season, in October and November, and then, if the snow comes, to kill them and keep them refrigerated the rest of the year. Stock cannot be profitably raised here, the proportion of severe weather annually is too great—from three to perhaps six months of every year they require feeding and watering, with good shelter. To furnish an animal with hay and grain up there is a costly matter, and the dampness of the growing summer season on both islands renders hay-making impracticable. Perhaps a few head of hardy Siberian cattle might pick up a living on the north shore of St. Paul, among the grasses and sand-dunes there, with nothing more than shelter and water given them, but they would need both of those attentions. Then the care of them would hardly return expenses, as the entire grazing ground could not support any number of animals. It is less than two square miles in extent, and half of this area is unproductive. Then, too, a struggle for existence would reduce the flesh and vitality of these cattle to so low an ebb, that it is doubtful whether they could be put through another winter alive, especially if severe. I was then, and am now, strongly inclined to think, that if a few of those Siberian reindeer could be brought over to St. Paul and to St. George, they would make a very successful struggle for existence, and be a source of a good supply, summer and winter, of fresh meat for the agents of the government and the company who may be living upon the islands. I do not think that they would be inclined to molest or visit the seal-grounds; at least, I noticed that the cattle and mules of the company running loose on St. Paul, were careful never to poke around on the outskirts of a rookery, and deer would be more timid and less obtrusive than our domesticated animals. But I did notice on St. George that a little squad of sheep, brought up and turned out there for a summer's feeding, seemed to be so attracted by the quiet calls of the pups on the rookeries, that they were drawn to and remained by the seals without disturbing them at all, to their own physical detriment, for they lost better

* The temerity of the fox is wonderful to contemplate, as it goes on a full run or stealthy tread up and down and along the faces of almost inaccessible bluffs, in search of old and young birds and their nests and eggs, for which the "peestches" have a keen relish. The fox always brings the egg up in its mouth, and, carrying it back a few feet from the brink of the precipice, leisurely and with gusto breaks the larger end and sucks the contents from the shell. One of the curious sights of my notice in this connection, was the sly, artful, and insidious advances of Reynard at Tolstoi Mees, St. George, where, conspicuous and elegant in its fluffy white dress, it cunningly stretched on its back as though dead, making no sign of life whatever, save to gently hoist its thick brush now and then; whereupon many dull, curious sea-birds, *Graculus bicristatus*, in their intense desire to know all about it, flew in narrowing circles overhead, lower and lower, closer and closer, until one of them came within the sure reach of a sudden spring and a pair of quick snapping jaws, while the gulls and others, rising safe and high above, screamed out in seeming contempt for the struggles of the unhappy "shag", and rendered hideous approbation.

pasturage by so doing. The natives of St. Paul have a strange passion for seal-fed pork, and there are quite a large number of hogs on the island of St. Paul and a few on St. George. The pigs soon become entirely carnivorous, living, to the practical exclusion of all other diet, on the carcasses of seals.

Chickens are kept with much difficulty, in fact it is only possible to save their lives when the natives take them into their own rooms, or keep them above their heads, in their dwellings, during winter.

BIRD-LIFE.—While the great exhibition of pinnipedia preponderates over every other feature of animal life on the seal-islands, still we find a wonderful aggregate of ornithological representation thereon. The spectacle of birds nesting and breeding, as they do at St. George island, to the number of millions, flocking those high basaltic bluffs of its shore-line, 29 miles in length, with color-patches of black, brown, and white, as they perch or cling to the mural cliffs in the labor of incubation, is a sight of exceeding attraction and constant novelty. It affords the naturalist an opportunity of a life-time for minute investigation into all the details of the reproduction of these vast flocks of circumboreal water-fowl. The island of St. Paul, owing to the low character of its shore-line, a large proportion of which is but slightly elevated above the sea and is sandy, is not visited, and cannot be visited, by such myriads of birds as are seen at St. George; but the small, rocky Walrus islet is fairly covered with sea-fowls, and the Otter island bluffs are crowded by them to their utmost capacity of reception. The birds string themselves anew around the cliffs with every succeeding season, like endless ribbons stretched across their rugged faces, while their numbers are simply countless. The variety is not great, however, in these millions of breeding-birds. It consists of only ten or twelve names; the whole list of avafauna belonging to the Pribylov islands, stragglers and migratory, contains but 40 species. Conspicuous among the last-named class is the robin, a straggler which was brought from the main land, evidently against its own effort, by a storm or a gale of wind, which also brings against their will the solitary hawks, owls, and waders, occasionally noticed here.

After the dead silence of a long ice-bound winter, the arrival of large flocks of those sparrows of the north, the "choochkies," *Phalaris microceros*, is most cheerful and interesting. Those plump little auks are bright, fearless, vivacious birds, with bodies round and fat. They come usually in chattering flocks on or immediately after the 1st of May, and are caught by the people with hand-scoops or dip-nets to any number that may be required for the day's consumption; their tiny, rotund forms making pies of rare, savory virtue, and being also baked and roasted and stewed in every conceivable shape by the Russian cooks—indeed they are equal to the reed-birds of the South. These welcome visitors are succeeded along about the 20th of July by large flocks of fat, red-legged turn-stones, *Streptilas interpres*, which come in suddenly from the west or north, where they have been breeding, and stop on the islands for a month or six weeks, as the case may be, to feed luxuriantly upon the flesh-flies, which we have just noticed, and their eggs. Those handsome birds go in among the seals, familiarly chasing the flies, gnats, etc. They are followed, as they leave in September, by several species of jack-snipe and a plover, *Tringa* and *Charadrius*; these, however, soon depart, as early as the end of October and the beginning of November, and then winter fairly closes in upon the islands; the loud, roaring, incessant seal-din, together with the screams and darkening flight of innumerable water-fowl, are replaced in turn again by absolute silence, marking out as it were in lines of sharp and vivid contrast, summer's life and winter's death.

The author of that quaint old saying, "Birds of a feather flock together," might well have gained his inspiration had he stood under the high bluffs of St. George at any season, prehistoric or present, during the breeding of the water-birds there, where myriads of croaking murrets and flocks of screaming gulls darken the light of day with their fluttering forms, and deafen the ear with their shrill, harsh cries as they do now, for music is denied to all those birds of the sea. Still, in spite of the apparent confusion, he would have taken cognizance of the fact, that each species had its particular location and kept to its own boundary, according to the precision of natural law.

FISHES.—With regard to the herpetology of the islands, I may state that the most careful search on my part was not rewarded by the discovery of a single reptile. In the province of ichthyology I gathered only a few specimens, the scarcity of fish being easily traceable to the presence of the seals on the grounds here. Naturally enough the finny tribes avoid the seal-churned waters for at least one hundred miles around. Among the few specimens, however, which I collected, three or four species new to natural science were found and have since been named by experts in the Smithsonian Institution.

The presence of such great numbers of amphibian mammalia about the waters, during five or six months of every year, renders all fishing abortive, and unless expeditions are made seven or eight miles at least from the land, and you desire to catch large halibut, it is a waste of time to cast your line over the gunwale of the boat. The natives capture "poltoos" or halibut, *Hippoglossus vulgaris*, within two or three miles of the Reef-point on St. Paul and the south shore during July and August. After this season the weather is usually so stormy and cold that the fishermen venture no more until the ensuing summer.

AQUATIC INVERTEBRATES.—With regard to the *Mollusca* of the Pribylov waters, the characteristic forms of *Toxoglossata* and *Heteroglossata* peculiar to this north latitude are most abundant; of the *Cephalopoda* I have seen only a species of squid, *Sepia loligo*. The clustering whelks, *Buccinoid*, literally conceal large areas of the boulders on the beaches here and there; they are in immense numbers, and are crushed under your foot at almost

every step when you pass over long reaches of rocky shingle at low tide. A few of the larger *Fusus* are found, and the live and dead shells of *Limacina* are in great abundance wherever the floating kelp-beds afford them shelter.

On land a very large number of shells of the genera *Succinea* and *Pupa* abound all over the islands; on the bluffs of St. George just over Garden cove I gathered a beautiful *Helix*.

The little fresh-water lakes and ponds contain a great quantity of representatives of the characteristic genera *Planorbis*, *Melania*, *Limnea*, and that pretty little bivalve, the *Cyclas*.

Of the *Crustacea*, the *Annelida*, and *Echinodermata*, there is abundant representation here. The sea-urchins, "replik" of the natives, are eagerly sought for at low tide and eaten raw by them. The Arctic sea-clam, *Mya truncata*, is once in a long time found here (it is the chief food of the walrus of Alaska), and the species of *Mytilus*, the mussels, so abundant in the Aleutian archipelago, are almost absent here at St. Paul, and only sparingly found at St. George.

The waters fairly swarm with an enormous number and variety of *Medusa* or jelly-fishes.

The sea-weeds are exceedingly varied and abundant here, great heaps of their assorted fronds are tossed up by every gale to rot upon the beaches.

DIMENSIONS AND CONTOUR OF THE ISLANDS.—Until my arrival on the seal-islands in April, 1872, no steps had ever been taken by any man whomsoever toward ascertaining the extent and the real importance of these interests of the government; the Russians never having made even an approximate survey of the land, while our own people did no better. I was very much surprised, immediately after landing, and calling for a map of the island of St. Paul, to have an odd sketch, traced from an old Russian chart, placed before me, that my eye stamped instantly as grotesque, by the land-bearings which I took out of my window on the spot. It was a matter of no special concern, however, to the Russians; had it been, doubtless they would have accurately surveyed the whole field. But it was and is quite different with us; and, that no agent of the Treasury Department, or other branches of the government, had, up to the date of my arrival, given it the slightest thought or attention, struck me as rather strange. It was, as it is, and ever will be, a matter of first importance to a correct and succinct understanding of the subject, and it was the first thing about which I busied myself. I present, therefore, with this memoir, a careful chart of each island and the contiguous islets, which are the first surveys ever made upon the ground having the slightest pretension to accuracy.* The reader will observe, as he turns to these maps, the striking dissimilarity which exists between them, not only in contour but in physical structure, the island of St. Paul being the largest in superficial area, and receiving a vast majority of the *Pinnipedia* that belong to both. As it lies in Bering sea to-day, this island is in its greatest length, between northeast and southwest points, 13 miles, air line; and a little less than 6 at points of greatest width. It has a superficial area of about 33 square miles, or 21,120 acres, of diversified, rough, and rocky uplands, rugged hills, and smooth, volcanic cones, which either set down boldly to the sea or fade out into extensive wet and mossy flats, passing at the sea-margins into dry, drifting, sand-dune tracts. It has 42 miles of shore-line, and of this coast, 16½ miles are hauled over by fur-seals *en masse*. At the time of its first upheaval above the sea, it doubtless presented the appearance of ten or twelve small rocky, bluffly islets and points, upon some of which were craters that vomited breccia and cinders, with little or no lava overflowing. Active plutonic agency must have soon ceased after this elevation, and then the sea around about commenced the work which it is now engaged in: of building on to the skeleton thus created; and it has progressed to-day so thoroughly and successfully in its labor of sand-shifting, together with the aid of ice-floes, in their action of grinding, lifting, and shoving, that nearly all of these scattered islets within the present area of the island, and marked by its bluffs and higher uplands, are completely bound together by ropes of sand, changed into enduring bars and ridges of water-worn bowlders. These are raised above the highest tides by winds that whirl the sand up, over, and on them, as it drives out from the wash of the surf and from the interstices of the rocks, lifted up and pushed by ice-fields.

