

A REPORT

UPON THE

CONDITION OF AFFAIRS

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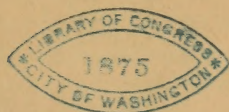
TERRITORY OF ALASKA.

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BY

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SPECIAL AGENT TREASURY DEPARTMENT.



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LETTER TO THE SECRETARY OF THE TREASURY.

WASHINGTON, D. C., *November 16, 1874.*

SIR: In compliance with the provisions of the act of Congress approved April 22, 1874, I have the honor to submit the following report upon the condition and importance of the fur-trade in the Territory of Alaska; "the present condition of the seal-fisheries of Alaska; the haunts and habits of the seal; the preservation and extension of the fisheries as a source of revenue to the United States, with like information respecting the fur-bearing animals of Alaska generally; the statistics of the fur-trade; and the condition of the people or natives, especially those upon whom the successful prosecution of the fisheries and fur-trade is dependent:"

The first measure suggested by my investigations this season is one of reform in the present government of the Territory. It is supposed that a useless outlay of money and labor is not intended to be persisted in, when the same annual expenditure will give prompt and effective supervision over interests in that region which seem now to be sadly neglected. The present mismanagement of affairs in Alaska is not attributable to any other cause than that of the universal ignorance prevailing in the United States, at the time of the transfer, in regard to the form of government needed, and since then no one seems to have taken any intelligent or active interest in the matter. In the following report, herewith submitted, I desire to draw your attention to the statements and suggestions contained in the chapter devoted to this subject, and I trust that you may be pleased to give them your approval.

The pecuniary value of the fur-seal interests of the Government renders it highly important that the Treasury Department, now intrusted with its care and supervision, should possess definite and authoritative information as to its proper management—for its perpetuation in its original integrity, at least. I, therefore, take great pleasure in calling your attention especially to the accompanying report upon the subject, which embodies the results of three seasons' (1872, 1873, and 1874) close per-

sonal observation and research on the ground, with maps and illustrations.

In connection with the condition of the natives of the Territory, on whom the successful prosecution of the fur-trade is dependent, I have been led into a very careful study of the history and habits of the sea-otter in this country, to the successful hunting of which between four and five thousand Christian Aleutians and Kodiakers look for a means of livelihood. Since the transfer, fire-arms, formerly proscribed, have been introduced among the sea-otter hunters. This, in combination with the keenest rivalry of opposition traders, makes it only a question of a very short time ere these valuable and interesting animals are exterminated, on the existence of which so many christianized natives are totally dependent for all of the comforts, and many even of the necessities, of a semi-civilized life. The remedy for this is a very simple and effective one, and I beg leave to refer to my discussion of the subject in this report under the head of the sea-otter and its hunters.

In my report it will be seen that I have given the Yukon, Aleutian, and Sitkan sections close attention, having yet to more fully examine the Kodiak, Cook's Inlet, and Copper River districts; that I have, in connection with Lieut. Washburn Maynard, United States Navy, my associate during the past season, carefully resurveyed the area and position of the breeding-grounds of the fur-seal on the Prybilov Islands. We surveyed Saint Matthew's Island, which is contiguous and was entirely unknown and uninhabited, in order to settle the question, so frequently asked, and to which no definite reply could be given, as to whether or not it was suitable ground for fur-seals to land upon and breed, should these animals ever become dissatisfied with their present locality; and that I have compiled, from Russian and other authorities, facts and statistics as to the extent of the fur-trade in the early days of the Territory, so as to compare with the condition of this business at the present, as I get it from traders and agents in the country generally. Of necessity, I have been obliged to use my judgment in selecting and taking these figures, both from the written as well as the verbal authorities. These I submit as being very nearly correct, to the best of my knowledge and belief. The remarkable increase in the catch of fur-bearing animals since the change of ownership of the country is most striking, but in perfect harmony with the strong contrast between the indo-

lent, make-shift management of the Russian-American Fur Company in later times and that of our energetic, economical traders.

The extravagant statements which have been made in regard to the resources of this Territory, which, on the one hand, were they true, would fit it for the future reception of a highly-civilized population, while, on the other, it would be made a land of utter desolation, worthlessness, and an entire loss of seven millions of purchase-money, besides being a burden to the General Government, these announcements, so often made and reiterated throughout our country, have caused me to pay great attention to the subject, and in this report I have endeavored to give a concise description of the agricultural character of the Territory as I have seen it, which thus far might be truthfully summed up in saying that there are more acres of better land lying now as wilderness and jungle in sight on the mountaintops of the Alleghanies from the car-windows of the Pennsylvania road than can be found in all Alaska; and when it is remembered that this land, wild, in the heart of one of our oldest and most thickly-populated States, will remain as it now is, cheap, and undisturbed for an indefinite time to come, notwithstanding its close proximity to the homes of millions of energetic and enterprising men, it is not difficult to estimate the value of the Alaskan acres, remote as they are, and barred out by a most disagreeable sea-coast climate, leaving out altogether the great West and vast agricultural regions of British America; but then, directly to the contrary, it would be wrong to hint by this statement, true as it is, that the country is worthless, for on the Seal Islands alone the Government possesses property which would not remain in the market many days unsold were it offered for seven millions, and from which the annual revenue is doubly sufficient to meet all expenditures for the proper government of the whole Territory, if the matter was correctly adjusted. Again, it should be understood that, beyond a few outcrops of Tertiary coal and small leads near Sitka of gold and silver, with reports of native copper *in situ*, nothing is known whatever of the mineral wealth of the Territory at the present writing, as far as I can learn, but which I have reason to think will develop into some value.

My opinion with reference to the fishing interests in the Territory has been almost entirely formed by the accounts of old, experienced fishermen whom I have met in the country person-

ally engaged in fishing in these waters. The value and probable yield of the cod-banks of Alaska have been greatly overrated, but it may be reasonably anticipated that the success attending the *canning* of salmon on the Columbia River will stimulate the prosecution of this industry at the mouths of all the large streams and rivers of the Territory.

In connection with my survey of affairs in the Territory, the Seal Islands in especial, I have been most fortunate in being associated with a gentleman so efficient and conscientious as Lieut. Washburn Maynard, the officer selected by the Secretary of the Navy, in compliance with the act of Congress, to accompany me on this tour of investigation, and to report independently.

It is also fitting that I should speak in flattering terms of the high character of the service rendered us this season by Capt. J. G. Baker, commanding the United States revenue-cutter *Reliance*, who carried us with all care and expedition to such points as we saw fit to designate, and which it was possible to visit in a sailing-vessel, with the time allotted.

The several subjects within the scope of my report I have arranged, and herewith respectfully present in the following order, viz :

CHAPTER I. THE CHARACTER OF THE COUNTRY.

II. THE NATIVES OR PEOPLE OF ALASKA ; THEIR
CONDITION, &C.

III. THE DUTY OF THE GOVERNMENT IN THE TERRITORY OF ALASKA.

IV. TRADE IN THE TERRITORY AND THE TRADERS,
STATIONS, &C.

V. THE SEA-OTTER AND ITS HUNTING.

VI. THE CONDITION OF AFFAIRS ON THE SEAL
ISLANDS ; PRYBILOV GROUP.

VII. THE HABITS OF THE FUR SEAL.

VIII. FISH AND FISHERIES.

IX. ORNITHOLOGY OF THE PRYBILOV ISLANDS.

APPENDIX.

I have endeavored in the preparation of this report to be as concise as possible, perhaps so to a fault, but the enumeration of the thousand and one little things that have combined to form opinion, and indirectly influence one's judgment, can interest no one but the writer.

On the subject of Alaska, it is safe to assert that no other unexplored section of the world was ever brought into notice suddenly, about which so much has been emphatically and positively written, based entirely upon the whims and caprices of the writers, and, therefore, it will not be at all surprising if the truth in regard to the Territory does frequently come into conflict with many erroneous popular opinions respecting it.

With the hope that the results of my labor as presented in the following report will meet with your approval and support,

I have the honor to be, very respectfully, your obedient servant,

HENRY W. ELLIOTT,

Special Agent Treasury Department.

Hon. B. H. BRISTOW,

Secretary of the Treasury.



CHAPTER I.

THE CHARACTER OF THE COUNTRY.

THE TERRITORY OF ALASKA.

So much has been said *pro* and *con* as to the natural wealth and advantages of our new acquisition, the Territory of Alaska, that the widest possible divergence of opinion has arisen upon this subject ; on the one hand, we hear that here is a country no more rugged or uninviting than is Sweden or Norway, where a high civilization exists, with just as much natural adaptation for the home of advancing humanity, with vast forests of the finest ship-timber, with iron, copper, coal, and possibly rich gold and silver mines, with valleys and plains upon which sheep and cattle can be bred and raised without more than ordinary care, so abundant is the grass and other vegetation ; that the climate is extremely mild on the seaboard, no more damp and foggy than on the coast of Oregon, &c. ; while, on the other hand, we are as gravely told that it is an area of total desolation ; that it is locked up in the grasp of winter's frosts for eight or nine months in the year ; that icebergs and snow fill the sea and drift in fathomless rifts ; that it is bare and barren, only moss and swale grass ; that even the inhabitants there drag out a miserable existence on seal-meat, oil, and like food ; and that it will never become the home of white men, because there is no object in the land that will draw them there save the small fur-trading interests.

There is truth in both declarations, but no such thing as a happy medium can be struck between the two views ; a fair, dispassionate statement in regard to this matter, however, at the time of the transfer of the Territory, could hardly have been made, no citizen of the United States having the means or the opportunity to form a proper judgment. The Russians did not live here as a people, but as a company of fur-traders only, with a single eye to the getting of skins ; and the matter of their subsistence while so doing was comparatively of little importance ; but it should be said that at all of their posts throughout the Territory they fully tested the capabilities of soil and climate for garden-products, and at many of them

gave hogs and cattle a trial, with a deep interest in the success of their experiments. The Russian American Company in retiring from the country gave us a generally correct map of the Territory, accurate figures as to the numbers and distribution of the natives; but upon other points the most vague or else conflicting data, and in this condition of knowledge we took possession of the country. Its true status, therefore, and real importance were simply unknown to our people.

Since that time, however, quite a number of adventurers, traders, miners, fishermen, and the like have had their attention and interest centered here, and the resources of the country in small sections have been keenly scrutinized with a view to what the country could or could not yield in supply of human wants.

THE DIVERSIFIED CHARACTER OF THE COUNTRY.

Everybody is familiar with the geographical position of Alaska, with its extended area of coast-line, stretching from a trifle south of the 55th parallel of north latitude, above Fort Simpson, on the British Columbian Territory, far to the northward and westward away into the Arctic Ocean and above the arctic circle; and, in describing the character of this vast trend of land, it should be divided into several natural districts, by reason of the local difference between them.

The Sitkan district.—Starting from Portland Canal and running north to Cross Sound and the head of Lynn Canal, the eye glances over a range of country made up of hundreds of islands, large and small, and a bold, mountainous coast, all everywhere rugged and abrupt in contour, and, with exception of highest summits, the hills, mountains, and valleys, the last always narrow and winding, are covered with a dense jungle of spruce and fir, cedar and shrubbery, so thick, dark, and damp, that it is traversed only by the expenditure of great physical energy, and a clear spot, either on islands or mainland, where an acre of grass might grow by itself, as it does in the little "parks" far in the interior, cannot be found. In these forest-jungles, especially on the lowlands and always by the water-courses, will be found a fair proportion of ordinary timber of the character above designated. The spruce and fir, however, are so heavily charged with resin, that they can be used for nothing but the roughest work; the cedar is, however, an excellent article. But back from the Coast Range here, on which our bound-

any-line is dotted, springs up quite a different country again, higher everywhere from the sea-level by thousands of feet, dry, with not one-tenth part of the rain-fall, vast rolling plains or table-lands and rounded mountain-tops, over which fire has swept not many years ago, for the last time, as it has frequently done before, utterly destroying the pine-forests, leaving nothing but the blackened and bleached trunks piled upon and across one another at the sport of fierce gales; and springing up from beneath this desolation and shutting over it is a new forest of young pine and poplars, with a large number of service-berry and salal bushes interspersed. The valleys here widen out, and contain large tracts of excellent ground for cultivation, with the significant objection, however, of being subject to frosts so late in the spring as June 10, and so early in the summer as the 20th of August. This, of course, excludes the question of agricultural utility; and although the grass grows everywhere here in the valleys in the most luxuriant manner, yet cattle cannot run out through the winters, which are here bitterly cold; widely different from those a hundred miles only to the westward across the Coast Range. Here, under the powerful influence of the great Pacific, winter is never anything but wet and chilly, seldom ever giving the people a week's skating on the small lake back of Sitka. Day after day there are high winds and drizzling rains, with breaks in the leaden sky showing gleams of clear blue and sunlight; and here the agriculturist or gardener has like cause for discouragement, for nothing will ripen; whatever he plants grows and enters on its stages of decay without perfecting. It must, moreover, be remarked that there is but very little land fit even for this unsatisfactory and most unprofitable agriculture, *i. e.*, properly-drained and warm soil enough for the very hardiest cereals. There is not one acre of such tillable land to every ten thousand of the objectionable character throughout the larger portion of this area, and certainly not more than one acre to a thousand in the best regions. Grass grows in small localities or areas, wherever it is not smothered by forests and thickets, in the valleys over this whole Sitkan district; its presence, however, is not the rule, but the exception, so vigorous is the growth of shrubbery and timber; and even did it grow in large amount, the curing of hay is simply impracticable. Although the winters are mild, still there is not enough ranging-ground

to support herds of cattle throughout the year and have them within control.