LAND AND SCENERY.—The sand which plays so important a part in the formation of the island of St. Paul, and which is almost entirely wanting in and around the others in this Pribylov group, is principally composed of *Foraminifera*, together with *Diatomacea*, mixed in with a volcanic base of fine comminuted black and reddish lavas and old friable gray slates. It constitutes the chief beauty of the sea-shore here, for it changes color like a chameleon, as it passes from wet to dry, being a rich steely-black at the surf-margin and then drying out to a soft purplish-brown and gray, succeeding to tints most delicate of reddish and pale neutral, when warmed by the sun and drifting up on to the higher ground with the wind. The sand-dune tracts on this island are really attractive in the summer, especially so during those rare days when the sun comes forth—the unwonted light shimmers over them and the most luxuriant grass and variety of beautiful flowers, which exist in profusion thereon. In past time, as these sand and bowlder bars were forming on St. Paul island, they, in making across from islet to islet, inclosed small bodies of sea-water. These have, by evaporation and time, by the flooding of rains and annual melting of snow, become, nearly every one of them, fresh; they are all, great and small, well shown on my map, which locates quite a large area of pure water. In them, as I have hinted, are no reptiles; but an exquisite species of tiny viviparous fish

* These surveys have since been confirmed and elaborated by H. W. McIntyre, of the A. C. Co., and Lieut. Washburn Maynard, U. S. N.

exists in the lagoon-estuary near the village, and the small pure-water lakes of the natives just under the flanks of Telegraph hill. The Aleuts assured me that they had caught fish in the great lake toward Northeast point, when they lived in their old village out there, but I never succeeded in getting a single specimen. The waters of these pools and ponds are fairly alive with vast numbers of minute *Rotifera*, which sport about in all of them whenever they are examined. Many species of water-plants, pond-lilies, algæ, etc., are found in the inland waters, especially in the large lake "Mee-sulk-mah-nee", that is very shallow.

The backbone of the island, running directly east and west, from shore to shore, between Polavina point and Einahnukto hills, constitutes the high land of the island: Polavina Sopka, an old extinct cinder-crater, 550 feet; Boga Slov, an upheaved mass of splinted lava, 600 feet; and the hills frowning over the bluffs there, on the west shore, are also 600 feet in elevation above the sea. But the average height of the upland between is not much over 100 to 150 feet above water-level, rising here and there into little hills and broad, rocky ridges, which are minutely sketched upon the map. From the northern base of Polavina Sopka a long stretch of low sand-flats extend, inclosing the great lake, and ending in a narrow neck where it unites with Novastoshnah, or Northeast point. Here the volcanic nodule known as Hutchinson's hill, with its low, gradual slopes, trending to the east and southward, makes a rocky foundation secure and broad, upon which the great single rookery of the island, the greatest in the world, undoubtedly, is located. The natives say that when they first came to these islands, Novastoshnah was an island by itself, to which they went in boats from Vesolia Mista; and the lagoon now so tightly inclosed was then an open harbor, in which the ships of the old Russian company rode safely at anchor. To-day no vessel drawing ten feet of water can get nearer than half a mile of the village, or a mile from this lagoon.

LACK OF HARBORS: ANCHORAGES.—The total absence of a harbor at the Pribylov islands is much to be regretted. The village of St. Paul, as will be seen by reference to the map, is so located as to command the best landings for vessels that can be made during the prevalence of any and all winds, except those from the south. From these there is no shelter for ships, unless they run around to the north side, where they are unable to hold practicable communication with the people or to discharge. At St. George matters are still worse, for the prevailing northerly, westerly, and easterly winds drive the boats away from the village roadstead, and weeks often pass at either island, but more frequently at the latter, ere a cargo is landed at its destination. Under the very best circumstances, it is both hazardous and trying to load and unload ship at any of these places. The approach to St. Paul by water during thick weather, is doubtful and dangerous, for the land is mostly low at the coast, and the fogs hang so dense and heavy over and around the hills as to completely obliterate their presence from vision. The captain fairly feels his way in, by throwing his lead-line and straining his ear to catch the muffled roar of the seal-rookeries, which are easily detected when once understood, high above the booming of the surf. At St. George, however, the bold, abrupt, bluff coast everywhere all around, with its circling girdle of flying water-birds far out to sea, looms up quite prominently, even in the fog; or, in other words, the navigator can notice it before he is hard aground or struggling to haul to windward from the breakers under his lee. There are no reefs making out from St. George worthy of notice, but there are several very dangerous and extended ones peculiar to St. Paul, which Captain John G. Baker, in command of the vessel* under my direction, carefully sounded out, and which I have placed upon my chart for the guidance of those who may sail in my wake hereafter.

When the wind blows from the north, northwest, and west to southwest, the company's steamer trips her anchor in eight fathoms of water abreast of the Black Bluffs opposite the village, from which anchorage her stores are lightered ashore; but in the northeasterly, easterly, and southeasterly winds, she hauls around to the Lagoon bay west of the village, and there, little less than half a mile from the landing, she drops her anchor in nine fathoms of water, and makes considerable headway at discharging the cargo. Sailing craft come to both anchorages, but, however, keep still farther out, though they choose relatively the same positions, but seek deeper water to swing to their cables in: the holding-ground is excellent. At St. George the steamer comes, wind permitting, directly to the village on the north shore, close in, and finds her anchorage in ten fathoms of water, in poor holding-ground; but it is only when three or four days have passed free from northerly, westerly, or easterly winds, that she can make the first attempt to safely unload. The landing here is a very bad one, surf breaking most violently upon the rocks from one end of the year to the other.

OTTER ISLAND.—The observer will notice that six miles southward and westward of the reef of St. Paul island, is a bluff islet, called by the Russians Otter island, because in olden time the Promyshleniks are said to have captured many thousands of sea-otters on its stony coast. It rises from the ocean, sheer and bold, an unbroken mural precipice extending nearly all around, of sea-front, but dropping on its northern margin, at the water, low, and slightly elevated above the surf-wash, with a broken, rocky beach and no sand. The height of the cliffs, at their greatest elevation over the west end, is 300 feet, while the eastern extremity is quite low, and terminated by a queer, funnel-shaped crater-hill, which is as distinctly defined, and as plainly scorched, and devoid of the slightest sign of vegetation within, as though it had burned up and out yesterday. This crater-point on Otter island is the only unique feature of the place, for with the exception of that low north shore, before mentioned, where many thousand of "bachelor seals" haul out during the season every year, there is nothing else worthy of notice concerning it. A

* United States revenue-marine cutter *Reliance*, June to October, 1874.

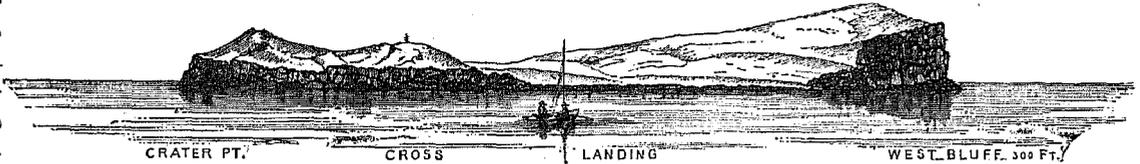
bad reef makes out to the westward and northward, which I have indicated from my observation of the rocks awash, looking down upon them from the bluffs. Great numbers of water-fowl roost upon the cliffs, and there are here about as many blue foxes to the acre as the law of life allows. A small, shallow pool of impure water lies close down to the north shore, right under a low hill, upon which the Russians in olden time posted a huge Greek cross, that is still standing; indeed, it was their habit to erect crosses on all the hills in those olden times; one of them is standing at Northeast point, on the large sand-dune which I have called St. John or Cross hill; and another one, a sound, stalwart stick, yet faces the gale and driving "boorgas" to-day on Boga Slo, as it has faced them for the last sixty years.



EAST SHORE.

[Bearing west by compass, 3 miles distant.]

Otter island has, since my return in 1872, had considerable attention in the Treasury Department, owing to the fact that certain parties



PROFILE OF THE NORTH SHORE OF OTTER ISLAND (from steamer's anchorage, Zoltoi bay, St. Paul).

[Bearing south by compass, 6 miles distant.]

contended that it lies without the jurisdiction of the law which covers and protects the seal-life on the Pribylov islands. This survey of mine, however, settles that question: the island is within the pale of law. It is a rock adjacent to and in the waters of St. Paul, and resorted to only by those seals which are born upon and belong to the breeding-grounds of St. Paul and St. George, and I have never seen at any one time more than three or four thousand "holluschickie" hauled out here.

WALRUS ISLAND.—To the eastward, six miles from Northeast point, will be noticed a small rock named Walrus island. It is a mere ledge of lava, flat-capped, lifted just above the wash of angry waves; indeed, in storms of great power, the observer, standing on either Cross or Hutchinson's hills, with a field-glass, can see the water breaking clear over it. These storms, however, occur late in the season, usually in October or November. This island has little or no commercial importance, being scarcely more than a quarter of a mile in length and 100 yards in point of greatest width, with bold water all around, entirely free from reefs or sunken rocks. As might be expected, there is no fresh water on it. In a fog it makes an ugly neighbor for the sea-captains when they are searching for St. Paul; they all know it, and they all dread it. It is not resorted to by the fur-seals or by sea-lions in particular; but, singularly enough, it is frequented by several hundred male walrus, to the exclusion of females, every summer. A few sea-lions, but only a very few, however, breed here. On account of the rough weather, fogs, etc., this little islet is seldom visited by the natives of St. Paul, and then only in the eggng season of late June and early July; then that surf-beaten rock literally swarms with breeding water-fowl.

This low, tiny, rocky islet is, perhaps, the most interesting single spot now known to the naturalist, who may land in northern seas, to study the habits of bird-life; for here, without exertion or risk, he can observe and walk among tens upon tens of thousands of screaming water-fowl, and as he sits down upon the polished lava rock, he becomes literally ignored and environed by these feathered friends, as they reassume their varied positions of incubation, which he disturbs them from by his arrival. Generation after generation of their kind have resorted to this rock unmolested, and to-day, when you get among them, all doubt and distrust seems to have been eliminated from their natures. The island itself is rather unusual in those formations which we find peculiar to Alaskan waters. It is almost flat, with slight, irregular undulations on top, spreading over an area of five acres, perhaps. It rises abruptly, though low, from the sea, and it has no safe beach upon which a person can land from a boat; not a stick of timber or twig of shrubbery ever grew upon it, though the scant presence of low, crawling grasses in the central portions prevents the statement that *all* vegetation is absent. Were it not for the frequent rains and dissolving fog, characteristic of summer weather here, the guano accumulation would be something wonderful to contemplate—Peru would have a rival. As it is, however, the birds, when they return, year after year, find their nesting-floor swept as clean as though they had never sojourned there before. The scene of confusion and uproar that presented itself to my astonished senses when I approached this place in search of eggs, one threatening, foggy July morning, may be better imagined than described, for as the clumsy bidarra came under the lee of the low cliffs, swarm upon swarm of thousands of murrets or "aries" dropped in fright from their nesting-shelves, and before they had control of their flight, they struck to the right and left of me, like so many cannon balls. I was forced, in self-protection, to instantly crouch for a few moments under the gunwale of the boat until the struggling, startled flock passed, like an irresistible, surging wave, over my head. Words cannot depict the amazement and curiosity with which I gazed around, after climbing up to the rocky plateau and standing among myriads of breeding-birds, that fairly covered the entire surface of the island with their shrinking forms, while others whirled in rapid flight over my head, as wheels within wheels, so thickly inter-running that the blue and gray of the sky

was hidden from my view. Add to this impression the stunning whirl of hundreds of thousands of strong, beating wings, the shrill screams of the gulls, and the muffled croaking of the "aries", coupled with an indescribable, disagreeable smell which arose from the broken eggs and other decaying substances, and a faint idea may be evoked of the strange reality spread before me. Were it not for this island and the ease with which the natives can gather, in a few hours, tons upon tons of sea-fowl eggs, the people of the village would be obliged to go to the westward, and suspend themselves from the lofty cliffs of Einahnuhto, dangling over the sea by ropes, as their neighbors are only too glad and willing to do at St. George.