Mount Saint Elias district.—Reaching from Cross Sound to Prince William's Sound is a second and clearly-defined region, exhibiting a bald, bare sea-front, with scarcely an island or a rock in its long stretch of over three hundred miles; little belts of spruce timber skirt the lowlands by the sea, while that which is hilly and mountainous is almost bare; grass and berries grow, however, in great abundance. It is the most cheerless, but at the same time the most interesting, portion of the Territory, not from any other point of view, however, than that of the tourist or geologist, who will find Mount Saint Elias the highest peak in North America, and the superb mountains of Fairweather and Cillon, and the country about them, covered, for miles and miles, with mighty glaciers, a field of most instructive interest. An immense mass of ice comes down into the head of Lynn Canal, which, the Indians say, originates and travels from Mount Fairweather over fifty miles away. This glacier is some eight miles wide where it faces the sea in the channel, and many hundred feet in thickness, perfectly magnificent, and should be visited, for, as yet, this region, like the most of our new Territory, has not been trodden by the foot of white man, and seldom even by the savage. Its exceptional presentation of timber, its long reaches of rounded, low, barren hills, and relative scarcity of both birds and animals, make this section about as uninviting, on economic grounds, as any in the Territory, and the paucity of Indian life within its limits speaks definitely for its poverty as to game and fish.

Cook's Inlet district.—I refrain from giving the reports which I received from this section, inasmuch as they are very contradictory in many leading features; though, in a general way, the ideas given me are undoubtedly correct. They represent the country similar to Kodiak, with more timber.

The Peninsular and Kodiak Island.—This region, lying between Iliamna Lake and the False Pass, between the head of the Peninsula of Alaska and contiguous islands, is the most valuable section of the entire Territory, possessing the most equable climate, especially so at Kodiak, growing the best garden-supplies of potatoes, turnips, &c., the only place where hay can be made, enough for a few head of stock, with anything like a certainty, from season to season; but the country comprised in this district, which forms the southern and western half of the Peninsula,

does not possess any of the above-mentioned qualifications in the same degree by any means. The island of Kodiak and the whole district is, however, rugged and mountainous, with numerous small lakes and tiny rivers or streams, up which a considerable number of salmon run every year. Timber, of spruce and fir, grows in fair quantity in the northern and eastern end of Kodiak, all the islands to the eastward, and down the Peninsula as far as Chignik Bay; it is not large, but in size for fuel, rough building, &c. Grass grows most luxuriantly, especially on Kodiak, but the area suitable for its support is limited, there being no plains or dry and accessible valleys in which to cut and cure it. There are many winters here in which cattle might be kept in small numbers without exceptional care and expense, *i. e.*, enough to afford milk and beef for a small settlement, and also sheep and hogs. Little patches of land can be found where a small garden will thrive consisting of potatoes, turnips, &c.; but reaching down to the Aleutian Islands, and over them, is a region bare entirely of timber and nearly so of shrubbery, rugged, abrupt, and extremely mountainous, the surface broken into patches set, as it were, on end; this is no country adapted for agriculture, for the prevalence of foggy, dark weather would render even the limited area that could be utilized with sunlight unserviceable for the production of fruits and vegetables. Soil there is sufficiently rich and deep, but it is too cold to mature or ripen garden-products, except in very favored localities where, as at Ounalashka, a few potatoes of inferior quality, good turnips, and lettuce, are in the favorable seasons raised. The Western Islands are all essentially volcanic, with scarcely a trace of sedimentary rock to be found; consisting of high, steep ridges and peaks of porphyries and volcanic tufa, with here and there syenitic granites. The vegetation, such as it is, principally *Empetrum nigrum*, grows most rank and luxuriant on the flanks and even the summits of many of these high places, and the light, frail stems of this plant, which are of about the size of strawberry-vines, the natives gather and bring down from the hills in large bundles for fire-wood. The only shrub that lifts its head above the earth, of value as wood, is a willow, (*Salix reticulata*), which grows in scattered clumps along the little water-courses, twisted and contorted, yet of sufficient size to furnish in early days strong and serviceable frames for native skin-boats or "baidars." Scattered over the Aleutian Islands and on the Peninsula are many small lakes, some of them quite

large. The Peninsular country is more rolling and level, on the north shore especially so; for from Port Moller on up to the head of Bristol Bay extensive flats make out from the highlands and stretch between them and the sea in width varying from ten to sixty miles.

There are a number of volcanoes in this district, such as that of Makooshin, on Ounalashka Island, Akootan and Shishaldin, on Oonimak, which, however, do not eject lava, but emit smoke, steam, and ashes, although in times past and within the memory of man large stones have been thrown out by many of them, and still earlier lava has been poured out on Oonimak in immense streams. The seared, rugged courses of the once liquid rock make traveling on that island excessively fatiguing. Akootan, on Akootan Island, and Makooshin are, perhaps, the most active, or as lively as any in the Territory to-day. There has been no disturbance on their account in the country for the last thirty years to mention, but previous to that time many severe earthquake shocks have been recorded, and the growth of a new island, *Bogaslov*, twenty miles north of Oomnak, in Bering Sea, has been witnessed by the present generation, and I think that the phenomena attending the appearance of this island far out at sea and alone must have been coincident with the whole history of the formation of the Aleutian Chain, and therefore I may be excused for giving the substance of the story as told by several of the Russian writers.

In the fall of 1796 the residents of Oonimak and Ounalashka were surprised by a series of loud reports and tremblings of the earth, followed by the appearance of a dense dark cloud, full of gas and ashes, which came down upon them from the sea to the northward, and, after a week or ten days, during which time the cloud hung steadily over them, accompanied with earthquakes and subterranean thunder, it cleared away somewhat, so that they saw distinctly to the northward a bright light burning above the sea, and, upon closer inspection in their boats, the people found that a small island, elevated about 100 feet above sea-level, had been forced up and was still in the process of elevation and enlargement, formed of lava and scorïæ. The volcanic action did not cease on this island until 1825, when it left above the water an oval peak, almost inaccessible, 400 to 500 feet high, and four or five miles in circumference. It was soon after this occupied by sea-lions and resorted to by sea-fowl,

which were found here in 1825, when the Russians landed for the first time, and the rocks were still warm.

In this way and recently, geologically speaking, were the Aleutian Islands formed from the Peninsula westward, including the Prybilov Group and Saint Matthew's, their appearance marking the course of a line of least resistance in the earth's crust.

The Yukon District.—In this division may be placed all that country above the head of Bristol Bay and north and west of the Peninsular Range of mountains as they extend far into the interior, reaching to the arctic and far beyond, an immense area of desolate sameness, almost unknown, and likely to be so for an indefinite time, the banks of the Yukon River being the only track traversed as yet by white men into the interior. This great range of country may properly be divided into two sections, the hills or timber-lands and the plains or tundra. The former seldom approach the waters of Bering or the Arctic Sea nearer than fifty or sixty miles, and generally trend some two to three hundred miles back. The general contour of the interior is a vast undulating plain, with high, rounded granitic hills and ridges scattered here and there, on the flanks of which, and by the countless lakes and water-courses, grow in tolerable abundances spruce, fir, hemlock, birch, and poplar, with a large number of hardy shrubs indigenous all the world over to these latitudes. The summers short, but warm and pleasant; the winters long, and bitterly cold and inclement.

The tundra, however, which fronts the whole coast-line of this, the most extensive section of the Territory, is, indeed, cheerless and repellant at any season; in the summer it is a great flat swale, full of bog-holes, slimy, decayed peat, innumerable lakes, shallow, stagnant, and from all places swarm mosquitoes of the most malignant type, while in winter it is a wide snow plain, over which fierce gales of wind, at zero temperature, sweep in constant succession, making travel as painful and dangerous as can be well imagined. In this season all approach to the coast is barred by a great system of shoals and banks, which extend so far out to sea that a vessel drawing 10 feet of water will be hard aground, out of sight of land, off the mouth of the Yukon.

There is a vast area of this district between the head of Cook's Inlet and the Arctic, and far back into the interior, that is entirely unknown, but as traders are extending their routes in all directions, this interior may in time be explored and noted.

The Ounalashka District.—Under this head may be placed the Aleutian Islands; and as Illolook or Ouralashka Village is the most important place among them, both with regard to population and trade, and the best position as a port, its name may be fitly applied to the whole region.

This great chain of rugged islands, enveloped during the greater part of the year in fogs, and swept over by frequent gales, that, in combination with the mists and currents, make it a region dreaded by the mariner, abounds in sharp hills, and hilly or bluff mountainous masses. Nearly every island—and there are many, small and large—is as it were set up on end, with small patches of bottom-land here and there, in rare intervals, at the base of the hills and mountains.

The appearance of any of these islands from a ship approaching them during the summer, on a clear sunny day—and such days are occasionally known—is most attractive: a rich, dark coat of vivid green clothes the valleys, hills, and mountains, quite to the snow-line. In these narrow defiles and bottom-land patches, the grass is most luxuriant, growing waist-high, with low, stunted willow-bushes here and there in small quantity; and it is at first not apparent, when one strolls about the country on such a day, that it is utterly worthless as an agricultural or stock-raising country. The mountains principally consist of syenitic granites and porphyries, with sharp summits and abrupt slopes, and present numerous small water-courses, with little or no valley-ground. The vegetation is rank and luxuriant, and, in favorable seasons, the grasses ripen their seeds well. Quite a variety of berries abound; for example, salmon, huckle, crow, and blue berries. The only timber is a slight willow, nowhere larger than a man's wrist, and not over 7 or 8 feet high, growing in small, scattered clumps, with stunted specimens climbing way up the hill-sides. The thick, dense carpet of crow-berry plants, into which one sinks at every step ankle-deep, covers the entire country, and makes traveling very tedious for a pedestrian. Several species of grass grow everywhere in patches, and if more sunlight were to fall upon these cold, moist places, where vegetation now springs up every year in such quantities, but of such inferior quality, hay might be cured, and it might be called a fair grazing-country; but although the islands would amply support herds of cattle and flocks of sheep during the summer-months, these animals would generally need shelter and feed for three to five months

as winter comes on, and far into the spring during late seasons, when high winds rage and keep the snow in drifts. Bailey might also be grown with a little more sunlight; and potatoes might also be matured year after year in fair quantity, and a good kitchen-garden established in the most favored sections; but perpetual fogs and mists hang like palls over the land and render it of no agricultural importance.

The summers are mild, foggy, and humid, with an average temperature of 50° Fahrenheit, with winters also mild, foggy, and humid, and an average temperature of 30°. Minimum thermometer here seldom or never falls lower than 10°; there never has been recorded four consecutive weeks of temperature lower than 3° or 5°. The weather begins to grow colder in October, and does not become milder until April. The natives here think that 12° to 15° is pleasant weather, but if it goes down to 3° or 5°, it is to them, horribly cold. There are, however, exceptional seasons. For instance, the summer of 1831, in July and August the thermometer did not rise above 35°, and evenings were not uncommon with as low a temperature as 12°.

Rain falls at all times and with all winds, but mostly in the autumn, with southeast and easterly winds, and less with southwest winds in winter.

Snow begins to fall in September, (and even in August,) and does not cease earlier than May, although it frequently melts as fast as it falls far into December. It is seen on the higher mountains all the year round. The average snow-fall is from 2 to 5 feet; the high, driving winds make the snow intensely disagreeable and impede traveling.

The cloudiness of the district is remarkable; there are not a dozen cloudless days in the whole year; about thirty to fifty fine days; and Veniaminov says, after living there ten years, "that the sun *may be seen* in a hundred to a hundred and sixty days during the year."

Thunder is seldom ever heard, and lightning never seen; although the clouds seem to constantly suggest it. Auroras are also almost unknown, and when seen are very faint.

The old Aleuts here say that in early times the snow was deeper and the cold greater than it has been for some time past, while, on the other hand, they assert that the winds are getting stronger and harsher as time rolls on with them. Veni-

aminov* says, "In all the time of my living here there was not one day from morning to evening that was entirely without wind, or was a perfect calm." The winds blow here strong from all quarters, strongest in October, November, December, and March. The gales do not usually last more than three days at a time, but they follow in quick succession in the seasons above mentioned.

There are a multitude of little lakes of fresh water on the islands, and in nearly all of the small streams (for there are no large ones) are found brook-trout of good quality.

In view of the foregoing, what shall we say of the resources of Alaska, viewed as regards its agricultural or horticultural capabilities?

It would seem undeniable that owing to the unfavorable climatic conditions which prevail on the coast and in the interior, the gloomy fogs and dampness of the former, and the intense, protracted severity of the winters, characteristic of the latter, unfit the Territory for the proper support of any considerable civilization.

Men may, and undoubtedly will, soon live here, in comparative comfort, as they labor in mining-camps, lumber and ship-timber mills, and salmon-factories, but they will bring with them everything they want except fish and game, and when they leave the country it will be as desolate as they found it.

Can a country be permanently and prosperously settled that will not in its whole extent allow the successful growth and ripening of a single crop of corn, wheat, or potatoes, and where the most needful of any domestic animals cannot be kept by poor people?