ST. PAUL.—A glance at the map of St. Paul, shows that nearly half of its superficial area is low and quite flat, not much elevated above the sea. Wherever the sand-dune tracts are located, and that is right along the coast, is found an irregular succession of hummocks and hillocks, drifted by the wind, which are very characteristic. On the summits of these hillocks the *Elymus* has taken root in times past, and, as the sand drifts up, it keeps growing on and up, so that the quaint spectacle is presented of large stretches to the view, wherein sand-dunes, entirely bare of all vegetation at their base and on their sides, are crowned with a living cap of the brightest green—a tuft of long, waving grass blades which will not down. None of this peculiar landscaping, however, is seen on St. George, not even in the faintest degree. Travel about St. Paul, with the exception of the road to Northeast point, where the natives take advantage of low water to run on the hard, wet sand, is exceedingly difficult, and there are examples of only a few white men who have ever taken the trouble and expended the physical energy necessary to accomplish the comparatively short walk from the village to Nahsayvernia, or the north shore. Walking over the moss-hidden and slippery rocks, or tumbling over slightly uncertain tussocks, is a task and not a pleasure. On St. George, with the exception of a half-mile path to the village cemetery and back, nobody pretends to walk, except the natives who go to and from the rookeries in their regular seal-drives. Indeed, I am told that I am the only white man who has ever traversed the entire coast-line of both islands. (See note, 39, E.)

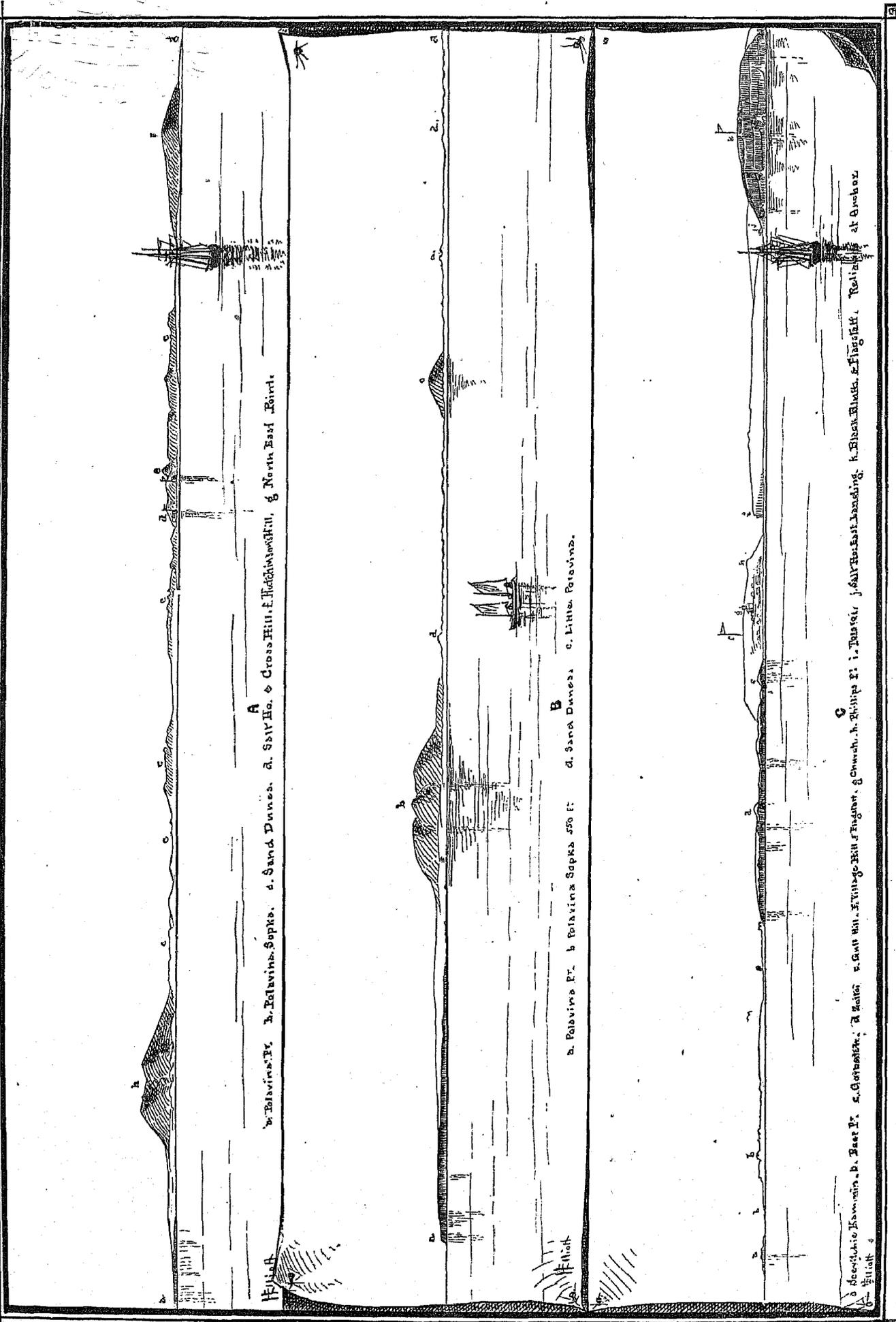
ST. GEORGE.—Turning to St. George and its profile, presented by the accompanying map, the observer will be struck at once by the solidity of that little island and its great boldness, rising, as it does, sheer and precipitous from the sea all around, except at the three short reaches of the coast indicated on the chart, and where the only chance to come ashore exists.

The seals naturally have no such opportunity to gain a footing here as they have on St. Paul, hence their comparative insignificance as to number. The island itself is a trifle over ten miles in extreme length, east and west, and about four and a quarter miles in greatest width, north and south. It looks, when plotted, somewhat like an old stone ax; and, indeed, when I had finished my first contours from my field-notes, the ancient stone-ax outline so disturbed me that I felt obliged to resurvey the southern shore, in order that I might satisfy my own mind as to the accuracy of my first work. It consists of two great plateaus, with a high upland valley between, the western table-land dropping abruptly to the sea at Dalnoi Mees, while the eastern falls as precipitately at Waterfall Head and Tolstoi Mees. There are several little reservoirs of fresh water—I can scarcely call them lakes—on this island; pools, rather, that the wet sphagnum seems to always keep full, and from which drinking-water in abundance is everywhere found. At Garden cove a small stream, the only one on the Pribylov group, empties into the sea.

St. George has an area of about 27 square miles; it has 29 miles of coast-line, of which only two and a quarter are visited by the fur-seals, and which is in fact all the eligible landing-ground afforded them by the structure of the island. Nearly half of the shore of St. Paul is a sandy beach, while on St. George there is less than a mile of it all put together, namely, a few hundred yards in front of the village, the same extent on the Garden cove beach southeast side, and less than half a mile at Zapadnie on the south side.

Just above the Garden cove, under the overhanging bluffs, several thousand sea-lions hold exclusive, though shy, possession. Here there is a half mile of good landing. On the north shore of the island, three miles west from the village, a grand bluff wall, of basalt and tufa intercalated, rises abruptly from the sea to a sheer height of 920 feet at its reach of greatest elevation, thence, dropping a little, runs clear around the island to Zapadnie, a distance of nearly 10 miles, without affording a single passage-way up or down to the sea that thunders at its base. Upon its innumerable narrow shelf-margins, and in its countless chinks and crannies, and back therefrom over the extended area of lava-shingled inland ridges and terraces, millions upon millions of water-fowl breed during the summer months.

The general altitude of St. George, though in itself not great, has, however, an average three times higher than that of St. Paul, the elevation of which is quite low, and slopes gently down to the sea east and north; St. George rises abruptly, with exceptional spots for landing. The loftiest summit on St. George, the top of the hill right back to the southward of the village, is 930 feet, and is called by the natives Ahluckeyak. That on St. Paul, as I have before said, is Boga Slov hill, 600 feet. All elevations on either island, 15 or 20 feet above sea-level, are rough and hummocky, with the exception of the sand-dune tracts at St. Paul and the summits of the cinder hills, on both islands. Weathered out or washed from the basalt and pockets of olivine on either island are aggregates of augite, seen most abundant on the summit slopes of Ahluckeyak hill, St. George. Specimens from the stratified bands of old, friable, gray lavas, so conspicuous on the shore of this latter island, show the existence of hornblende and vitreous feldspar in considerable quantity, while on the south shore, near the Garden cove, is a large dike of a bluish and greenish gray phonolith, in which numerous small crystals of spinel are found. A dike, with well-defined



PROFILES OF THE EAST COAST OF ST. PAUL ISLAND.

- A. Northeast shore of St. Paul Island, from a point at sea, about 8 miles distant to eastward, magnetic.
- B. Polovina Sopka and Point, from a seaward view, 3 miles distant; the mountain bearing west, magnetic.
- C. Village and East Landing, from the usual anchorage there; 1 mile distant.

walls of old, close-grained, clay-colored lava, is near the village of St. George, about a quarter of a mile east from the landing, in the face of those reddish breccia bluffs that rise from the sea. It is the only example of the kind on the islands. The bases or foundations of the Pribylov islands are, all of them, basaltic; some are compact and grayish-white, but most of them exceedingly porous and ferruginous. Upon this solid floor are many hills of brown and red tufa, cinder-heaps, etc. Polavina Sopka, the second point in elevation on St. Paul island, is almost entirely built up of red scoria and breccia; so is Ahluckeyak hill, on St. George, and the cap to the high bluffs opposite. The village hill at St. Paul, Cone hill, the Einahnukto peaks, Crater hill, North hill, and Little Polavina are all ash-heaps of this character. The bluffs at the shore of Polavina point, St. Paul, show in a striking manner a section of the geological structure of the island. The tufas on both islands, at the surface, decompose and weather into the base of good soil, which the severe climate, however, renders useless to the husbandman. There is not a trace of a granitic or a gneissic rock found *in situ*. Metamorphic boulders have been collected along the beaches and pushed up by the ice-floes which have brought them down from the Siberian coast away to the northwest. The dark-brown tufa bluffs and the breccia walls at the east landing of St. Paul island, known as "Black bluffs", rise suddenly from the sea 60 to 80 feet, with stratified horizontal lines of light-gray calcareous conglomerate, or cement, in which are imbedded sundry fossils characteristic of and belonging to the Tertiary age, such as *Cardium groenlandicum*, *O. decoratum*, and *Astarte pectunculata*, etc. This is the only locality within the purview of the Pribylov islands where any paleontological evidence of their age can be found. These specimens, as indicated, are exceedingly abundant; I brought down a whole series, gathered there at the east landing or "Navastock", in a short half-hour's search and labor.