The Russians, who have subdued a rougher country, and settled in large communities under severer conditions than have been submitted to by any body of our own people as yet, were in this Territory, after some twenty years at least of patient, *intelligent* trial, obliged to send a colony to California to raise their potatoes, grain, and beef; the history of their settlement there, and forced abandonment in 1842, is well known.

We may with pride refer to the rugged work of settlement so successfully made by our ancestors in New England, but it is idle to talk of the subjugation of Alaska as a task simply requiring a similar expenditure of persistence, energy, and ability.

* Zapieskie, &c., vol. 1, p. 98.

In Massachusetts* our forefathers had a land *in which all the necessities of life, and many of the luxuries, could be produced from the soil with certainty from year to year*; in Alaska their lot would have been quite the reverse, and they could have maintained themselves there with no better success than the present inhabitants. Attention should be directed to the development of its mineral wealth, which I have reason to think will yet prove to be considerable, and effort should be made to stimulate and protect the present available industries of the fur-trade, the canning of salmon, &c.

* "I have seen with surprise and regret, that men whose forefathers wielded the ax in the forests of Maine, or gathered scanty crops on the hill-sides of Massachusetts, have seen fit to throw contempt and derision on the acquisition of a great territory naturally far richer than that in which they themselves originated, (!) principally on the ground that it is a 'cold' country." (W. H. Dall, *Alaska and its Resources*, p. 242, Boston, Lee & Shepard, 1870.)

CHAPTER II.

THE NATIVES OR PEOPLE OF ALASKA—THEIR CONDITION.

THEIR LIFE IN THE PAST, IN THE PRESENT, AND PROSPECTS FOR THE FUTURE.

In taking the subject of the condition of the people of Alaska into consideration, the character of the country in which they live should always be kept in mind, for the life of any people is insensibly but surely molded by the climate and land in which they are found: under favorable and genial influences of soil and climate, a rude race may be raised from barbarism, pass into civilization, and be sustained by these favoring supports.

The inhabitants of the Territory are divided into two decidedly distinct races, widely different in habits and disposition; one of these two classes consists of the Christian Aleuts, who live upon the Aleutian Islands, the Seal Islands, the Peninsula of Alaska, the adjacent Islands, and Kodiak; the Indians, occupying all the rest of the inhabited country, constitute the other. It will be seen by a Russian table which I submit in connection with this subject that quite a large number, in 1863, of the natives, outside of the district above specified, are claimed as Christians, but I cannot recognize the claim to-day; they have worn off what little Christianity they may have possessed ten years ago, and there is no Christian influence, properly speaking, in the Territory, outside of the Aleutians and the people of Kodiak; these people are naturally fitted for the reception of the principles of Christianity, or otherwise they would have remained Indians, as the others, who are savages, have done. The Russian Greek Catholic priests spared no effort in their attempts to convert the Koloshians of Sitka and those of kindred stock elsewhere in the Territory, but met with partial failure in every instance.

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 aborigines, to whom, however, they are intimately allied. They adopted the Christian faith with very little opposition, readily exchanging their barbarous customs and wild superstitions for the agreeable 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; but now, to all outward signs and professions of Christianity they respond as sincerely as our own church-going people.

The question as to the derivation of these people is still a mooted one among ethnologists; in all points of personal bearing, intelligence, character, as well as physical structure, they seem to form a link of perfect gradation between the Japanese and Eskimo, although their traditions and language are entirely distinct and peculiar to themselves; they, however, claim to have come first to the Aleutian Islands from a "big land to the westward," and that when they came here 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 Peninsular and Kodiak.

The Aleuts, as they appear to-day, have been so mixed with Russian, Koloshian, and Kamschadale blood, &c., that they present characteristics in one way or another of the various races of men from the negro up to the Caucasian. The predominant features among them are small, wide-set, dark 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 among them, some being over six feet in height, and others dwarfs.

The number of these people, including those of Kodiak, who resemble the Aleutians only as Christians, having no other natural or blood affinity, is about 5,000, but when first discovered by the Russians they were four and five times as many; at least 20,000 were living on the Aleutian Islands and the Peninsular in 1760; and from that time, in obedience to that natural law which causes an inferior class to succumb to its superior when brought into opposition, the Aleuts were quickly diminished in number until it became an object of care and solicitude on the

part of the Russians to save them for the prosecution of the fur-trade. In 1834 they numbered only about 4,000, Kodiak included, and therefore they have not diminished nor increased to any noteworthy degree during the last forty years. There has been a slight increase, if any, up to the present time.

When first discovered they were living in large "*yourts*" or "*oo-laga-muh*" houses partially underground, which resemble very much such a structure as our farmers put up for a root-cellar, with the difference only of having the entrance through a hole in the top, going in and out on a rude ladder or notched timber post. Some of these *yourts* were very large, as shown by the ruins to-day; one on Oonimak Island, north side, is over 500 feet in length, with corresponding width, and one at Koshegan, Ounalashka Island, the foundations still standing, shows that it was 87 yards long and 40 wide; and an old woman who was living only two years ago, remembered when her people lived there, and called it "a handsome house." In these *yourts* they lived by forties, fifties, and hundreds as a single family, with the double object of protection and warmth, where fuel was so scarce and precious.

For a full account of them as they existed when first visited by the Russian priests I can do no better than call attention to the history of their lives and condition, as published by Father Veniaminov,* a noble missionary, and who made good use of his time in recording faithfully the custom of a people which has been entirely changed by Christianity in less than one hundred years. As an illustration, showing how exceedingly superstitious they were in these early days, I may mention that there is a small stream running into the northwest head of Beaver Bay, Ounalashka Island, forming a very pretty little waterfall, and near by it is a large mass of dark basaltic rock; the water of this creek the Aleuts never dared to drink for fear of instant death, and to the stone they paid homage, and revered it as a devil petrified.

As they are living at this time, nearly every family is in possession of a hut or "*barrabkie*," built partly underground, walled up on the sides, and roofed over with dirt and sod; a small window placed at one end, and a low door at the other, which opens into a low, dark alley, which in turn communicates with the living-room by another small door. This living-

* A translation is published in *Alaska and its Resources*, W. H. Dall: Lee & Shepard, 1870.

room is not large, seldom over ten feet square, and often not more than seven or eight, with a hard earthen or wooden floor; the walls are neatly boarded up and sometimes papered and embellished with pictures of church saints. In this room the Aleut spends most of his time when not hunting; shuts himself up in it with his family, builds a hot fire, lasting only a few minutes, in the little stove or Russian oven, and either drinks cup after cup of tea, or stupefies himself with "*quass*" or native beer, and lies for hours, and days even, in dull, stupid enjoyment on his pallet. I have looked into a barrabkie where there were twenty men, women, and children packed into a living-room not more than ten feet square, all drinking tea, with the perspiration rolling down in beady streams from every face. Many of these huts are damp and exceedingly filthy, while others are dry and cleanly; but the temper and disposition of the Aleuts is that of improvidence and shiftlessness, and all exist, with a few exceptions, as a matter of course, in a state of ignorance, though a great many read and write, in consequence of their relationship to the church, the services of which are recited in the Russian tongue, and as most of the subpriests, deacons, &c., are recruited from the ranks of the people themselves, (the boys only being educated for this purpose,) a large proportion of them speak and read Russian well enough for all ordinary use.

The manners and customs of these people, to-day, possess in themselves nothing of a barbarous or remarkable character, aside from that which belongs to a state of advanced semi-civilization. They are exceedingly polite and civil, not only to their trading agents, but among themselves, and visit one with another freely and pleasantly, the women being great gossips; but, on the whole, their intercourse is very quiet indeed, for 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 liquor that they lose their naturally quiet and amiable disposition and fall into drunken orgies.

Having been so long under the control and influence of the Russians, they have adopted many of the customs of the latter, in giving birth-day dinners, naming their children, &c. They are great tea-drinkers, but seldom use coffee. On account

of scarcity of fuel, they use a great amount of hard bread, soda and sweet crackers, instead of buying flour and baking it.

They are remarkably attached to their church, which is well adapted to them, and no other form of religion could be better or have a firmer hold upon the sensibilities of the people. Their chastity and sobriety cannot be commended.

As parents, they are very indulgent while their children are infants or under the age of eight or nine years, but when this age is attained by their offspring they become harsh disciplinarians and task-masters, putting burdens upon young shoulders that are heavy enough for adults, always exacting implicit obedience. Though many children are born, the mothers are not successful in rearing them, for they are extremely negligent in regard to air and diet, irregular in their meals and slumbers, shiftless and unclean, and they frequently indulge in intoxication while nursing their infants. These vices cause an excessive mortality among the children. The Aleuts are dependent entirely upon themselves, except at the Seal Islands, for relief and aid in case of illness, yielding themselves to such treatment as they can get with the utmost patience and resignation. They believe generally in a mild form of Shamanism, or in the laying on of hands, which is practiced usually by old women.

The average Aleut is a bold, hardy trapper, as he must be to be successful as a sea-otter hunter, and this is the only profession or calling that his country can offer him. He is a patient, steady workman, and supplies as good manual labor as could be desired, and such as is required in the country. The Russians made sailors, navigators, carpenters, blacksmiths, store-keepers, &c., of this race; but since the transfer of the Territory there are too many of our own people of that class idle for the Aleuts to compete with, and who come directly into the country in response to any demand for such labor, so that he falls back upon the sea-otter as his sole support against a relapse into barbarism. Competition in this business he has no occasion to fear from the white man, who would never consent to spend the same amount of skill and energy for the returns which satisfy the Aleutian hunter.

It will therefore be evident that the good condition of the native hunters of this Territory is a matter of great importance to the traders who have any deep interest in the fur-trade; and it is not remarkable, in view of the clearness of the case, as above stated, that the Aleuts to-day are existing in greater comfort,

in better houses, with greater facilities for hunting, and receive better pay than they ever realized before for their skins. Of this I am confident, by personal observation of the present, and from a knowledge of the past derived from the archives of the Russian company, and the history, meager but true, of the early traders in the country. The enlightened and true business policy adopted by the agents of the Alaska Commercial Company with regard to the improvement of the condition of the hunters of the Aleutian Islands has already begun to bear its golden fruit in an immensely-increased yield of sea-otters every year. This statement is fully corroborated by a person of all men in the whole country best qualified to pass an independent and correct opinion, Father Innocent Shiesnekov, an intelligent and pious Greek Catholic priest, in charge of the Aleutians, who was born and raised on the ground, and with whom I have had several interviews bearing upon the subject of this chapter.

There is one general evil, not confined to this section of the Territory, but more injurious to the people here than elsewhere, and that is the curse of beer-drinking and the disorders which arise constantly from its effects. These people have an inordinate fondness for spirituous liquors, and as this is not permitted to be made, vended, or brought into the Territory, the traders among these natives keep such a sharp lookout for whisky-schooners, that the traffic is thoroughly suppressed among the Aleutians; and the people, therefore, determined to have some means of ministering to their craving appetites for strong drink, brew a thick, sour, alcoholic beer, by fermenting sugar, hops, flour, dried apples, &c., together, in certain proportions, with water, and many of them manage to keep intoxicated and stupefied for weeks, and even months, at a time; beating their wives and children, destroying their houses, and recently, on several occasions, committing murder. This practice makes every one of the settlements at frequent intervals, and always after the return of a successful hunting-party, a scene of lamentable debauchery, which can only be stopped either by prohibiting the sale or importation of sugar into the Territory, or by empowering Government agents to inflict summary punishment for the least criminal offenses growing out of intoxication. No great severity in the punishment would be required, for it must be said, to their credit, that they are naturally a law-abiding

people, and the mere presence of an officer is, with few exceptions, enough to secure obedience.

For the present demoralization among the natives of the Territory in this respect (and it is a vital one) the Government alone is responsible. The people, during the last four or five years, have indulged in all manner of excesses while under the influence of beer, and have observed that, do what they will, from beating their wives up to cold-blooded murder, there is no authority in the land to punish them; and this knowledge tends to continue this unhappy state of affairs. This laxity is an injustice toward the orderly and more soberly-inclined portion of the communities, subjecting them to the control of the leaders of drunken revels and to an immense amount of unnecessary suffering. The sea-otter traders would gladly pay, in the form of a slight tax on the skins of that animal, more than enough to afford a liberal salary twice over for the services of some man armed with authority to suppress this demoralization and attend to other urgent matters neglected on the part of the Government.

From the Aleuts we pass to the consideration of the rest of the people (Indians) of the Territory, who, by far the most numerous, are living now as they were when first discovered, over a hundred years ago; those of the north, belonging to the Eskimo race and immediate derivatives, are quite amiable in their barbarism when compared with the Koloshes and other tribes of Indians proper in their neighborhood. Any steps that may be taken for the elevation and improvement of the condition of these Indians in the Territory of Alaska, however well intended, would be entirely abortive. If they work, and they frequently do, on the coasters as seamen, and about the sound and Victoria as laborers, wood-cutters, &c., the money necessary for a debauch or a gambling game is the incentive. The condition of any savage people is one that arouses the sympathy of benevolent minds, and for its amelioration has absorbed the best energies and resources of hundreds of brave, devoted men who have labored in our country, but the result of such labor can only be successful under certain conditions of life and mental constitution of a savage race not found in Alaska. The Russian priests energetically struggled with these Indians of Alaska, from Bering's Straits down to Queen Charlotte's Island, backed up and cordially aided by the Russian-American Company, which hoped to gain more control over the natives,

(and would have done so had the missionaries succeeded,) but the result was most unsatisfactory. A thin varnish of decency, honesty, morality, &c., was put on, but the subject had to be revarnished every day or his evil nature would continue to shine out.