WHY THESE ISLANDS ARE FREQUENTED BY FUR-SEALS.—The fact that the fur-seals frequent these islands and those of Bering and Copper, on the Russian side, to the exclusion of other land, seems at first a little singular, to say the least; but when we come to examine the subject we find that these animals, when they repair hither to rest for two or three months on the land, as they must do by their habit during the breeding-season, they require a cool, moist atmosphere, imperatively coupled with firm, well-drained land, or dry, broken rocks, or shingle rather, upon which to take their positions and remain undisturbed by the weather and the sea for the lengthy period of reproduction. If the rookery-ground is hard and flat, with an admixture of loam or soil, puddles are speedily formed in this climate, where it rains almost every day, and when not raining, rain-fogs take quick succession and continue the saturation, making thus a muddy slime, which very quickly takes the hair off the animals whenever it plasters or wherever it fastens on them; hence, they carefully avoid any such landing. If they occupy a sandy shore the rain beats that material into their large, sensitive eyes, and into their fur, so they are obliged, from simple irritation, to leave and hunt the sea for relief.

The seal-islands now under discussion offer to the *Pinnipedia* very remarkable advantages for landing, especially St. Paul, where the ground of basaltic rock and of volcanic tufa or cement slopes up from so many points gradually above the sea, making thereby a perfectly adapted resting-place for any number, from a thousand to millions, of those intelligent animals, which can lie out here from May until October every year in perfect physical peace and security. There is not a rod of ground of this character offered to these animals elsewhere in all Alaska, not on the Aleutian chain, not on the mainland, not on St. Matthew or St. Lawrence. Both of the latter islands were surveyed by myself, with special reference to this query, in 1874; every foot of St. Matthew shore-line was examined, and I know that the fur-seal could not rest on the low clayey lava flats there in contentment a single day; hence he never has rested there, nor will he in the future. As to St. Lawrence, it is so ice-bound and snow-covered in spring and early summer, to say nothing of numerous other physical disadvantages, that it never becomes of the slightest interest to the seals.

D. THE OCCUPANTS OF THE ISLANDS.

5. THE NATIVES OF THE ISLANDS.

COLONIZATION BY RUSSIANS AND ALEUTS: EARLY HISTORY.—When Pribylov, in taking possession, landed on St. George a part of his little ship's crew, July, 1786, he knew that, as it was uninhabited, it would be necessary to create a colony there, from which to draft laborers to do the killing, skinning, and curing of the peltries; therefore he and his associates, and his rivals after him, imported natives of Oonalashka and Atkha—passive, docile Aleuts. They founded their first village a quarter of a mile to the eastward of one of the principal rookeries on St. George, now called "Starry Ateel", or "Old settlement"; a village was also located at Zapadnie, and a succession of barrabaras planted at Garden cove. Then, during the following season, more men were brought up from Atkha and taken over to St. Paul, where five or six rival traders posted themselves on the north shore, near and at "Maroonitch", and at the head of the Big lake, among the sand-dunes there. They were then as they are now, somewhat given to riotous living, if they only had the chance, and the ruins of the Big lake settlement are pleasantly remembered by the descendants of those pioneers to-day, on St. Paul, who take off their hats as they pass by, to

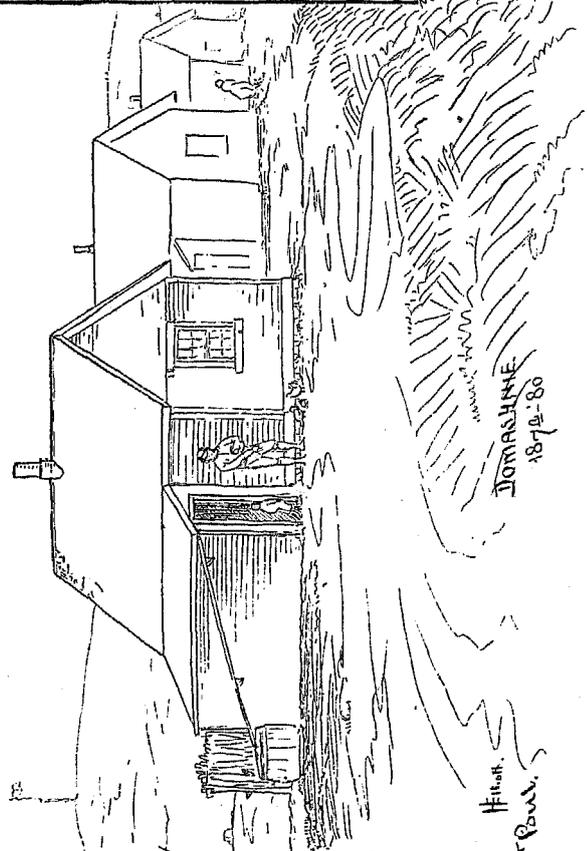
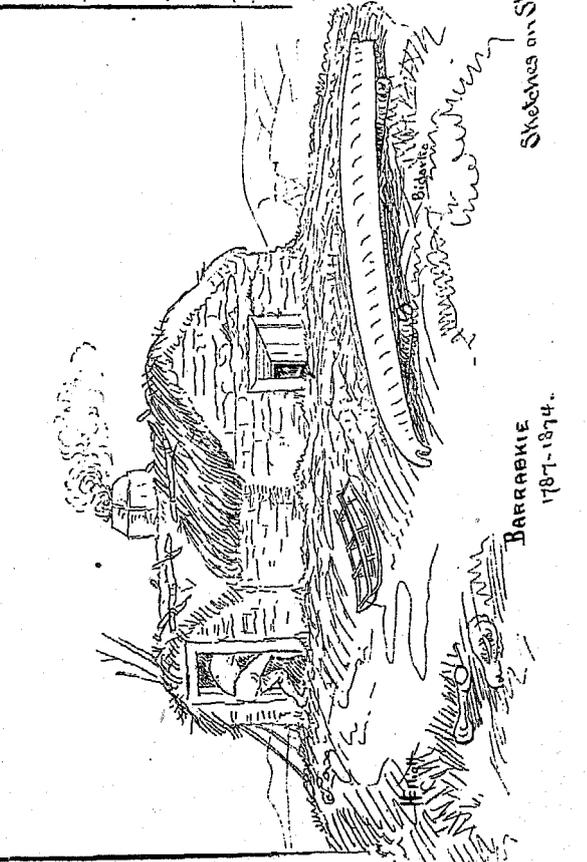
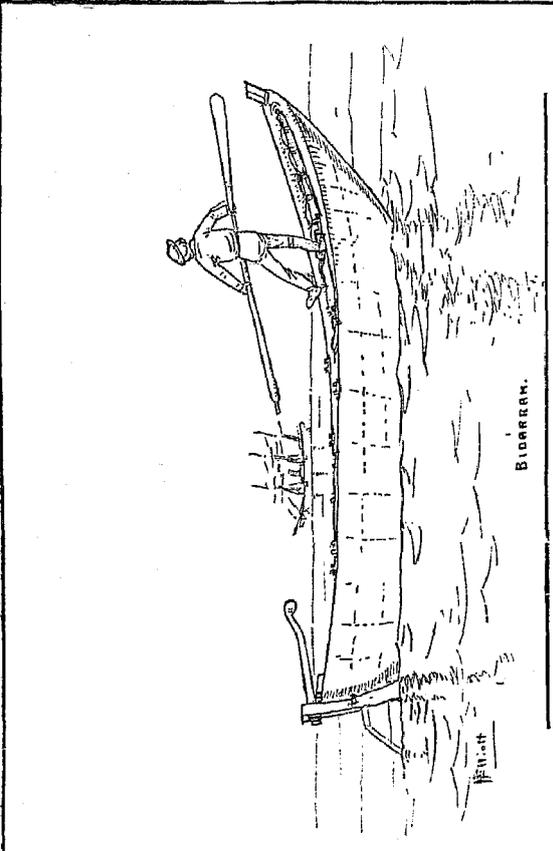
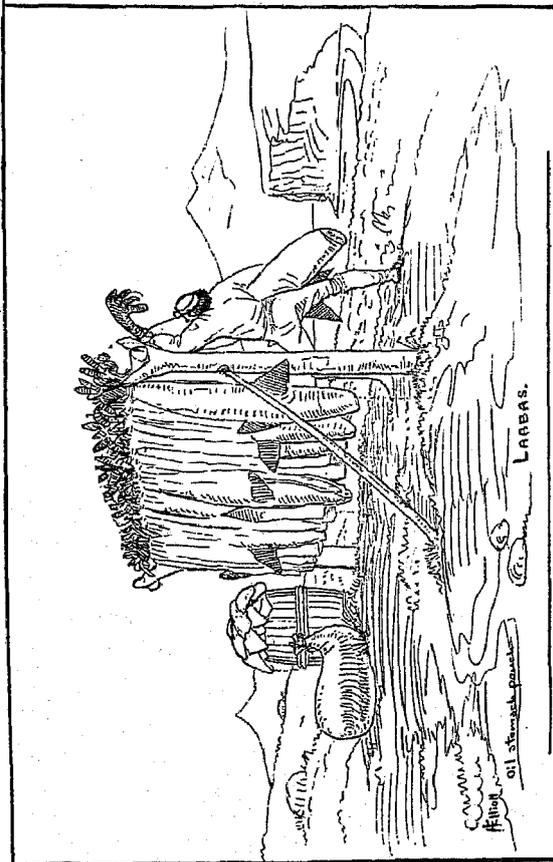
affectionately salute, and call the place "Vesolia Mista", or "Jolly Spot"; the old men telling me, in a low whisper, that "in those good old days they had plenty of rum". But, when the pressure of competition became great, another village was located at Polavina, and still another at Zapadnie, until the activity and unscrupulous energy of all these rival settlements well-nigh drove out and eliminated the seals in 1796. Three years later the whole territory of Alaska passed into the hands of the absolute power vested in the Russian-American Company. These islands were in the bill of sale, and early in 1799 the competing traders were turned off neck and heels from them, and the Pribylov group passed under the control of a single man, the iron-willed Baranov. The people on St. Paul were then all drawn together, for economy and warmth, into a single settlement at Polavina. Their life in those days must have been miserable. They were mere slaves, without the slightest redress from any insolence or injury which their masters might see fit, in petulance or brutal orgies, to inflict upon them. Here they lived and died, unnoticed and uncared for, in large barracoons half under ground and dirt roofed, cold, and filthy. Along toward the beginning or end of 1825, in order that they might reap the advantage of being located best to load and unload ships, the Polavina settlement was removed to the present village site, as indicated on the map, and the natives have lived there ever since.