From what we are led to plainly understand by the history of well-directed and persistent efforts in the past, we can only consider the present condition of the Indians of Alaska as that of savages, and beyond the power of the Government or of the church to change for the better. If they were a people living in a country favorable to exertion and were merely lazy and ignorant, then there would be hope with some assurance of success in effecting a change for the better, but the case is worse, for the obstacles are insuperable.

They are living in the manner customary with all Indians who have an abundance of fish and game, and when they suffer in any section of the Territory, as they frequently do, for want of food, it is on account of the indolence and improvidence during the seasons of plenty, for all of these people on the mainland who, at regular periods of the year, have access to a most lavish profusion of fish and the flesh of deer, are never caught by a severe winter with a full supply of provisions on hand, and exist through the long, cold spring-months most miserably, often living upon their skin-garments, offal, &c. As an instance of this improvidence, Captain Hennig, an old trader, cites the following case: At the mouth of the Koishak River, which empties into Bristol Bay between the Peninsula and the mainland, the reindeer pass by swimming in large herds across in September as they go in feeding to and from the peninsula; the natives at this season run along the bank as the deer rise from the water and spear them with great ease and in any number that fancy or want may dictate. At one time Captain Hennig counted here seven hundred deer carcasses as they lay rotting and untouched save by the removal of the hides; not a pound of meat of the thousands putrefying had been saved by the natives, who would be living perhaps in less than five months in a state of starvation.

These Indians are not steady, persistent hunters like the Alents; they are fickle, and have far less to gain by trade in their estimation than the Aleutians, who, on the contrary, are not satisfied with a small amount of tobacco and a few beads, which are the staple commodities with the Indians, together

with a little powder and ball. The Aleuts want good clothes ; they desire to dress their women and children well ; they crave tea, sugar, flour, &c., all of which are simply despised by the savage, and, consequently, a little hunting will obtain all he wants in return from the trader, and exertion beyond this, on his part, appears to him simply absurd or ridiculous.

While the sea-otter trade in Alaska, therefore, is well developed, the fur-trade on the mainland is by no means of the importance it might be made to assume were the hunting as energetically followed up as is that prosecuted by the people of Kodiak and the Aleutian Islands ; the industry and energy, however, of our traders will undoubtedly add largely every succeeding year to the yield, in creating desire among the Indians, and thus stimulating exertion on their part in hunting so as to insure its gratification.

I shall not enter into a description of these Indians. Their treacherous, indolent lives have been most accurately and fully described by a score of writers ; one of the earliest, that of Portlock and Dixon, in 1786, 1787, and 1788, reads as if it had been written from my own notes taken this season, so little have they changed in the main of habit and disposition. Of course, when the Russians were obliged, in 1832,* to commence the liquor-trade with them in self-defense against American adventurers and the Hudson Bay Company, and the small-pox in 1835 swept like wild-fire through all the villages on the north-west coast, destroying nearly one-third of them, the combination of two such terrible evils, whisky and the plague, demoralized and diminished them to such an extent that they never have recovered their former strength, nor is it now probable that they will recover it.

The number of Indians now living in the Territory is, according to best authority and my judgment, between eighteen and twenty thousand. Of this number, between ten and twelve thousand belong to that district bounded on the north by Cook's Inlet and south by Fort Simpson ; the remainder inhabit that stretch of country reaching from Bristol Bay to Kotzebue Sound, and back into the far interior, where there are several tribes, supposed to be quite numerous, about which very little is known even by the traders.

On this coast-line of Alaska, between Bering's Straits and

*This was stopped in 1842. A treaty was made between them and the Hudson Bay Company.

Fort Simpson, are found six distinct tongues through which their relations of affinity may be traced, viz: the *Aleutian*; the *Kodiak*; the *Kenai*, or *Cook's Inlet*; the *Yahkootat*, or *Mount Saint Elias country*; the *Sitkan*; and the *Kahgan*, or *Prince of Wales Island*.

The ALEUTIAN TONGUE is the language of the inhabitants of the Aleutian Islands and part of the Peninsula; it is divided into two dialects, one spoken by the Aleuts of Atka, and the other by those of Ounalashka.

The KODIAK TONGUE is the root of all the dialects spoken on the shores of Bering Sea, and still farther north and to the east; it is the tongue spoken by the *Choochkie* of the Asiatic side, and is divided into six distinct dialects, and these again subdivided, so that the Kodiak root is the language of the following tribes:

The *Malemutes*, of Kotzebue Sound, Norton Sound, Port Clarence, the Diomedes, King, Sledge, and Saint Lawrence Islands.

The *Aziagmutes*, of Saint Michael's, part of the Pastol Bay and as far north as Norton's Sound.

The *Agoolmutes*, of the mouth of the Yukon River.

The *Magmutes*, between Cape Romanzov and Cape Arinov.

The *Koskoquims*, of Koskoquim Bay and River.

The *Aglahmutes*, of the Nushagak country, and part of the Peninsula.

The *Nunivaks*, of Nunivak Island, who use a dialect almost like the pure Kodiak, which is spoken on that island.

The *Koyoukons*, of the Middle Yukon River.

The *Ingaleeks*, of the Lower Yukon River.

The *Choogaks*, between Cape Elizabeth and the mouth of Copper River, (taking all the south shore of the Kenai Peninsula and Prince William's Sound.)

The KENAI TONGUE can hardly be called of Kodiak derivation; it is divided into four dialects:

The *Kenai*, of the Gulf of Kenai, or Cook's Inlet.

The *Maidnorskie*, or people on Copper River.

The *Kolchans*, or people of the Upper Koskoquim River—quite a large tribe, estimated at six or seven thousand.

The *Kahwichepaks*, a people on the Upper Yukon. In this dialect are many words of *Kodiak* and *Yahkutat*.

The Kenai language is the most difficult of all the Indian tongues, so abounding in a profusion of harsh, guttural sounds that their own savage neighbors frequently try in vain to acquire them when it is for their interest to do so.

The YAHKUTAT TONGUE is spoken only by the people of Yahkutat, or that belt of coast between Lituya Bay and Copper River; it is divided into two dialects, viz :

The *Yahkutats*, from Icy Bay to Cross Sound.

The *Oogalenskie*, from mouth of Copper River to Icy Bay.

The SITKA, or KOLOSH TONGUE, is spoken by all the Indians from Lituya Bay to Prince of Wales Island, the Stickeen, and without any dialects, although there are eight or ten tribes, and they are relatively numerous.

The KAHEGAN, or PRINCE OF WALES, is spoken on that island and Queen Charlotte's, and completes the list of languages in the Territory, as far as I can intelligently compile and arrange them.

From the tables which I give at the close of this chapter, the relative population of these different tribes can be recognized, and by them it will be seen that, save where the Aleutians and Kodiakers are living, together with a number of Russian half-breeds or creoles, there are no organized or fixed settlements in the Territory; the Indians roaming at will in the mountains and over the plains during the summer, fishing and berrying principally, until the severity of approaching winter drives them back to underground houses in the north, and wooden huts and large barracoons by the sea at the south, where, reeking in filth, four and five months are passed in perfect comfort to them, provided that they have food—passed in sloth and sleep, with the exception of a small proportion of them who are marten, mink, and fox trappers. These men frequently perform an astonishing amount of labor, enduring incredible hardships, should they happen to be ambitious, but this is a very rare quality.

The two leading stations in the Territory, (excepting the Prybilov Islands,) both with regard to trade and population, are the villages of Ounalashka and Kodiak, each with an Aleut and creole population of four hundred, more than double the number occupying any other settlement, save that of Belcovskie, which has two hundred and forty-eight, with a sea-otter trade fully equal or superior to either Ounalashka or Kodiak. Then following in order of trade and population, we have the villages of Unga, of one hundred and sixty-two souls; Atka, of one hundred and thirty-one souls; Oomnak, of one hundred and nineteen souls; then comes Sitka, with a population to-day, principally Russian half-breeds, of one hundred and eighty-six,*

* Not counting the troops, Government employés, or Indians.

and no trade whatever to mention, and commercially of less importance than any one of the following points, in addition to the list above, viz: Koskoquim, Nushagak, and Saint Michael's. Even should trade ever be re-established in Sitka, it would consist principally of the fur of marten, mink, and beaver, with air-dried deer-skins; but as matters now stand in the Territory, there is no future for Sitka; a change only in the supervision of the interest of the Government in that district can benefit it, or make it worth the attention of a small trader to live there. On this point I speak at length in my chapter on the duty of the Government in this respect.

The sum and substance of my investigations with reference to the condition of the people of Alaska during the past season may be given briefly as follows: That the Indians are living as usual, in nearly the same number and in the same condition as when under Russian rule, with the marked and significant exception that they have been under no restraint whatever by government for the past five years, such as they were accustomed to have imposed upon them by the old *régime*, and that this is rapidly making it troublesome and dangerous for small traders to go in among them on the northwest coast. Those in the vicinity of Sitka have become familiar with the process of distillation of whisky from molasses, and make a large amount of it openly, in addition to what they get by illicit trading.

The Christian Aleuts and Kodiakers are in, if anything, a better condition than at the time of the transfer; some sections, as at Ounalashka, in a greatly improved state, which is, by the way, promised to all the rest in the course of a few years, if proper, prompt steps are taken by Government. But the condition of the small population of creoles, chiefly at Sitka, is changed very much for the worse; they were store-keepers, clerks, sailors, traders, artisans, &c., of the old company, and there is no longer any great demand for that labor in the country, and not likely to be during their lives, at least; they are unfortunate in not having the training or the energy to make good hunters, for this is the only industry the Territory holds out for them. To say that they are now in spirit and purse poor, is true, but still they are not in any physical misery, the abundance of fish and game preventing such a result. From my observation and knowledge of them, I can truly state that they are now in a better condition in the Territory,

living as they do, than they would be anywhere else in our country, with an exceptional case, of course, here and there, for they are not distinguished by either energy or industry, as a class.

I have been assured by the Russian bishop having the spiritual direction of affairs in the Greek Catholic Church, now established in the Territory, that there is no intention on the part of the home church to neglect its interest there; that he is at the present time busily engaged in fitting a class of young Russians for the work of priests and teachers in Alaska, by giving them a thorough knowledge of the English language in addition to the regular course of discipline usually necessary for his church.

If *we*, on the part of the Government, attempt to teach them, we shall soon have to feed some eight or ten thousand paupers. All they need is to be sustained and protected in their hunting industries, as is indicated in the following chapter, and they will take care of themselves.

CHAPTER III.

THE DUTY OF THE GOVERNMENT WITH REGARD TO THE TERRITORY AND ITS PEOPLE.

The measures which are now in force for the support of law and order in the Territory are entirely inadequate and costing much more than a correct and efficient system would. The case is a plain one, and the facts in regard to it are as follows:

The Territory of Alaska was received from the hands of a powerful fur-trading organization which held absolute sway over the entire domain, even to the life and death of the people, and which had governed the land despotically for more than sixty years. It was fully prepared at any moment to carry out its orders, and was supported by a small fleet of sail and steam vessels, and a regularly-organized troop of employés and retainers, over two thousand in number, placed here and there throughout the country, the headquarters being at Sitka, for political reasons.

War and revenue-marine vessels, with duly-authorized officers and agents, were sent to the principal stations, villages, and ports, where they ran up our flag and loudly proclaimed the fact to the people, or natives, that they were now free and independent; that no person or parties had the power to control or direct their trade in furs, or any other matter to which they might turn their attention; that crime of all description, theft, murder, &c., would be promptly dealt with, and that the agents of the American Government would visit them at irregular though frequent intervals, or upon call, with these vessels fully prepared to enforce and execute the law. This was done in 1868 and 1869. This is all that has been done, and to-day, as matters are conducted, the country is as far from control by our Government as though it were a foreign land, the agents of the Government, both military and civil, being unable to exercise any effectual supervision over the affairs of the Territory, or to enforce the laws.

The propriety of quartering troops in this Territory may be seriously questioned; for where any considerable body of natives exist they will be found upon the seaboard and estuaries,

and the only way by which their villages can be reached is by water. Traveling by land is simply impossible, so that to-day the two companies of artillery at Sitka are entirely unable to correct the most wanton outrage which the Indians might see fit to perpetrate but a mile from their sentry-lines.

The practical result of quartering troops among people like these in Alaska is bad. The communities thus visited were not remarkable for sobriety, morality, or industry before the coming of our troops, but after their arrival the change for the worse, wherever the natives were brought in contact with them, was very marked. Honorable officers find it sufficiently difficult to restrain their subordinates in camps and posts remote from demoralizing temptation, but when their men are surrounded by simple natives who will sell themselves for rum and tobacco, the inevitable result follows of debauchery and intemperance. The history of the military occupation of this Territory by our Government, although brief, reflects no honor upon the troops, and is a most unfortunate one for the natives with whom they came in contact, so much so that all the posts throughout the Territory have been discontinued except that of Sitka, of which the law, I believe, compels a continuance, and which, I trust, will be soon repealed for the relief of the troops, the credit of the Government, and also a saving of unnecessary expense to the public Treasury in moving the soldiers to and from the Territory and of subsidizing a mail-steamer to carry their letters, &c.