On St. George the several scattered villages were abandoned, and consolidated at the existing location some years later, but for a different reason. The labor of bringing the seal-skins over to Garden cove, which is the best and surest landing, was so great, and that of carrying them from the north shore to Zapadnie still greater, that it was decided to place the consolidated settlement at such a point between them, on the north shore, that the least trouble and exertion of conveyance would be necessary. A better place, geographically, for the business of gathering the skins and salting them down at St. George cannot be found on the island, but a poorer place for a landing it is difficult to pick out, though in this respect there is not much choice outside of Garden cove.

CONTRAST IN THE CONDITION OF THE INHABITANTS UNDER RUSSIAN AND AMERICAN RULE.—Up to the time of the transfer of the territory and leasing of the islands to the Alaska Commercial Company, in August, 1870, these native inhabitants all lived in huts or sod-walled and dirt-roofed houses, called "barrabkies," partly under ground. Most of these huts were damp, dark, and exceedingly filthy: it seemed to be the policy of the short-sighted Russian management to keep them so, and to treat the natives not near so well as they treated the few hogs and dogs which they brought up there for food and for company. The use of seal-fat for fuel, caused the deposit upon everything within doors of a thick coat of greasy, black soot, strongly impregnated with a damp, moldy, and indescribably offensive odor. They found along the north shore of St. Paul and at Northeast point, occasional scattered pieces of drift-wood, which they used, carefully soaked anew in water if it had dried out, split into little fragments, and, trussing the blubber with it when making their fires, the combination gave rise to a roaring, spluttering blaze. If this drift-wood failed them at any time when winter came round, they were obliged to huddle together beneath skins in their cold huts, and live or die, as the case might be. But the situation to-day has changed marvelously. We see here now at St. Paul, and on St. George, in the place of the squalid, filthy habitations of the immediate past, two villages neat, warm, and contented. Each family lives in a snug frame-dwelling; every house is lined with tarred paper, painted, furnished with a stove, with out-houses, etc., complete; streets laid out, and the foundations of these habitations regularly plotted thereon. There is a large church at St. Paul, and a less pretentious but very creditable structure of the same character, on St. George; a hospital on St. Paul, with a full and complete stock of drugs, and skilled physicians on both islands to take care of the people, free of cost. There is a school-house on each island, in which teachers are also paid by the company eight months in the year, to instruct the youth, while the Russian Church is sustained entirely by the pious contributions of the natives themselves on these two islands, and sustained well by each other. There are 80 families, or 80 houses, on St. Paul, in the village, with 20 or 24 such houses to as many families at St. George, and 8 other structures. The large ware-houses and salt-sheds of the Alaska Commercial Company, built by skillful mechanics, as have been the dwellings just referred to, are also neatly painted; and, taken in combination with the other features, constitute a picture fully equal to the average presentation of any one of our small eastern towns. There is no misery, no downcast, dejected, suffering humanity here to-day. These Aleuts, who enjoy as the price of their good behaviour, the sole right to take and skin seals for the company, to the exclusion of all other people, are known to and by their less fortunate neighbors elsewhere in Alaska as the "Bogatskie Aloutov", or the "rich Aleuts". The example of the agents of the Alaska Commercial Company, on both islands, from the beginning of its lease, and the course of the treasury agents* during the last four or five years, have been silent but powerful promoters of the welfare of these people. They have maintained perfect order: they have directed neatness, and cleanliness, and stimulated industry, such as those natives had never before dreamed of.

NUMBER AND CONDITION OF THE ISLANDERS IN 1880.—The population of St. Paul is, at the present writing, 298. Of these, 14 are whites (13 males and 1 female), 128 male Aleutians, and 156 females. On St. George we have 92 souls: 4 white males, 35 male Aleutians, and 53 females, a total population on these islands of 390. This is an increase of between 30 and 40 people since 1873. Prior to 1873, they had neither much increased nor diminished for 50 years, but would have fallen off rapidly (for the births were never equal to the deaths) had not

*Messrs. Morton, Falconer, Otis, Moulton, Scribner, and Beaman.



SEAL-MEAT FRAME, LIGHTER, HUT, AND HOUSES AT ST. PAUL ISLAND.

recruits been regularly drawn from the mainland and other islands every season when the ships came up. As they lived then, it was a physical impossibility for them to increase and multiply; but, since their elevation and their sanitary advancement are so marked, it may be reasonably expected that those people for all time to come will at least hold their own, even though they do not increase to any remarkable degree. Perhaps it is better that they should not. But it is exceedingly fortunate that they do sustain themselves so as to be, as it were, a prosperous corporate factor, entitled to the exclusive privilege of labor on these islands. As an encouragement for their good behavior the Alaska Commercial Company, in pursuance of its enlightened treatment of the whole subject, so handsomely exhibited by its housing of these people, has assured them that so long as they are capable and willing to perform the labor of skinning the seal-catch every year, so long will they enjoy the sole privilege of participating in that toil and its reward. This is wise on the part of the company, and it is exceedingly happy for the people. They are, of all men, especially fitted for the work connected with the seal-business—no comment is needed—nothing better in the way of manual labor, skilled and rapid, could be rendered by any body of men, equal in numbers, living under the same circumstances, all the year round. They appear to shake off the periodic lethargy of winter and its forced inanition, to rush with the coming of summer into the severe exercise and duty of capturing, killing, and skinning the seals, with vigor and with persistent and commendable energy.

To-day only a very small proportion of the population are descendants of the pioneers who were brought here by the several Russian companies, in 1787 and 1788; a colony of 137 souls, it is claimed, principally recruited at Oonalashka and Atkha. I have placed in the appendix, together with other scattered notes, a list of these people who were living on St. Paul island in August, 1873; also showing at the same time those who were living there in 1870. It is a simple record, perhaps of no interest to anybody except those who are intimately associated with the islands. (See note, 39, F.)

ORIGIN AND TRAITS OF THE ALEUTS.—The question as to the derivation of these natives is still a mooted one among ethnologists, for in all points of personal bearing, intelligence, character, as well as physical structure, they seem to form a perfect link of gradation between the Japanese and Eskimos, although their traditions and their language are entirely distinct and peculiar to themselves; not one word or numeral of their nomenclature resembles the dialect of either. They claim, however, to have come first to the Aleutian islands from a "big land to the westward", and that when they came there first they found the land uninhabited, and that they did not meet with any people, until their ancestors had pushed on to the eastward as far as the peninsula and Kadiak. Confirmatory of this legend, or rather highly suggestive of it, is the fact that repeated instances have occurred within our day where Japanese junks have been, in the stress of hurricanes and typhoons, dismantled, and have drifted clear over and on to the reefs and coasts of the Aleutian islands. Only a short time ago, in the summer of 1871, such a craft was so stranded, helpless and at the mercy of the sea, upon the rocky coast of Adak island, in this chain; the few surviving sailors, Japanese, five in number, were, I remember, rescued by a party of Aleutian sea-otter hunters, who took care of them until the vessel of a trader carried them back, by way of Oonalashka, to San Francisco, and from thence they returned to their native land.

The Aleuts on the islands, as they appear to-day, have been so mixed up with Russian, Koloshian, and Kamschadale blood, that they present characteristics, in one way or another, of all the various races of men, from the negro up to the Caucasian. The predominant features among them are small, wide-set eyes, broad and high cheek-bones, causing the jaw, which is full and square, to often appear peaked; coarse, straight, black hair, small, neatly-shaped feet and hands, together with brownish-yellow complexion. The men will average in stature five feet four or five inches; the women less in proportion, although there are exceptions to this rule among them, some being over six feet in height, and others are decided dwarfs. The manners and customs of these people to-day possess nothing in themselves of a barbarous or remarkable character, aside from that which belongs to an advanced state of semi-civilization. They are exceedingly polite and civil, not only in their business with the agents of the company on the seal-islands, but among themselves; and they visit, the one with the other, freely and pleasantly, the women being great gossips. But, on the whole, their intercourse is subdued, for the simple reason that the topics of conversation are few, and, judging from their silent but unconstrained meetings, they seem to have a mutual knowledge, as if by sympathy, as to what may be occupying each other's minds, rendering speech superfluous. It is only when under the influence of beer or strong liquor, that they lose their naturally quiet and amiable disposition; they then relapse into low, drunken orgies and loud, brawling noises. Having been so long under the control and influence of the Russians, they have adopted many Slavie customs, such as giving birthday-dinners, naming their children, etc.; they are remarkably attached to their church, and no other form of religion could be better adapted or have a firmer hold upon the sensibilities of the people. Their inherent chastity and sobriety cannot be commended. They have long since thrown away the uncouth garments of the Russian rule—the shaggy dog-skin caps, with coats half seal and half sea-lion—for a complete outfit, *cap-à-pié*, such as our own people buy in any furnishing house; the same boots, socks, underclothing, and clothing, with ulsters and ulsterettes; but the violence of the wind prevents their selecting the hats of our *haut ton* and sporting fraternity. As for the women, they too have kept pace and even advanced to the level of the men, for in these lower races there is much more vanity displayed by the masculine element than the feminine, according to my observation; in other words, I have noticed