The present statute, which provides ostensibly for the government of the Territory, authorizes the appointment of a collector of customs and four or five deputies there, the former located at Sitka, the others at Ounalashka, Kodiak, and Wrangel, where they are able only to *conjecture* as to the condition of revenue details in their respective districts, for they are unable to leave their posts. The collector of customs can exercise no adequate vigilance against the illicit manufacture and trade in whisky, smuggling, &c., with the sailing-cutter which is allotted to this district. A small steam-vessel alone can follow these traders and smugglers through the innumerable narrow and intricate channels and fjords of the Aleutian and Alexander Archipelagoes.

With the present sailing-cutter, no calculation can be made with reference to her movements; she is at the mercy of wind and tide; how long will be her trip to a given place, and when

she will return, no satisfactory conjecture can be made; she may be absent but a few days, and the absence may be protracted a month. If the natives were to seize a trader's schooner a hundred, or even fifty, miles away from Sitka, and were the collector to get instant word of it, weeks might elapse before the sailing-cutter could get upon the ground of the outrage, and would even then be utterly unable to follow the outlaws. There is no trading done at Sitka; the eight or ten thousand Indians between Cross Sound and Fort Simpson trade entirely in the inshore passages and channels with all sorts of men and craft; what is going on no one knows, and, as matters now stand, the collector and his deputies are certainly not to blame if they never know.

As matters now stand, the town-site of Sitka is the only place in the Territory where the merest shadow of ability exists on the part of the Government to sustain law and order, protect property, &c. The troops there stationed are utterly helpless to do anything outside of their station, and what is more, the Indians know it and laugh at them when they are reproached and warned for misdemeanors. The collector of customs has a sailing-cutter, which is of no earthly use, for she cannot be used in the intricate inside passages, where the principal body of natives live, and can at the best make a wide, shy visit to Kodiak or Unalashka, or some such outside sea port, and then is at the mercy of the most fickle and uncertain weather for sailing, so that no calculation can be made upon her going or coming.

The natives of the Territory have been living since the transfer under no effectual government restraint—a sudden and pernicious change from the strict Russian *régime*; for now everywhere in the Aleutian Islands and at Kodiak the natives are in the habit of drinking “quass,” or home-brewed beer, to such an extent that it bids fair to ruin them unless checked. The leaders in drunken orgies are getting perfectly reckless, for they have noted the fact that during the past five years there has been no punishment or notice taken by proper authority of crime, including theft, wife-beating, and murder; that there is no such thing as the shadow, even, of suspicion or power on the part of the Government, of which they have only heard and know nothing.

That these people have not behaved worse during the last two or three years in their present life of unchecked license is

a strong evidence of their naturally amiable and law-abiding disposition, and it is manifestly wrong on the part of the Government to allow the disorderly element in the Aleutian and Indian communities to gather such strength by continued inattention; for it is leading to the rapid demoralization of the Aleutians, and is making it unsafe for white traders to venture singly among the Indians. I therefore most earnestly call attention to a plan for reform in the Territory, which will not annually draw from the Treasury more than half of what is received every year from the tax netted from the Seal Islands alone.

The annual revenue derived by the Government from the Territory, about \$300,000 net, is sufficient to support the proposed system of government, and afford an unexpended balance, every year, of from \$100,000 to \$150,000; and it would also result, in a very few years, in adding greatly to the receipts.

The following is the plan, after much deliberation, which I venture to propose: *

1. Withdrawal of the troops from the Territory.

2. The placing of the collector of customs at Kodiak where he can live without the slightest danger of injury from savages, although if left alone at Sitka he would be subjected to no actual risk. There is no reason why the central point for the action of the revenue-officers should be at Sitka in preference to either Kodiak or Ounalashka; both of the latter being better situated, with ten times the amount of trade, and double the law-abiding population; but the deputy, now at Kodiak, might be transferred to Sitka.

3. A small revenue-steamer should be provided, with a single gun, and having compound engines, so that she will use but three or four tons of coal per diem, and steam seven to eight knots per hour, and fitted with spars to take advantage of favoring winds. Such a vessel could move to any point on brief notice. She should cruise steadily throughout the year, for she would move in good, sheltered channels. The appearance of this vessel, at frequent intervals, would be all that is necessary to guarantee security of life and property to traders throughout the entire district. Her cruising-trips would establish a prompt means of communication between posts; and she could visit Tongass or Fort Simpson every two or three

*Always excepting the Prybilov Group of Seal Islands, which are well provided for by special acts of Congress, approved July 1, 1870, and March 5, 1872

months and obtain the mail for the Territory, which the revenue-cutter stationed on Puget Sound should be detailed to bring at preconcerted intervals of two or three months, and, by so doing, give the Territory a mail-system.

4. The abolition of the present subsidized mail-steamer which runs between Portland and Sitka. The handful of white citizens there, only two of them citizens of the United States, have no more right to claim the privilege of a mail-steamer, *which now runs for their benefit exclusively*, than have the inhabitants of Kodiak, Ounalashka, or Saint Michael's, or half a dozen other villages of greater population or of more importance in this Territory.

5. The appointment of an agent, a man of character and education, who will have an opportunity to keep the Government well informed of the exact condition of the people in the Territory and its resources, by reason of the facilities for travel afforded by the revenue-steamer.

6. The extension of the jurisdiction of the courts of Oregon or Washington Territory over this Territory, so that when persons belonging to the Territory, guilty of murder, arson, &c., are arrested and sent down for trial, they can be punished, and not permitted to escape, as they have been in more than one case already, for want of this jurisdiction.

7. The laws relating to our mining-lands might be so extended as to include the Territory of Alaska. Gold and silver, copper, iron, and coal exist here, and there is no predicting what the future may bring forth, for prospectors are constantly at work.

By placing matters in the Territory on such a footing as I have described, at least some definite approach to a system of law and order would be initiated. There would be a steady and prompt means of communication between all the stations where life and property exist. No whisky-smuggling or oppression of the natives could be carried on without its speedy apprehension and suppression, and the petty crimes which are so aggravating and demoralizing at present throughout the Territory would quickly cease. The annual revenue now derived from the Territory is more than sufficient to support the whole system recommended.

Beyond the adoption of this plan, in my judgment, on the part of the Government, nothing more is required by the Territory and its people. Any scheme of establishing Indian

reservations or agencies in this country, with an idle and mischievous retinue of superintendents, chaplains, and school-teachers, seems to me entirely uncalled for. The people here are keen hunters and quick-witted traders, and need no help or care beyond that I have indicated. Such of them as are christianized have long ago embraced the Greek Catholic faith, and adhere to it with devotion. The rest, or Indians, as they are called, are just as far from being in a Christian state of mind as they were when first approached by the Russian priests, over a hundred years ago.

With regard to the education of the children of the better class of the natives, that is, the Christian Aleuts, there appears to be one invincible obstacle. The children, speaking a strange tongue, will not attend school, and their parents, as a body, will either prevent or discourage them by positive command, or by utter indifference. If they are to be educated, their church alone can do it. It now controls them perfectly in this matter of education.

That the children will not attend school has been most thoroughly tested already, not only by the Russians, but by ourselves during the past four years on the Seal Islands. In 1835 a school was opened at Ounalashka, and presided over by one of the most indomitable and excellent of men, Veniaminov, who tells us that in this settlement of over 275 souls then, only "twelve boys could be brought together." When more than this is wanted by Alaska in the way of legislation by Government, it will suggest itself in due time, and in reason.

CHAPTER IV.

TRADE IN THE TERRITORY, AND THE TRADERS, STATIONS, STATISTICS, ETC.

Trade is devoted chiefly to furs, with occasional dealings in oil and ivory ; it is divided among a few parties, the Alaska Commercial Company having a large preponderance, by virtue of greater resources and greater energy, than any or all of its competitors combined ; the sagacity of its traders, and the kindness with which they treat the natives, have resulted in even more than quadrupling the yield of furs in the Yukon and Ounalashka districts, as reported by the Russian American Fur Company at the time of the transfer. The operation of this company is confined to the country west from Kodiak, embracing the Aleutian Islands, where they at the present time have but little competition ; on the Yukon, Koskoquim, and Ounalashka they are opposed by Charles Jansen, and by David Shirpser at Belcovskie and Kodiak, and a number of small traders and whalers in Kotzebue Sound. The trade east of Kodiak, up Cook's Inlet, down the coast back of Sitka, to Fort Simpson, is, so far as is known—for I was unable to examine this district—given up to small traders who ply in and out in light schooners, canoes, &c., and, doubtless, is quite extensive and largely illicit, for the natives will not trade at Sitka for money ; so the inference plainly is that they dispose of their furs for whisky, &c., in the inshore passages, where smuggling can be carried on.

When the Russian traders first opened up the country the natives were everywhere found engaged in fierce intestine wars, and not prosecuting the chase of fur-bearing animals more than enough to supply themselves with skins for manufacture into garments ; depending on the sea for their principal means of subsistence.

They used the skin of the sea-otter and beaver generally for cloaks, employing usually three sea-otters for one cloak ; one of these skins was cut into two pieces and afterward sewed together, so as to form a square, and were loosely tied about the shoulders with small leather strings, fastened on each side ; it

was the sight of these sea-otter cloaks that excited the greed and cupidity, and stimulated the adventurous trips made by the first Russian traders in the Aleutian Islands, and the wearisome voyages of the English and French to the coast of Vancouver's Island, and to the northward as far as Cook's Inlet, so early as 1785-'86. The beauty and value of the skin of the sea-otter alone drew men, who, in spite of all danger, visited every mile of the rugged coast of this Territory, nearly a hundred years ago, in rude, clumsy ships and shallops, and depended upon ruder nautical instruments, without charts, &c.

The hardships endured and perils encountered by these hardy, indomitable adventurers can be appreciated only by the seaman of to-day, who may sail in their tracks, provided with a generally correct chart of a coast then absolutely unknown, in the best sailing-vessels, fully equipped with perfect nautical instruments, and yet this modern sailor cannot sleep day or night with safety while he is on the coast or among the islands, so severe is the trial.

The first great demand by the natives in the Territory, as an equivalent for their furs, was iron ; the English traders used to make it up into thick wrought bands, about eighteen inches to two feet in length, with a breadth of two inches, called " toes ; " for one of these, at first, they readily procured a fine sea-otter or two, and a hatchet would obtain two or three ; tobacco, the present great staple of trade, was then scarcely in demand, but soon became so ; flour, when given by the Russians to some Aleuts at Ounalashka, in 1788, was taken by them up to a hill-top and thrown by handfuls to the wind, the natives enjoying the sight of the mock snow-storm spectacle much more than the use of the material for food ; over on the mainland, when crackers and sugar were given to some natives, at Nushagak, they spit it from their mouths with disgust, wearing an expression of exceeding dislike for the strange food ; lead pleased the Aleutians at first very much, it could be cut and fashioned so readily, but the most determined trials on their part failed, of course, to make it retain a cutting-edge, and they finally gave it up.

By degrees, however, and quite rapidly, iron with form of spear heads, axes, knives, kettles, &c., became a drug among the people generally, and a taste for the wearing of cotton and woollen goods, the use of tea and tobacco, caused the natives of the Aleutian Islands to strain every nerve in hunting the sea-

otter, and so effectually did they do so that the animals diminished in a very short time to but a fraction of their former number; but the natives of the mainland, a very different class of people, and incapable of living in as advanced a civilization as the Aleutians, were never aroused, and never will be, to any such activity by any legitimate effort to trade; they only covet tobacco and rum, and a little of either, used as an Indian uses them, goes a long way.

Therefore, while we may say that the fur-trade of the Aleutian Islands and the Peninsula, as far as Kodiak, has been and is to-day developed to its full importance, it is very evident that, with regard to the rest of the Territory, the annual yield can be and will be greatly augmented by the exertions of our energetic and industrious traders who are now scattered in keen rivalry over the ground.

By the very nature of the business, character of country, and climate of Alaska, white men will never themselves do any sea-otter hunting or mainland trapping; it rests solely with the natives, and the annual yield depends entirely upon the exertions which these people may be inclined to make as a means of procuring coveted articles in the hands of the traders. The hardship and privation to which the fox and marten trappers, and especially the sea-otter hunters, are subjected while in pursuit of their quarry are very great, yet not so great but that white men could endure and would endure them did it pay well enough; but it will be seen by reference to the tables giving the fur yield of the Territory that in proportion to the number of hunters, all of whom are more or less skillful, the return is a small one, and would not equal the earnings of the ordinary mechanic or day-laborer in our country, with the marked exception of the wages of the inhabitants of the Seal Islands, who live better and receive more pay than a majority of our people who are dependent upon manual labor for support.

The life and labor of the trader on the mainland and islands is one of much discomfort, and at certain seasons of the year of incessant activity. A chief trader, though burdened with much responsibility, lives quietly and comfortably at the redoubt or station where he is posted, the headquarters usually of a very large district; but the trading is all done by deputy traders, who are under the control of this head officer. These men start out from the post alone, perhaps accompanied by an Indian, with a dog-team and sled, which is loaded with several

hundred-weight of goods, such as are likely to be most prized by the tribes they intend to visit for the purposes of trade, usually tobacco, calico, beads, and powder and ball, caps, &c.; but the great bulk is generally tobacco. These men start in the dead of winter, provided with nothing but a blanket, a tent, a few pounds of dried meat or fish, and tea, and go in this way from tribe to tribe, from settlement to settlement, until the intended circuit is made or the goods disposed of.