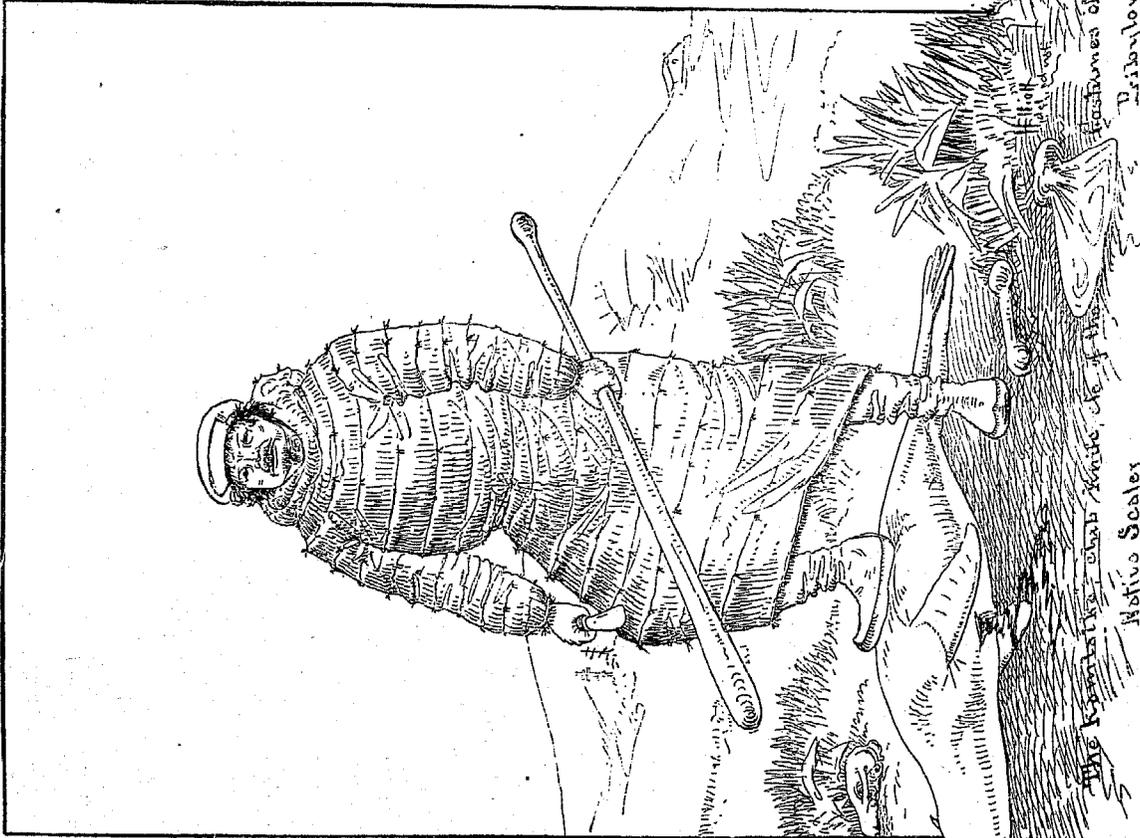
a greater desire among the young men than among the young women of savage and semi-civilized people to be gaily dressed, and to look fine. But the visits of the wives of our treasury officials and the company's agents to these islands, during the last ten years, bringing with them a full outfit, as ladies always do, of everything under the sun that women want to wear, has given the native female mind an undue expansion up there, and stimulated it to unwonted activity. They watch the cut of the garments, and borrow the patterns; and some of them are very expert dress-makers to-day. When the Russians controlled affairs the women were the hewers of the drift-wood and the drawers of the water. At St. Paul there was no well of drinking-fluid about the village, nor within half a mile of the village; there was no drinking-water unless it was caught in cisterns, and the cistern-water, owing to the particles of seal-fat soot which fall upon the roofs of the houses, is rendered undrinkable; so that the supply for the town, until quite recently, used to be carried by the women from two little lakes at the head of the lagoon, a mile and a half, as the crow flies, from the village, and right under Telegraph hill. This is quite a journey, and when it is remembered that they drink so much tea, and that water has to go with it, some idea of the labor of the old and young females can be derived from an inspection of the map. Latterly, within the last four or five years, the company have opened a spring less than half a mile from the "gorode", which they have plumbed and regulated, so that it supplies them with water now, and renders the labor next to nothing, compared with the former difficulty. But to-day, when water is wanted in the Aleutian houses at St. Paul, the man has to get it, the woman does not; he trudges out with a little wooden firkin or tub on his back, and brings it to the house.

Some of the natives save their money; but there are very few among them, perhaps not more than a dozen, who have the slightest economical tendency. What they cannot spend for luxuries, groceries, and tobacco, they manage to get away with at the gaming-table. They have their misers and their spendthrifts, and they have the usual small proportion who know how to make money and then how to spend it. A few among them who are in the habit of saving, have opened a regular bank-account with the company; some of them have to-day two or three thousand dollars saved, drawing an interest of 9 per cent.

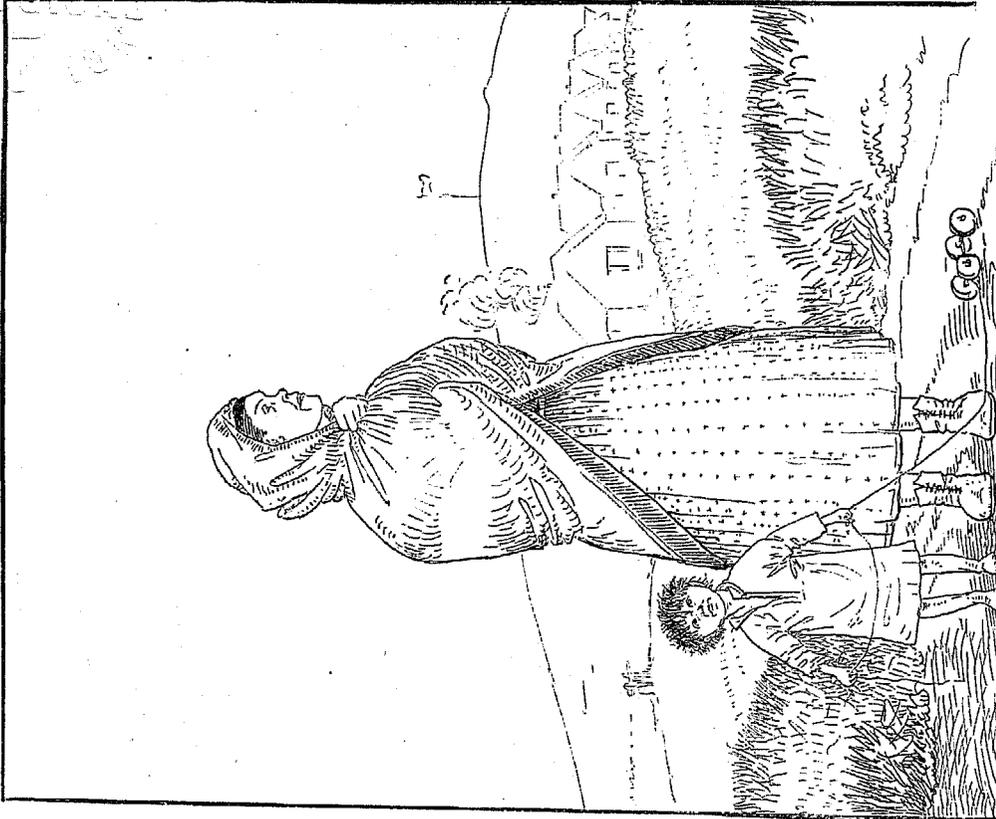
When the ships arrive and go, the great and necessary labor of lightering their cargoes off and on from the roadsteads where they anchor, is principally performed by these people, and they are paid so much a day for their labor, from 50 cents to \$1, according to the character of the service they render; this operation, however, is much dreaded by the ship-captains and sea-going men, whose habits of discipline and automatic regularity and effect of working render them severe critics and impatient coadjutors of the natives, who, to tell the truth, hate to do anything after they have pocketed their reward for sealing; and when they do labor after this, they regard it as an act of very great condescension on their part.

As they are living to-day up there, there is no restraint, such as the presence of policemen, courts of justice, fines, etc., which we employ for the suppression of disorder and maintenance of the law in our own land. They understand that if it is necessary to make them law-abiding, and to punish crime, that such officers will be among them; and hence, perhaps, is due the fact that, from the time that the Alaska Commercial Company has taken charge, in 1870, there has not been one single occasion where the simplest functions of a justice of the peace would or could have been called in to settle any difficulty. This speaks eloquently for their docile nature and their amiable disposition.

FOOD.—Seal-meat is their staple food, and in the village of St. Paul they consume on an average fully 500 pounds a day the year round; and they are, by the permission of the Secretary of the Treasury, allowed every fall to kill 5,000 or 6,000 seal-pups, or an average of 22 to 30 young "kotickie" for each man, woman, and child in the settlements. The pups will dress 10 pounds each. This shows an average consumption of nearly 600 pounds of seal-meat by each person, large and small, during the year. To this diet the natives add a great deal of butter and many sweet crackers. They are passionately fond of butter—no epicure at home, or butter-taster in Goshen, knows or appreciates that article better than these people do. If they could get all that they desire, they would consume 1,000 pounds of butter and 500 pounds of sweet crackers every week, and indefinite quantities of sugar—the sweetest of all sweet teeth are found in the jaw of the average Aleut. But it is of course unwise to allow them full swing in this matter, for they would turn their stomachs into fermenting tanks if they had full access to an unlimited supply of saccharine food. The company allows them 200 pounds a week. If unable to get sweet crackers they will eat about 300 pounds of hard or pilot bread every week, and in addition to this nearly 700 pounds of flour at the same time. Of tobacco they are allowed 50 pounds per week; candles, 75 pounds; rice, 50 pounds. They burn, strange as it may seem, kerosene oil here to the exclusion of the seal-fat, which literally overruns the island. They ignite and consume over 600 gallons of kerosene oil a year in the village of St. Paul alone. They do not fancy vinegar very much—perhaps 50 gallons a year is used up there. Mustard and pepper are sparingly used, one to one and a half pounds a week for the whole village; beans they peremptorily reject—for some reason or other they cannot be induced to use them. Those who go about the vessels contract a taste for split-pea soup, and a few of them are sold in the village-store. Salt meat, beef or pork, they will take reluctantly, if it is given to and pressed upon them, but they will never buy it. I remember, in this connection, seeing two barrels of prime salt pork and a barrel of prime mess salt beef opened in the company's store, shortly after my arrival in 1872, and, though the people of the village were invited to help themselves, I think I am right in saying



The Khabatka, uban, Avic, etc. of the
 Natives Seales
 The Khabatka, uban, Avic, etc. of the
 Pribylov Group.



His Wife and Child

TYPICAL DRESS OF PRIBYLOV NATIVES.

Ordinary attire of men on the killing-grounds.

Ordinary attire of women and young children in the villages.

that the barrels were not emptied when I left the island in 1873. They use a very little coffee during the year—not more than 100 pounds—but of tea a great deal. I do not know exactly—I cannot find among my notes a record as to this article—but I can say, that they do not drink less than a gallon of tea apiece per diem. The amount of this beverage which they sip, from the time they rise in the morning until they go to bed late at night, is astounding. Their “samovars”, and, latterly, the regular tea-kettles of our American make, are bubbling and boiling from the moment the housewife stirs herself at daybreak until the fire goes out when they sleep. It should be stated in this connection, that they are supplied with a regular allowance of coal every year by the company, *gratis*, each family being entitled to a certain amount, which alone, if economically used, keeps them warm all winter in their new houses; but, for those who are extravagant and are itching to spend their extra wages, an extra supply is always kept in the storehouses of the company for sale. Their appreciation of and desire to possess all the canned fruit that is landed from the steamer, is marked to a great degree. If they had the opportunity, I doubt whether a single family on that island to-day would hesitate to bankrupt itself in purchasing this commodity. Potatoes they sometimes demand, as well as onions, and perhaps if these vegetables could be brought here and kept to an advantage, the people would soon become very fond of them. (See note, 39, G.)

OCCUPATION.—The question is naturally asked: How do these people employ themselves during the long nine months of every year after the close of the sealing season and until it begins again, when they have little or absolutely nothing to do? It may be answered, that they simply vegetate; or, in other words, are entirely idle, mentally and physically, during most of this period. But to their credit, let it be said, that mischief does not employ their idle hands; they are passive killers of time, drinking tea and sleeping, with a few disagreeable exceptions, such as the gamblers. There are a half-dozen of these characters at St. Paul, and perhaps as many at St. George, who pass whole nights at their sittings, even during the sealing season, playing games of cards, taught by Russians and persons who have been on the island since the transfer of the territory; but the majority of the men, women, and children, not being compelled to exert themselves to obtain any of the chief, or even the least, of the necessaries of life, such as tea and hard bread, sleep the greater portion of the time, when not busy in eating, and in the daily observances of the routine belonging to the Greek Catholic church. The teachings, pomp, and circumstance of the religious observances of this faith alone preserve these people from absolute stagnation. In obedience to its teachings they gladly attend church very regularly. They also make and receive calls on their saints’ days, and these days are very numerous. I think some 290 of the whole year’s calendar must be given up to the ceremonies attendant upon the celebration of some holy man’s or woman’s birth or death.