When the trader reaches a settlement he inquires if the Indians there have any furs; if so, he pitches his tent and unpacks his goods under it, seats himself in the middle, near an aperture in the tent, so that the natives may approach and look in upon his assortment. Their skins are then passed through the opening with an intimation of what is desired from the trader's stock in exchange. The trader examines the skins, tosses them over into a common heap, and tears off the cloth or passes out the tobacco as the Indians require; and this continues till the business is concluded.

If the trader finds at the close of his trading at any one or more settlements that the bulk or weight of his furs is too great for removal on his sled, he gives the surplus into the care of some one of the people, counting over to him in the presence of the whole village all the skins. This man takes charge and honestly guards them until the trader comes in person or sends for them, and the whole community seems to feel as if their reputation were at stake, for they will neither molest the trader's *cache* nor permit others to do so. This is certainly a strange and most noteworthy characteristic of the Indians of the great interior of Alaska, designated in this report as the Yukon district.

The trading on the northwest coast, however, from Puget Sound up to Prince William's Sound, was and is conducted in a very different manner from that of the Yukon district. Here the traders, large and small, employed vessels varying from steamers of considerable size to sloops. Since, however, the withdrawal of the Russian American Company from the Territory, and the steamer Labouchere of the Hudson Bay Company, but one trading-steamer remains upon this coast, viz, the old Otter, the property of the last-named corporation. Sailing-vessels, small schooners principally, monopolize the trade, and of these there are eight or ten at least.

The practice of these trading-vessels is to cruise along the

coast, running into the numerous canals, channels, and harbors so characteristic of the region, where they come to an anchor, within easy reach of the shore, and wait for the natives to come off to them in their canoes laden with whatever they may possess fit for barter. The trading itself is tedious beyond all measure. The natives will sit in their canoes around the vessel for hours before showing the least attention or desire for business; then when it does begin the haggling baffles description; each Indian after the other trying to get a little more than his predecessor, no matter how slight or insignificant it may be. The traders of course dare not, even to gain precious time, deviate from an invariable rule or tariff in barter, and so the slow exchange goes on. The Indians throughout this whole section are shrewd and artful traders, and do not scruple to adopt any means by which they can outwit or deceive the white trader, so that it is unfortunately a case of diamond cut diamond wherever traders meet the natives of the northwest coast to-day.

With the Indians of the Territory trade is carried on without the use of coin, but on the Aleutian Islands, among the Christian Aleuts, the people take cash for their furs and pay over the counters of the different stores for their goods; and this necessitates the keeping of accounts, since the traders often find it to their advantage to give credit to a penniless hunter. These accounts the Aleuts keep in very good shape, and they are seldom in error over their reckoning.

The Russians pursued a different course from our people in conducting their trade in this region, where they were free from the competition of rival traders. Baranov, the real founder and maker of the Russian American Company, was a man of indomitable energy and foresight, and gave the affairs of the company his vigilant personal supervision everywhere and at all times, but his successors were unlike him, and made no exertion to pay dividends to the stockholders, or to pay debts. All of these gentlemen, with one exception, General Viviatovskie, were officers of the imperial fleet, and lived in official rotation at Sitka, which was selected in preference to Kodiak as a better position in which to menace and repel the advances of the Hudson's Bay people along the coast belonging to Alaska. They were surrounded by a troop of subordinates, living without regard to cost or expenditure of time or labor; a fleet of fourteen or fifteen vessels, steam and sail. Indeed,

no better commentary on the management can be made than a reference to their archives, where in almost any one year, look, for instance, January, 1863, (Techmainov, vol. ii, p. 224,) at this table showing the number and distribution of the employés and dependents:

Districts.	Russians, Fins, and foreigners.		Russian creoles.		Aleuties and Kuriles.		Total.	
	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.
District of Sitka.....	413	50	210	300	36	31	664	331
District of Kodiak....	129	1	480	489	1,010	983	1,619	1,473
District of Ounalashka	4	.....	131	125	749	815	881	960
District of Atka.....	2	.....	94	106	367	342	463	448
District of Yukon.....	32	.....	25	21	14	11	71	32
District of Kuriles.....	1	.....	4	5	126	108	131	113
Total.....	536	51	944	1,046	2,302	2,310	3,822	2,406

Or a grand total of 6,977 dependents of all classes, and of this number over 1,200 were paid regular salaries, from the governor down to the serf.

And yet, with this small army of servants and dependents, the Russians, for the last forty years of their possession, did not get one-half of the furs annually that our traders now secure every year since their establishment in the Territory, while there are not over two hundred men engaged in the whole business at present.

Take the sea-otter trade for instance. The Russians called it a fair season when they secured in the course of the year, throughout the whole Territory, 350 to 400 sea-otters; many years occurred in which less than 200 were taken; but during the last two years 2,500 to 3,000 have been captured each season in the Aleutian and Kodiak districts alone; and I estimate that not less than 500 have been taken from Cook's Inlet down to Fort Simpson. This great increase in the development of the business is simply due to the active personal supervision of the present agents and traders.

In connection with this view of the trade and traders in the Territory, it is proper to mention the operations of the Alaska Commercial Company, as it has been the subject of comment by the press. The whole matter appears to amount to this, that the fur-trade of Alaska, (always excepting the Seal Islands,) placed, as it is, in a fair field for competition, will sooner or later be controlled by those who invest the most money in the undertaking and send the best men for the work, who make their stations more attractive to the natives, and

render communication between their wide-scattered posts more frequent and regular. It will be more difficult every year for small or inexperienced traders to do anything at the fur-trade in this Territory, and the trade does not appear extensive enough to support the operations of two companies, each with as much capital invested as the one in question. The result would be that one would have to withdraw. As far, however, as the Government is concerned, the field for trade in Alaska is free and open to all; a practical illustration of which is shown in the following statement of affairs existing at Ounalashka:

Ounalashka is an Aleutian village of some four hundred souls, men, women, and children; of these sixty are first-class sea-otter hunters, and this is their profession. The Alaska Commercial Company have erected three large warehouses fronting a wharf, where their vessels unload and load; a large store-house, filled with a most extensive selection of goods; a very large dwelling-house for their traders; with office, courtyard, stables for cattle and sheep, a blacksmith-shop, &c., all finished in first-class style, and furnished thoroughly throughout. The company have also erected and are building snug cottages for their best hunters to live in; and there is a school-house, where the native children are invited to attend, which some do. In opposition to this, a young man is placed in a small, weather-worn, rickety shanty, which is made to serve as warehouse, store, and living-room for the agent; a most meager stock of goods, no assortment whatever; and yet this young man, who has not got one dollar to back him, came to me and complained of the almost total loss of his trade, and said in explanation that it was due to the fact that though the natives wanted to trade with him, yet they were living under the influence of fear to such an extent that they dared not do it, and hence transferred their trade. I told him, after looking about the place and talking with the natives and their priest for three or four days, that the only fear that these people of Ounalashka had in the matter was a most wholesome one; it was the fear, coupled with an absolute certainty, that, as he was situated for trade, they would not do as well at his establishment as they could at his opponent's, and the dullest of them could readily appreciate it; therefore, if any successful opposition to the Alaska Commercial Company is to be made in the Territory where it is established, money must, be freely

expended in buildings and upon the people, who will go with wonderful promptness and unanimity wherever they can make the most in trade and are best treated, for they are keen and shrewd.

I now pass to the consideration of the several trading districts, and the character and quality of the furs obtained from them respectively.

THE YUKON DISTRICT.

KOTZEBUE SOUND :

The trade at this place with the natives is principally by whaling-vessels, which are supplied with liquors; they fit out and clear from the Sandwich Islands for the arctic, and take advantage of the impunity with which they can visit this port and profit by this illicit occupation; for the natives here, as everywhere else, are passionately fond of liquor, and a large proportion of the best furs from the Lower Yukon, the region south of Saint Michael's, is picked out by Indian traders and carried to this place, where they can be exchanged for whisky. The trade, however, that belongs to the sound itself is not extensive; only a small number of Eskimo live here, in scattered settlements along the coast, at the mouths of debouching creeks, &c. The catch of fur-bearing animals is not large; the people themselves live more by trading than by hunting, *i. e.*, trading between the people living far to the southward and eastward on the one hand, and the whalers and others, making profits as middlemen.

NORTON'S SOUND :

A few Eskimo traders live here; the catch and yield of fur-bearing animals unimportant. These people assist the Kotzebue traders in getting their furs carried up and over to that place, and many of them go over to Port Clarence with an assortment of furs, beaver principally, where they meet the people from the Asiatic side, who cross Bering's Straits in the winter on the ice by way of the Diomed Islands, with dog-sleds, loaded with tame reindeer-skins, tanned, which are in great demand by the natives of this district for manufacture into cloaks, coats, *parkies*, &c., while the Asiatics are equally desirous of getting any and all kinds of fur, such as mink, marten, land-otter, beaver, &c., but desire beaver especially.

THE DIOMEDES, KING'S ISLAND, SLEDGE ISLAND, AND SAINT LAWRENCE—

Are inhabited by a few Eskimo, but there is no trade with them worth mentioning; they have a little walrus-oil and ivory, and a few red foxes, and occasionally get some whalebone.

SAINT MICHAEL'S:

This is a shipping-point only for the accumulated furs gathered by the traders from the Lower and Upper Yukon, at Nulato, Fort Yukon, and the Tannanah. The present annual yield from these points is the largest and most valuable from the mainland of Alaska. A vessel coming to Saint Michael's in the summer will find from one hundred to one hundred and fifty Indians; they have come in from long distances to the northwest, eastward, and southward; but the fur-trading on the Yukon River and its many tributaries is very irregular as to time and place year after year, the traders constantly moving from settlement to settlement. This year they may only get a thousand skins where they got five thousand last season, and *vice versa*. It is impossible to say where the best place for trade will be, the catch in different sections varying every winter with the depth of snow, the severity of climate, &c.

NUNIVAK:

Trade here is small and unimportant, principally walrus-oil, some ivory, and a few red foxes.

CAPE ROMANZOV:

Traders come up from the Koskoquim and down from the Yukon to this point, where they get some very good furs, mink, marten, and foxes. At Cape Avinova, the district there is quite celebrated for its marten catch, both in quantity and quality; a large number of brown bear range here, where they subsist upon berries, roots, reindeer, &c. The Indians live in small huts and settlements scattered all along the coast down from Saint Michael's.

KOSKOQUIM:

The trade is extensive, and done principally at Kolmakov Redoubt, about one hundred and fifty miles up the river from its mouth, and at a station some sixty miles below it. The traders come down the river in June with their cargoes and meet the ships. The principal trade is beaver, red foxes, mink,

(plenty,) marten, land-otter, (abundant,) bears, brown and black. The people of this district keep traveling all the year round.

NUSHAGAK:

About the same as at Koskoquim, but the quality of sable or marten deteriorates very much and rapidly as the trader goes south from this region. The people are also great travelers, always on the move. This section closes the Yukon district, which forms the western boundary of that of the Peninsula and Kodiak. In this country, between Kotzebue and its southern boundary back into the interior as far as a thousand miles, furs are gathered as follows:

Beaver are taken of the very best quality and in the greatest quantity, and an immense number of *musk-rat* skins, for the trader must buy everything, (these musk-rat skins are principally shipped to France and Germany, for poor people wear them;) of *red foxes*, quite a large number are taken. *Black foxes* are seldom obtained, perhaps three or four on an average during the year. *Silver-gray foxes*, a small number annually. *Mink* and *marten* of very fine quality from Koskoquim to the northward, but from this point to the southward this fur deteriorates rapidly. *Land-otter*, quite a large number of the best quality. *Black and brown bear*, a few; a small trade in *swans-down*. *Eider-down*, with profit, cannot be sold in San Francisco, but it is valuable in Russia. (German goose-down is used by our upholsterers in preference, as it is much cheaper and just as good.) *Reindeer-skins* are dried; quite a large number of these which go east are tanned, and make a very superior leather.

Figures to show the number of skins taken out of the country might easily be obtained were it under the control of a single corporation, as it was under the Russian rule, but as it is now, with ten or a dozen independent traders, large and small, all studiously concealing or purposely exaggerating their transactions in order to draw or divert trade, the figures, were they furnished, would be quite unreliable. The following table, however, showing the yield of this district during a period of twenty years, between 1842 and 1861, as given by Russian authority, may be deemed correct; and I was assured by Father Shiesneekov, of Ounalasbka, a Russian priest, born and raised in this country, that the present yield of furs is at least four

times as great every year, compared with the table, owing to the greater activity and energy of our traders :

Table showing the number of skins taken by the Russian American Company from the Yukon district, during the period between 1842 and 1861, twenty years.