In early times the same disgraceful beer-drinking orgies which prevailed to so great an extent, and still cause so much misery and confusion seen elsewhere in the territory, prevailed here, and I remember very well the difficulty which I had in initiating the first steps taken by the Treasury Department to suppress this abominable nuisance. During the last four or five years, it gives me pleasure to say, since the new order of things was inaugurated, the present agents of the department have faithfully executed the law.

The natives add to these entertainments of their saints’ day and birth festivals, or “Emannimiks”, the music of accordeons and violins; upon the former and its variation, the concertina, they play a number of airs, and are very fond of the noise. A great many of the women, in particular, can render indifferently a limited selection of tunes, many of which are the old battle-songs, so popular during the Rebellion, woven into weird Russian waltzes and love ditties, which they have jointly gathered from their former masters and our soldiers, who were quartered here in 1869. From the Russians and the troops, also, they have learned to dance various figures, and have been taught to waltz. These dances, however, the old folks do not enjoy very much. They will come in and sit around and look at the young performers with stolid indifference; but, if they manage to get a strong current of tea setting in their direction, nicely sugared and toned up, they revive and join in the mirth. In old times they never danced here unless they were drunk, and it was the principal occupation of the amiable and mischievous treasury agents, and others, in the early days to open up this beery fun. Happily, that nuisance is abated.

As an illustration of their working ability on the seal-grounds, I offer the following table, which shows the actual time occupied by them in finishing up the three seasons’ work which I personally supervised:

On St. Paul island:

In 1872, 50 days’ work of 71 men secured 75,000 seal-skins.

In 1873, 40 days’ work of 71 men secured 75,000 seal-skins.

In 1874, 39 days’ work of 84 men secured 90,000 seal-skins.

This exhibit plainly presents the increased ability and consequent celerity of action among the natives, and furnishes also at the same time abundant proof of the statement which I make, of the full and undiminished supply of killable seals, or “holluschickie”, from year to year.

THE INFLUENCE OF THE ALASKA COMMERCIAL COMPANY.—Before leaving the consideration of these people, who are so intimately associated with and blended into the business on these islands, it may be well to clearly define the relation existing between them, the government, and the company leasing the islands. When Congress granted to the Alaska Commercial Company of San Francisco the exclusive right of taking a certain number of fur-seals every year, for a period of twenty years on these islands, it did so with several reservations and conditions, which were

confided in their detail to the Secretary of the Treasury. This officer and the president of the Alaska Commercial Company agreed upon a code of regulations which should govern their joint action in regard to the natives. It was a simple agreement that these people should have a certain amount of dried salmon furnished them for food every year, a certain amount of fuel, a school-house, and the right to go to and come from the islands as they chose; and also the right to work or not, understanding that in case they did not work, their places would and could be supplied by other people who would work.

The company, however, has gone far beyond this exaction of the government; it has added the inexpressible boon of comfort, in the formation of the dwellings now occupied by the natives, which was not expressed nor thought of at the time of the granting of the lease. An enlightened business-policy suggested to the company, that it would be much better for the natives, and much better for the company too, if these people were taken out of their filthy, unwholesome hovels, put into habitable dwellings, and taught to live cleanly, for the simple reason that by so doing the natives, living in this improved condition, would be able physically and mentally, every season when the sealing work began, to come out from their long inanition and go to work at once with vigor and energetic persistency. The sequel has proved the wisdom of the company.

Before this action on their part, it was physically impossible for the inhabitants of St. Paul or St. George islands to take the lawful quota of 100,000 seal-skins annually in less than three or four working months. They take them in less than thirty working days now with the same number of men. What is the gain? Simply this, and it is everything: The fur-seal skin, from the 14th of June, when it first arrives, as a rule, up to the 1st of August, is in prime condition; from that latter date until the middle of October it is rapidly deteriorating, to slowly appreciate again in value as it sheds and renews its coat; so much so that it is practically worthless in the markets of the world. Hence, the catch taken by the Alaska Commercial Company every year is a prime one, first to last—there are no low-grade "stagey" skins in it; but under the old regimen, three-fourths of the skins were taken in August, in September, and even in October, and were not worth their transportation to London. Comment on this is unnecessary; it is the contrast made between a prescient business-policy, and one that was as shiftless and improvident as language can well devise.

SCHOOLS AND CHURCHES.—The company found so much difficulty in getting the youth of the villages to attend their schools, taught by our own people, especially brought up there and hired by the company, that they have adopted the plan of bringing one or two of the brightest boys down every year and putting them into our schools, so that they may grow up here and be educated, in order to return and serve as teachers there. This policy is warranted by the success attending the experiment made at the time when I was up there first, whereby a son of the chief was carried down and over to Rutland, Vermont, for his education, remained there four years, then returned and took charge of the school on St. Paul, which he has had ever since, with the happiest results in increased attendance and attention from the children. But, of course, so long as the Russian church service is conducted in the Russian language, we will find on the islands more Russian-speaking people than our own. The non-attendance at school was not and is not to be ascribed to indisposition on the part of the children and parents. One of the oldest and most intelligent of the natives told me, explanatory of their feeling and consequent action, that he did not, nor did his neighbors, have any objection to the attendance of their children on our English school; but, if their boys and young men neglected their Russian lessons, they knew not who were going to take their places, when they died, in his church, at the christenings, and at their burial? To any one familiar with the teachings of the Greek-Catholic faith, the objection of old Philip Volkov seems reasonable. I hope, therefore, that, in the course of time, the Russian church service may be voiced in English; not that I want to substitute any other religion for it—far from it; in my opinion it is the best one we could have for these people—but until this substitution of our language for the Russian is done, no very satisfactory work, in my opinion, will be accomplished in the way of an English education on the seal-islands.

The fact that among all the savage races found on the northwest coast by Christian pioneers and teachers, the Aleutians are the only practical converts to Christianity, goes far, in my opinion, to set them apart as very differently constituted in mind and disposition from our Indians and our Eskimos of Alaska. To the latter, however, they seem to be intimately allied, though they do not mingle in the slightest degree. They adopted the Christian faith with very little opposition, readily exchanging their barbarous customs and wild superstitions for the rites of the Greek-Catholic church and its more refined myths and legends.

At the time of their first discovery, they were living as savages in every sense of the word, bold and hardy, throughout the Aleutian chain, but now they respond, on these islands, to all outward signs of Christianity, as sincerely as our own church-going people.

6. THE ALASKA COMMERCIAL COMPANY.

OCCUPATION OF THE ISLANDS BY AMERICANS IN 1868.—The Alaska Commercial Company deserves and will receive a brief but comprehensive notice at this point. In order that we may follow it to these islands, and clearly and correctly appreciate the circumstances which gave it footing and finally the control of the business, I will pass back and review the chain of evidence adduced in this direction from the time of our first occupation, in 1867, of the territory of Alaska.

It will be remembered by many people, that when we were ratifying the negotiation between our government and that of Russia, it was made painfully apparent that nobody in this country knew anything about the subject of Russian America. Every schoolboy knew where it was located, but no professor or merchant, however wise or shrewd, knew what was in it. Accordingly, immediately after the purchase was made and the formal transfer effected, a large number of energetic and speculative men, some coming from New England even, but most of them residents of the Pacific coast, turned their attention to Alaska. They went up to Sitka in a little fleet of sail- and steam-vessels, but among their number it appears there were only two of our citizens who knew of or had the faintest appreciation as to the value of the seal-islands. One of these, Mr. H. M. Hutchinson, a native of New Hampshire, and the other a Captain Ebenezer Morgan, a native of Connecticut, turned their faces in 1868 toward them. Mr. Hutchinson gathered his information at Sitka—Captain Morgan had gained his years before by experience on the South Sea sealing-grounds. Mr. Hutchinson represented a company of San Francisco or California capitalists when he landed on St. Paul; Captain Morgan represented another company of New London capitalists and whaling merchants. They arrived almost simultaneously, Morgan a few days or weeks anterior to Hutchinson. He had quietly enough commenced to survey and preempt the rookeries on the islands, or, in other words, the work of putting stakes down and recording the fact of claiming the ground, as miners do in the mountains; but later agreed to cooperate with Mr. Hutchinson. These two parties passed that season of 1868 in exclusive control of those islands, and they took an immense number of seals. They took so many that it occurred to Mr. Hutchinson unless something was done to check and protect these wonderful rookeries, which he saw here for the first time, and which filled him with amazement, that they would be wiped out by the end of another season; although he was the gainer then, and would be perhaps at the end, if they should be thus eliminated, yet he could not forbear saying to himself that it was wrong and should not be. To this Captain Morgan also assented.

ORGANIZATION OF THE ALASKA COMMERCIAL COMPANY.—In the fall of 1868 Mr. Hutchinson and Captain Morgan, by their personal efforts, interested and aroused the Treasury Department and Congress, so that a special resolution was enacted declaring the seal-islands a governmental reservation, and prohibiting any and all parties from taking seals thereon until further action by Congress. In 1869, seals were taken on those islands, under the direction of the Treasury Department, for the subsistence of the natives only; and in 1870 Congress passed the present law, a copy of which I append, for the protection of the fur-bearing animals on those islands, and under its provisions, and in accordance therewith, after an animated and bitter struggle in competition, the Alaska Commercial Company, of which Mr. Hutchinson was a prime organizer, secured the award and received the franchise which it now enjoys and will enjoy for another decade. The company is an American corporation, with a charter, rules, and regulations, which I reproduce in the appendix to this memoir. They employ a fleet of vessels, sail and steam: four steamers, a dozen or fifteen ships, barks, and sloops. Their principal occupation and attention is given naturally to the seal-islands, though they have stations scattered over the Aleutian islands and that portion of Alaska west and north of Kadiak. No post of theirs is less than 500 or 600 miles from Sitka.

Outside of the seal-islands all trade in this territory of Alaska is entirely open to the public. There is no need of protecting the fur-bearing animals elsewhere, unless it may be by a few wholesome general restrictions in regard to the sea-otter chase. The country itself protects the animals on the mainland and other islands by its rugged, forbidding, and inhospitable exterior.

The treasury officials on the seal-islands are charged with the careful observance of every act of the company; a copy of the lease and its covenant is conspicuously posted in their office; is translated into Russian, and is familiar to all the natives. The company directs its own labor, in accordance with the law, as it sees fit; selects its time of working, etc. The natives themselves work under the direction of their own chosen foremen, or "toyone". These chiefs call out the men at the break of every working-day, divide them into detachments according to the nature of the service, and order their doing. All communication with the laborers on the sealing-ground and the company passes through their hands; these chiefs having every day an understanding with the agent of the company as to his wishes, and they govern themselves thereby.