	Beaver.	Land-otter.	Marten.	Mink.	Musk-rat.	Fox, red.	Fox, blue.	Wolverine.	Lynx.	Bear.
Koskoquim ...	32, 396	1, 165	2, 098	.....	.....	3, 590	320	.....	327	93
Saint Michael's	49, 398	4, 954	8, 853	330	4, 668	10, 216	.....	52	1, 607	183
Total ...	81, 794	6, 119	10, 951	330	4, 668	13, 806	320	52	1, 334	276

Guided by this exhibit, if I could rely on what has been affirmed by the traders whom I have met in the Territory, the catch in the Yukon district during the last three years has averaged six times as much as the Russian annual average.

THE PENINSULAR AND KODIAK.

OAGASHIK:

This is the only trading-station on the north shore of the Peninsula, and it is in itself inconsiderable ; the people have a few red foxes, a few beaver, but quite a fair number of reindeer-skins, the country being fairly alive with these animals; they also are adjacent to the large walrus hauling-grounds in Bristol Bay, and some ivory is secured by them; they have a few brown bears, an occasional wolf-skin, and a little swans'-down.

BELCOVSKIE:

A sea-otter post: the natives bring in the skins of these animals, which they obtain at Saanach and the Chernobour Rocks; the trade otherwise is unimportant—a few red foxes and brown bears.

Saanach. A sea-otter post recently established: nearly two-thirds of the sea-otters captured in the whole Alaskan district are taken around this island.

Unga. A sea-otter post, with small trade in red foxes, black and brown bears, &c.

Kodiak, or Saint Paul's.—Once the headquarters of the old Russian American Company, but since 1825 it has been a mere trading post; a large number of sea-otter hunters make it their home, and bring in their quarry for trade there; all the trade of Kenai and Cook's Inlet came in here under the old

régime, but it is now confined principally to the sea-otter trade; the Cook's Inlet and Katmai trade is mostly engrossed by trading-schooners plying between these places and Puget Sound; the yield of this district under the Russian control is given for twenty years, 1842-1861, inclusive, as follows: Sea-otters, 5,809; beaver, 85,381; marten, 14,295; minks, 1,175; musk-rats, 14,313; wolverines, 1,276; marmots, 712; wolves, 58.

In the COOK'S INLET DISTRICT, the MOUNT SAINT ELIAS and SITKAN DISTRICTS, there are no well-established trading-posts, the business being conducted on shipboard everywhere, the natives coming off to the trading-schooners in their canoes. At the time of the Russian occupation there was considerable trading done at Sitka, but now it has fallen off entirely, the natives of that place and vicinity going back into the inside passages, where they can trade with whisky-schooners in perfect security, as affairs are now conducted in the Territory.

A large variety of furs are brought in from the dense forests and high mountains of this region—such as red, black, and silver foxes, brown and black bears, mink, marten, porcupines, beaver, land and sea otter, fur seal, hair-seal, deer, rabbits, squirrels, mountain-goats, ermines, and the hoary marmot or whistler.

THE OUNALASHKA DISTRICT:

This embraces the whole of the Aleutian Archipelago, and is given entirely to the sea-otters; there is nothing else in this section fit for trade save a few red and black foxes, and in it are established six stations, viz: *Ounalaska*, the largest and principal one, *Akootan*, *Chernovskie*, *Oomnak*, *Atka*, and *Attou*, which are the homes of the sea-otter hunters, and where they trade.

The stations enumerated in the foregoing districts comprise all that are established in the Alaskan Territory.

THE VALUE OF THE FUR-TRADE.

With the exception of the Sitkan and Cook's Inlet districts, the gross value of the annual fur-production of Alaska can be closely ascertained. I append to this head several tables from Russian authorities in reference to the subject, and call attention to the fact that for the last ninety years or more, up to the present date, the prices of the leading furs in our market to-day are very much what they were then, with the exception of the

fur-seal, which has been greatly enhanced in value by reason of improvement in dressing, but the marten and the sea-otter stand to-day at almost the same figures at which they were bought and sold a hundred years ago in China, where the value of money has remained the same; the native hunters, however, receive now three, four, and five times as much as they were paid by the Russian American Company for their skins. The following list may be taken as very nearly correct, and shows the gross value of the fur-trade of the Territory to the traders for the year 1873:

100,000 fur-seal skins, at an average of \$7.....	\$700,000
3,000 sea-otter skins, at an average of \$75	225,000
50,000 skins from the Yukon district, assorted, at an average of \$2.	100,000
30,000 skins from all the rest of the Territory, (this is a very unsatisfactory estimate,) at an average of \$2	60,000

A grand total of..... 1,085,000

Which is more than double the annual receipts of any one of the best of the last twenty years of the Russian American Company, so far as can be judged by reference to their statements, as is shown in the table at the close of this article.

It seems that the Seal Islands represent two-thirds of the whole value of the fur-trade of Alaska, and that with the sea-otter interest combined there is scarcely anything left.

Matters are now so arranged on the Seal Islands that the Government nets a revenue of \$300,000 per annum, with the preservation of its interest there in all of its original integrity. With reference to the sea-otter trade, I think I clearly show the necessity for protection from the Government in my discussion of the subject in this report, and, in regard to the remaining interests, the country itself protects them.

Table showing the yield of the different stations in the Territory of Alaska, from the archives of the Russian American Fur Company, for a period of twenty years, between 1842 and 1861.

	Seal Islands.	Saint Michael's.	Koskoquim.	Attou.	Atka.	Oonadashka.	Sloomagins.	Kodiak.
Beaver		49,398	32,396					85,381
Land-otter		4,954	1,165			339	979	
Sea-otter				2,242	1,188	5,686	3,611	5,800
Fur-seal	309,701							
Foxes, black								
Foxes, silver								
Foxes, red		10,216	3,590			19,671	5,731	
Foxes, blue	34,794		320	2,503	1,685			
Foxes, white								
Martens		8,853	2,098					14,295
Minks		330						1,175
Wolverines		52						1,276
Lynx		1,007	327					
Wolves								58
Bears		183	93					
Sea-lions								
Musk-rats		4,668						14,313
Marmots								712
Walrus-teeth	4,160 lbs	116 lbs.	1,040 lbs.			21,640 lbs		51,840 lbs
Castorum		3,315 prs.	6,236 prs.					

Table showing the exportation of furs by the Russian-American Company.

Variety of fur.	Period of 1797-1821, (24 years.)	Period of 1821-1842, (21 years.)	Period of 1842-1861, (19 years.)
Sea-otter, adult and 1-year old skins	72,894	25,416	25,899
Sea-otter tails	34,546	23,506	25,797
Land-otters	14,969	29,442	70,473
Fur-seals	1,232,374	458,502	372,894
Beavers	34,546	162,034	157,484
Foxes, black	13,702	17,913	} 77,847
Foxes, cross or silver	21,890	26,462	
Foxes, red	30,950	45,947	
Foxes, blue	36,362	55,714	
Foxes, white	4,234	13,638	} 54,134
Martens	17,289	15,666	
Minks	4,802	15,481	12,782
Wolverines	1,151	1,564	872
Lynx	1,389	4,253	10
Wolves	121	201	6,927
Bears	1,602	5,355	24
Sea-lions, young	27		1,893
Musk-rats		4,491	
Walrus-teeth	64,640 lbs.		6,570
Castorum	20 lbs.		260,040 lbs.
Whale-bone	47,040 lbs.		4,960 lbs.
			138,200 lbs.

The following shows the amount of food-supplies required, independent of tea, tobacco, and liquor, for the annual subsistence of the employés of the Russian-American Company, (1863;) a year's supply or more was always kept in advance in case of an emergency, (from Techmainov:)

Wheat, 14,000 poods, at 3 rubles and 26 kopecks a pood, (or 36 pounds.)

Flour, 498 poods, at 6 rubles and 31 kopecks a pood.

Peas, 404 poods, at 4 rubles and 90 kopecks a pood.

Split wheat, 404 poods, at 4 rubles and 90 kopecks a pood.

Salt, 922 poods, at 3 rubles and 78 kopecks a pood.

Butter, 498 poods, at 20 rubles and 20 kopecks a pood.

Hams, 92 poods, at 59 kopecks a pound.

The rubles are *paper*, equal to 20 cents each. A *pood* is 36 pounds English, or 40 Russian pounds.

CHAPTER V.

THE SEA-OTTER AND ITS HUNTING.

The sea-otter, like the fur-seal, is another illustration of an animal long known and highly prized in the commercial world, yet respecting the habits and life of which nothing definite has been ascertained or published. The reason for this is obvious, for, save the natives who hunt them, no one properly qualified has ever had an opportunity of seeing the sea-otter so as to study it in a state of nature, for, of all the shy, sensitive beasts, upon the capture of which man sets any value, this creature is the most keenly on the alert and difficult to obtain; and, like the fur-seal in this Territory, it possesses the enhancing value of being principally confined to our country. A truthful account of the strange, vigilant life of the sea-otter, and of the hardships and perils encountered by its hunters, would surpass in novelty and interest the most attractive work of fiction.

When the Russian traders opened up the Aleutian Islands they found the natives commonly wearing sea-otter cloaks, which they parted with at first for a trifle, not placing any especial value on the animal, as they did the hair-seal and the sea-lion, the flesh and skins of which were vastly more palatable and serviceable to them; but the offers of the greedy traders soon set the natives after them. During the first few years the numbers of these animals taken all along the Aleutian Chain, and down the whole northwest coast as far as Oregon, were very great, and compared with what are now captured seem perfectly fabulous; for instance, when the Prybilov Islands were first discovered, two sailors, Lukannon and Kaiekov, killed at Saint Paul's Island, in the first year of occupation, *five thousand*; the next year they got less than a *thousand*, and in six years after not a single sea-otter appeared, and none have appeared since. When Shellikov's party first visited Cook's Inlet, they secured three thousand; during the second year, two thousand; in the third, only eight hundred; the season following they obtained six hundred; and finally, in 1812, less than a hundred, and since then not a tenth of that number. The first visit made by the Russians to the Gulf of Yakhutat,

in 1794, two thousand sea-otters were taken, but they diminished so rapidly that in 1799 less than three hundred were taken. In 1798 a large party of Russians and Aleuts captured in Sitka Sound and neighborhood twelve hundred skins, besides those for which they traded with the natives there, fully as many more; and in the spring of 1800 a few American and English vessels came into Sitka Sound, anchored off the small Russian settlement there, and traded with the natives for over two thousand skins, getting the trade of the Indians by giving fire-arms and powder, ball, &c., which the Russians did not dare to do, living then, as they were, in the country. In one of the early years of the Russian American Company, 1804, Baranov went to the Okotsk from Alaska with fifteen thousand sea-otter skins, that were worth as much then as they are now, viz, fully \$1,000,000.

The result of this warfare upon the sea-otters, with ten hunters then where there is one to-day, was not long delayed. Everywhere throughout the whole coast-line frequented by them the diminution set in, and it became difficult to get to places where a thousand had once been as easily obtained as twenty-five or thirty. A Russian chronicler says: "The numbers of several kinds of animals are growing very much less in the present as compared with past times; for instance, the company here (Ounalashka) regularly killed more than a thousand sea-otters annually; now (1835) from seventy to a hundred and fifty are taken; and there was a time, in 1826, when the returns from the whole Ounalashkan district (the Aleutian Islands) were only *fifteen* skins."

It is also a fact coincident with this diminution of the sea-otters, that the population of the Aleutian Islands fell off almost in the same proportion. The Russians regarded the lives of these people as they did those of dogs, and treated them accordingly; they took, under Baranov and his subordinates, hunting-parties of five hundred to a thousand picked Aleuts, eleven or twelve hundred miles to the eastward of their homes, in skin-baidars and bidarkies, or kyacks, traversing one of the wildest and roughest of coasts, and used them not only for the severe drudgery of otter-hunting, but to fight the Koloshians and other savages all the way up and down the coast; this soon destroyed them, and few ever got back alive.

When the Territory came into our possession the Russians were taking between four and five hundred sea-otters from the

Aleutian Islands and south of the peninsula of Alaska, with perhaps a hundred and fifty more from Kenai, Yakutat, and the Sitkan district; the Hudson's Bay Company and other traders getting about two hundred more from the coast of Queen Charlotte's and Vancouver's Islands, and off Gray's Harbor, Washington Territory.

Now, during the last season, 1873, instead of less than seven hundred skins, as obtained by the Russians, our traders secured not much less than *four thousand* skins. This immense difference is not due to the fact of there being a proportionate increase of sea-otters, but to the organization of hunting-parties in the same spirit and fashion as in the early days above mentioned. The keen competition of our traders will ruin the business in a comparatively short time if some action is not taken by the Government; and to the credit of these traders let it be said, that while they cannot desist, for if they do others will step in and profit at their expense, yet they are anxious that some prohibition should be laid upon the business. This can be easily done, and in such a manner as to perpetuate the sea-otter, not only for themselves, but for the natives, who are dependent upon its hunting for a living which makes them superior to savages.

Over two-thirds of all the sea-otters taken in Alaska are secured in two small areas of water, little rocky islets and reefs around the island of Saanach and the Chernobours, which proves that these animals, in spite of the incessant hunting all the year round on this ground, seem to have some particular preference for it to the practical exclusion of nearly all the rest of the coast in the Territory. This may be due to its better adaptation as a breeding-ground. It is also noteworthy that all the sea-otters taken below the Straits of Fuca are shot by the Indians and white hunters off the beach in the surf at Gray's Harbor, a stretch of less than twenty miles; here some fifty to a hundred are taken every year, while not half that number can be obtained from all the rest of the Oregon and Washington coast-line; there is nothing in the external appearance of this reach to cause its selection by the sea-otters, except perhaps that it may be a little less rocky.