BUSINESS-METHODS.—The company pays 40 cents for the labor of taking each skin. The natives take the skins on the ground; each man tallying his work and giving the result at the close of the day to his chief or foreman. When the skins are brought up and counted into the salt-houses, where the agent of the company receives them from the hands of the natives, the two tallies usually correspond very closely, if they are not entirely alike. When the quota of skins is taken, at the close of two, three, or four weeks of labor, as the case may be, the total sum for the entire catch is paid over in a lump to the chiefs, and these men divide it among the laborers according to their standing as workmen, which they themselves have exhibited on their special tally-sticks. For instance, at the annual divisions, or "catch" settlement, made by the natives on St. Paul island among themselves, in 1872, when I was present, the proceeds of their work for that season in taking and skinning 75,000 seals, at 40 cents per skin, with extra work connected with it, making the sum of \$30,637 37, was divided among them in this way: There were 74 shares made up, representing 74 men, though in fact only 56 men worked, but they wished to give a certain proportion to their church, a certain proportion to their priest, and a certain proportion to their widows; so they water their stock, commercially speaking. The 74 shares were proportioned as follows:

37 first-class shares, at.....	\$451 22 each.
23 second-class shares, at	406 08 each.
4 third-class shares, at.....	360 97 each.
10 fourth-class shares, at.....	315 85 each.

These shares do not represent more than 56 able-bodied men.

In August, 1873, while on St. George island, I was present at a similar division, under similar circumstances, which caused them to divide among themselves the proceeds of their work in taking and skinning 25,000 seals, at 40 cents a skin, \$10,000. They made the following subdivision:

	Per share.
17 shares each, 961 skins	\$384 40
2 shares each, 935 skins	374 00
3 shares each, 821 skins	328 40
1 share each, 820 skins	328 00
3 shares each, 770 skins	308 00
3 shares each, 400 skins	160 00

These 29 shares referred to stated represent only 25 able-bodied men; two of them were women. This method of division as above given, is the result of their own choice. It is an impossible thing for the company to decide their relative merits as workmen on the ground, so they have wisely turned its entire discussion over to them. Whatever they do they must agree to—whatever the company might do they possibly and probably would never clearly understand, and hence dissatisfaction and suspicion would inevitably arise; as it is, the whole subject is most satisfactorily settled.

7. THE BUSINESS CONCERNED.

THE METHODS OF THE ALASKA COMMERCIAL COMPANY.—Living as the seal-landers do, and doing what they do, the seal's life is naturally their great study and objective point. It nourishes and sustains them. Without it they say they could not live, and they tell the truth. Hence, their attention to the few simple requirements of the law, so wise in its provisions, is not forced or constrained, but is continuous. Self-interest in this respect appeals to them keenly and eloquently. They know everything that is done and everything that is said by anybody and by everybody in their little community. Every seal-drive that is made, and every skin that is taken, is recorded and accounted for by them to their chiefs and their church, when they make up their titling-roll at the close of each day's labor. Nothing can come to the islands, by day or by night, without being seen by them and spoken of. I regard the presence of these people on the islands at the transfer, and their subsequent retention and entailment in connection with the seal-business, as an exceedingly good piece of fortune, aliko advantageous to the government, to the company, and to themselves.

It will be remembered that, at the time the question of leasing the islands was before Congress, much opposition to the proposal was made, on several grounds, by two classes, one of which argued against a "monopoly", the other urging that the government itself would realize more by taking the whole management of the business into its own hands. At that time far away from Washington, in the Rocky mountains, I do not know what arguments were used in the committee-rooms, or who made them; but since my careful and prolonged study of the subject on the ground itself, and of the trade and its conditions, I am now satisfied that the act of June, 1870, directing the Secretary of the Treasury to lease the seal-islands of Alaska to the highest bidder, under the existing conditions and qualifications, did the best and the only correct and profitable thing that could have been done in the matter, both with regard to the preservation of the seal-life in its original integrity, and the pecuniary advantage of the treasury itself. To make this statement perfectly clear, the following facts, by way of illustration, should be presented:

First. When the government took possession of these interests, in 1868 and 1869, the gross value of a seal-skin laid down in the best market, at London, was less in some instances, and in others but slightly above the present tax and royalty paid upon it by the Alaska Commercial Company.

Second. Through the action of the intelligent business-men who took the contract from the government, in stimulating and encouraging the dressers of the raw material, and in taking sedulous care that nothing but good skins should leave the islands, and in combination with leaders of fashion abroad, the demand for the fur, by this manipulation and management, has been wonderfully increased.

Third. As matters now stand, the greatest and best interests of the lessees are identical with those of the government; what injures one instantly injures the other. In other words, both strive to guard against anything that shall interfere with the preservation of the seal-life in its original integrity, and both having it to their interest, if possible, to increase that life; if the lessees had it in their power, which they certainly have not, to ruin these interests by a few seasons of rapacity, they are so bonded and so environed that prudence prevents it.

Fourth. The frequent changes in the office of the Secretary of the Treasury, who has very properly the absolute control of the business as it stands, do not permit upon his part that close, careful scrutiny which is exercised by the lessees, who, unlike him, have but their one purpose to carry out. The character of the leading men among them is enough to assure the public that the business is in responsible hands, and in the care of persons who will use every effort for its preservation and its perpetuation, as it is so plainly their best end to serve. Another great obstacle to the success of the business, if controlled entirely by the government, would be encountered in disposing

of the skins after they had been brought down from the islands. It would not do to sell them up there to the highest bidder, since that would license the sailing of a thousand ships to be present at the sale. The rattling of their anchor-chains, and the scraping of their keels on the beaches of the two little islands, would alone drive every seal away and over to the Russian grounds in a remarkably short space of time. The government would therefore need to offer them at public auction in this country, and it would be simply history repeating itself—the government would be at the mercy of any well-organized combination of buyers. The agents conducting the sale could not counteract the effect of such a combination as can the agents of a private corporation, who may look after their interest in all the markets of the world in their own time and in their own way, according to the exigencies of the season and the demand, and who are supplied with money which they can use, without public scandal, in the manipulation of the market. On this ground I feel confident in stating, that the treasury of the United States receives more money, net, under the system now in operation, than it would by taking the exclusive control of the business. Were any capable government officer supplied with, say, \$100,000, to expend in "working the market", and intrusted with the disposal of 100,000 seal-skins wherever he could do so to the best advantage of the government, and were this agent a man of first-class business ability and energy, I think it quite likely that the same success might attend his labor in the London market that distinguishes the management of the Alaska Commercial Company. But imagine the cry of fraud and embezzlement that would be raised against him, however honest he might be! This alone would bring the whole business into positive disrepute, and make it a national scandal. As matters are now conducted, there is no room for any scandal—not one single transaction on the islands but what is as clear to investigation and accountability as the light of the noon-day sun; what is done is known to everybody, and the tax now laid by the government upon, and paid into the treasury every year by the Alaska Commercial Company, yields alone a handsome rate of interest on the entire purchase-money expended for the ownership of all Alaska.

It is frequently urged with great persistency, by misinformed or malicious authority, that the lessees can and do take thousands of skins in excess of the law, and this catch in excess is shipped *sub rosa* to Japan from the Pribylov islands. To show the folly of such a move on the part of the company, if even it were possible, I will briefly recapitulate the conditions under which the skins are taken. The natives of St. Paul and St. George do themselves, in the manner I have indicated, all the driving and skinning of the seals for the company. No others are permitted or asked to land upon the islands to do this work, so long as the inhabitants of the islands are equal to it. They have been equal to it and they are more than equal to it. Every skin taken by the natives is counted by themselves, as they get 40 cents per pelt for that labor; and at the expiration of each day's work in the field, the natives know exactly how many skins have been taken by them, how many of these skins have been rejected by the company's agent because they were carelessly cut and damaged in skinning—usually about three-fourths of one per cent. of the whole catch—and they have it recorded every evening by those among them who are charged with the duty. Thus, were 101,000 skins taken, instead of 100,000 allowed by law, the natives would know it as quickly as it was done, and they would, on the strength of their record and their tally, demand the full amount of their compensation for the extra labor; and were any ship to approach the islands, at any hour, these people would know it at once, and would be aware of any shipment of skins that might be attempted. It would then be the common talk among the 398 inhabitants of the two islands, and it would be a matter of record, open to any person who might come upon the ground charged with investigation. (See note, 39, L.)

Furthermore, these natives are constantly going to and from Oonalashka, visiting their relations in the Aleutian settlements, hunting for wives, etc. On the mainland they have intimate intercourse with bitter enemies of the company, with whom they would not hesitate to talk over the whole state of affairs on the islands, as they always do; for they know nothing else and think of nothing else and dream of nothing else. Therefore, should anything be done contrary to the law, the act could and would be reported by these people. The government, on its part, through its four agents stationed on these islands, counts these skins into the ship, and one of their number goes down to San Francisco upon her. There the collector of the port details experts of his own, who again count them all out of the hold, and upon that record the tax is paid and the certificate signed by the government.

It will, therefore, at once be seen, by examining the state of affairs on the islands, and the conditions upon which the lease is granted, that the most scrupulous care in fulfilling the terms of the contract is compassed, and that this strict fulfillment is the most profitable course for the lessees to pursue; and that it would be downright folly in them to deviate from the letter of the law, and thus lay themselves open at any day to discovery, the loss of their contract, and forfeiture of their bonds. Their action can be investigated at any time, any moment, by Congress; of which they are fully aware. They cannot bribe these 398 people on the islands to secrecy, any more successfully than they could conceal their action from them on the sealing fields; and any man of average ability could go, and can go, among these natives and inform himself as to the most minute details of the catch, from the time the lease was granted up to the present hour, should he have reason to suspect the honesty of the treasury agents. The road to and from the islands is not a difficult one, though it is traveled only once a year.

The subject of the method and direction of the business of sealing on these islands, involving as it does a discussion of the law and the action of the Alaska Commercial Company and the natives combined, will form a thesis for another chapter.

ILLUSTRATIONS.

PLATE		Page.
	I.—Profiles of the east coast of St. Paul	19
	II.—Meat frames, lighter, hut.	21
	III.—Typical dress of the native	23
	IV.—The hair-seal, <i>Phoca vitulina</i>	23
	V.—The countenance of <i>Callorhinus</i>	29
	VI.—The fur-seal—a general group	32
	VII.—The natives selecting a drive	45
	VIII.—Sundry sketches from the author's portfolio	47
	IX.—The north shore of St. Paul island	57
	X.—The north rookery, etc., St. George island	61
	XI.—Pelagic attitudes of the fur-seal	65
	XII.—“Holluschickie” sporting around the baidar	67
	XIII.—Natives driving the “Holluschickie”	71
	XIV.—The killing gang	73
	XV.—Kenching seal-skins	77
	XVI.—The sea-lion, <i>Eumetopias Stelleri</i>	85
	XVII.—The black sea-lion, <i>Zalophus Gillespii</i>	87
	XVIII.—Springing the alarm	89
	XIX.—The sea-lion corral or pen	91
	XX.—Spearing the surround; driving, and shooting old males	93
	XXI.—The walrus of Bering sea	95
	XXII.—Plunging the harpoon	97
	XXIII.—The walrus “coup”	99
	XXIV.—The Eskimo double purchase	101
	XXV.—Walrus islet	103
	XXVI.—The Landseer and Edward figures of the fur-seal	109
	XXVII.—Sea-bird egging over cliffs of St. George	125
	XXVIII.—Sea-bird egging at Walrus island	127
	XXIX.—The Fulmar's niche	135
MAP OF ST. PAUL.	}	176
MAP OF ST. GEORGE.		