As matters are now conducted by the hunting parties, the sea-otters at Saanach and the Chernobours do not have a day's rest during the whole year. Parties relieve each other in succession, and a continual warfare is maintained. This persistence

is stimulated by the traders, and is rendered still more deadly to the sea-otter by the use of rifles of the best make, which, in the hands of the young and ambitious natives, in spite of the warnings of the old men, must result in the extermination of these animals, as no authority exists in the land to prevent it. These same old men, in order to successfully compete with their rivals, have to drop their bone spears and arrows and take up fire-arms in self-defense. So the bad work goes on rapidly, though a majority of the natives and the traders deprecate it.

With a view to check this evil and to perpetuate the life of the sea-otter in the Territory, I offer the following suggestions to the Department:

1st. Prohibit the use of fire-arms of any description in the hunting of the sea-otter in the Territory of Alaska.

2d. Make it unlawful for any party or parties to hunt this animal during the months of June, July, and August, fixing a suitable penalty, fine, or punishment.

The first proposition gives the sea-otter a chance to live; and, with the second, may possibly promote an increase in the number of this valuable animal.

The enforcement by the Government of this prohibition will not be difficult, as it is desired by a great majority of the natives and all the traders having any real interest in the perpetuation of the business. A good deputy attached to the customs, whose salary and expenses might be more than paid by a trifling tax upon each otter-skin, say \$1, could, if provided with a sound whale-boat, make his headquarters at Saanach and Belcovski and carry the law into effect. The trade of the Kodiak district centers at the village of that name, and the presence of the collector or his deputy will exert authority, and cause the old native hunters and many of the younger who have reflection to comply with his demands. The collector then being provided with the small revenue-steamer spoken of in my chapter upon the duty of the Government toward the Territory, can insure compliance with the instructions given him, and punish violations.

This proposed action on the part of the Government is urgent and humane, for upon the successful hunting of the sea-otter some five thousand Christianized natives are entirely dependent for the means to live in a condition superior to barbarism.

THE HABITS OF THE SEA-OTTER, (*Enhydra marina*.)

I have had a number of interesting interviews with several very intelligent traders, and an English hunter who had spent an entire winter on Saanach Island, shooting sea-otters, and enduring, while there, bitter privation and hardship; and chiefly from their accounts, aided by my own observation, I submit the following:

Saanach Island, Islets, and Reefs, is the great sea-otter ground of this country. The island itself is small, with a coast-line circuit of about eighteen miles. Spots of sand-beach are found here and there, but the major portion of it is composed of enormous water-worn boulders piled up by the surf. The interior is low and rolling, with a ridge rising into three hills, the middle one some 800 feet in height. There is no timber on it, but abundant grass, moss, &c., with a score of little fresh-water lakes, in which multitudes of ducks and geese are found every spring and fall. The natives do not live upon the island, because the making of fires and scattering of food-refuse alarms the otters, driving them off to sea; so that it is only camped upon, and fires are never built unless the wind is from the southward, for no sea-otters are ever found to the north of the island. The sufferings to which the native hunters subject themselves every winter on this island, going for many weeks without fires, even for cooking, with the thermometer down to zero, in a northerly gale of wind, is better imagined than described.

To the southward and westward, and stretching directly out to sea, some five to eight miles from Saanach Island, is a succession of small islets, bare, most of them, at low water, but with numerous reefs and rocky shoals, beds of kelp, &c. This is the great sea-otter ground of Alaska, together with the Cherrobour Islets, to the eastward about thirty miles, which are similar to it.

The sea-otter rarely lands upon the main island, but it is found just out of water on the reef-rocks and islets above mentioned, in certain seasons, and at a little distance at sea during calm and pleasant weather.

The adult sea-otter is an animal that will measure from three and a half to four feet at most, from nose to tip of tail, which is short and stumpy. The general contour of the body is closely like that of the beaver, with the skin lying in loose folds, so that when taken hold of in lifting the body out from the water,

it is as slack and draws up like the hide on the nape of a young dog. This skin, which is taken from the body with but one cut made in it at the posteriors, is turned inside out, and air-dried, and stretched, so that it then gives the erroneous impression of an animal at least six feet in length, with girth and shape of a weasel or mink.

There is no sexual dissimilarity in color or size, and both manifest the same intense shyness and aversion to man, coupled with the greatest solicitude for their young, which they bring into existence at all seasons of the year, for the natives get young pups every month in the year. As the natives have never caught the mothers bringing forth their offspring on the rocks, they are disposed to believe that the birth takes place on kelp-beds, in pleasant or not over-rough weather. The female has a single pup, born about 15 inches in length, and provided during the first month or two with a coat of coarse, brownish, grizzled fur, head and nape grizzled, grayish, rufous white, with the roots of the hair growing darker toward the skin. The feet, as in the adult, are very short, webbed, with nails like a dog, fore-paws exceedingly feeble and small, all covered with a short, fine, dark, bister-brown hair or fur. From this poor condition of fur they improve as they grow older, shading darker, finer, thicker, and softer, and by the time they are two years of age they are "prime," though the animal is not full-grown until its fourth or fifth year. The white nose and moustache of the pup are not changed in the adult. The whiskers are white, short, and fine.

The female has two teats, resembling those of a cat, placed between the hind limbs on the abdomen, and no signs of more; the pup sucks a year at least, and longer if its mother has no other; the mother lies upon her back in the water or upon the rocks, as the case may be, and when she is surprised she protects her young by clasping it in her fore-paws and turning her back to the danger; they shed their fur just as the hair of man grows and falls out; the reason is evident, for they must be ready for the water at all times.

The sea-otter mother sleeps in the water on her back, with her young clasped between her fore-paws. The pup cannot live without its mother, though frequent attempts have been made by the natives to raise them, as they often capture them alive, but, like some other species of wild animals, it seems to

be so deeply imbued with fear of man that it invariably dies from self-imposed starvation.

Their food, as might be inferred from the flat molars of dentition, is almost entirely composed of clams, muscles, and sea-urchins, of which they are very fond, and which they break by striking the shells together, held in each fore paw, sucking out the contents as they are fractured by these efforts; they also undoubtedly eat crabs, and the juicy, tender fronds of kelp or sea-weed, and fish.

They are not polygamous, and more than an individual is seldom seen at a time when out at sea. The flesh is very unpalatable, highly charged with a rank smell and flavor.

They are playful, it would seem, for I am assured by several old hunters that they have watched the sea-otter for a half an hour as it lay upon its back in the water and tossed a piece of sea-weed up in the air from paw to paw, apparently taking great delight in catching it before it could fall into the water. It will also play with its young for hours.

The quick hearing and acute smell possessed by the sea-otter are not equaled by any other creatures in the Territory. They will take alarm and leave from the effects of a small fire, four or five miles to the windward of them; and the footstep of man must be washed by many tides before its trace ceases to alarm the animal and drive it from landing there should it approach for that purpose.

There are four principal methods of capturing the sea-otter, viz, by *surf-shooting*, by *spearing-surrounds*, by *clubbing*, and by *nets*.

The surf-shooting is the common method, but has only been in vogue among the natives a short time. The young men have nearly all been supplied with rifles, with which they patrol the shores of the island and inlets, and whenever a sea-otter's head is seen in the surf, a thousand yards out even, they fire, the great distance and the noise of the surf preventing the sea-otter from taking alarm until it is hit; and, in nine times out of ten, when it is hit, in the head, which is all that is exposed, the shot is fatal, and the hunter waits until the surf brings his quarry in, if it is too rough for him to venture out in his "bidarkie." This shooting is kept up now the whole year round.

The spearing-surround is the orthodox native system of capture, and reflects the highest credit upon them as bold, hardy

watermen. A party of fifteen or twenty bidarkies, with two men in each, as a rule, all under the control of a chief elected by common consent, start out in pleasant weather, or when it is not too rough, and spread themselves out in a long line, slowly paddling over the waters where sea-otters are most usually found. When any one of them discovers an otter, asleep, most likely, in the water, he makes a quiet signal, and there is not a word spoken or a paddle splashed while they are on the hunt. He darts toward the animal, but generally the alarm is taken by the sensitive object, which instantly dives before the Aleut can get near enough to throw his spear. The hunter, however, keeps right on, and stops his canoe directly over the spot where the otter disappeared. The others, taking note of the position, all deploy and scatter in a circle of half a mile wide around the mark of departure thus made, and patiently wait for the re-appearance of the otter, which must take place within fifteen or thirty minutes for breath; and as soon as this happens the nearest one to it darts forward in the same manner as his predecessor, when all hands shout and throw their spears, to make the animal dive again as quickly as possible, thus giving it scarcely an instant to recover itself. A sentry is placed over its second diving-wake as before, and the circle is drawn anew; and the surprise is often repeated, sometimes for two or three hours, until the sea-otter, from interrupted respiration, becomes so filled with air or gases that he cannot sink, and becomes at once an easy victim.

The coolness with which these Aleuts will go far out to sea in their cockle-shell kyacks, and risk the approach of gales that are as apt to be against them as not, with a mere handful of food and less water, is remarkable. They are certainly as hardy a set of hunters, patient and energetic, as can be found in the world.

The clubbing is only done in the winter-season, and then at infrequent intervals, which occur when tremendous gales of wind from the northward, sweeping down over Saanach, have about blown themselves out. The natives, the very boldest of them, set out from Saanach, and scud down on the tail of the gale to the far outlying rocks, just sticking out above surf-wash, where they creep up from the leeward to the sea-otters found there at such times, with their heads stuck into the beds of kelp to avoid the wind. The noise of the gale is greater than that made by the stealthy movements of the hunters, who, armed

each with a short, heavy, wooden club, dispatch the animals, one after another, without alarming the whole body, and in this way two Aleuts, brothers, were known to have slain seventy-eight in less than an hour and a half.

There is no driving these animals out upon land. They are fierce and courageous, and, when surprised by a man between themselves and the water, they will make for the sea, straight without any regard for the hunter, their progress, by a succession of short leaps, being very rapid for a small distance. The greatest care is taken by the sea-otter hunters on Saanach. They have lived in the dead of a severe winter six weeks at a time without kindling a fire, and with certain winds they never light one. They do not smoke, nor do they scatter or empty food-refuse on the beaches. Of all this I am assured by one who is perhaps the first white eye-witness of this winter-hunting, as he lived on the island through that of 1872-'73, and could not be induced to repeat it.

The hunting by use of nets calls up the strange dissimilarity existing now, as it has in all time past, between the practice of the Atka and Attou Aleuts and that of those of Ounalashka and the eastward, as given above. These people capture the sea-otter in nets, from 16 to 18 feet long and 6 to 10 feet wide, with coarse meshes, made nowadays of twine, but formerly of sinew.

On the kelp-beds these nets are spread out, and the natives withdraw and watch. The otters come to sleep or rest on these places, and get entangled in the meshes of the nets, seeming to make little or no effort to escape, paralyzed as it were by fear, and fall in this way easily into the hands of the trappers, who tell me that they have caught as many as six at one time in one of these small nets, and frequently get three. They also watch for surf-holes or caves in the bluffs, and, when one is found to which a sea-otter is in the habit of resorting, they set this net by spreading it over the entrance, and usually capture the animal.

No injury whatever is done to these frail nets by the sea-otters, strong animals as they are; only stray sea-lions destroy them. The Atka people have never been known to hunt sea-otters without nets, while the people of Ounalashka and the eastward have never been known to use them. The salt-water and kelp seem to act as a disinfectant to the net, so that the smell of it does not repel or alarm the shy animal.

CHAPTER VI.

THE CONDITION OF AFFAIRS ON THE SEAL ISLANDS, PRYBILOV GROUP.

THE DISCOVERY OF THE ISLANDS.

When the Russians first came into the country, in 1760-'65, the abundance of sea-otter skins and their immensely-greater value than that of any others found, caused very little attention to be paid to the skins of fur-seals or those of other animals; but the great diminution of otter-skins toward the end of 1777-'78 raised anew the question, often asked the natives but in vain, as to where the fur-seal bred, such numbers of them were seen every year in the spring passing north and in the autumn going south through the narrow channels, straits, &c., between the Aleutian Islands. This regular routine of travel followed by these animals every year pointed to some unknown breeding-ground in Bering Sea, and search was made for it, resulting in the discovery of the group under discussion, in 1786-'87, by Gehrman Prybilov, commanding a small schooner, and serving one of the twenty-eight different trading-companies and traders then about the Aleutian Archipelago. The islands were without population, or the traces even of human habitation.

The island of Saint George was first discovered and named after the little vessel commanded by Prybilov,* and in the following year, July, 1787, the island of Saint Paul was noticed by the men stationed at Saint George looming on the northwest horizon, twenty-seven miles distant.

Prybilov endeavored to keep the discovery to himself, but in less than a month after his return to Ounalashka it was well known. The competition there was so lively, that as many as six companies established themselves at once on the Seal Islands, and a number of irregular visitors now and then appeared. The rapacity and shiftlessness of their management is well described by a Russian historian, from whom I have translated extracts bearing upon this subject, and which will be found in its proper

* Prybilov died at Sitka while in command of the ship "Three Saints," March, 1796.

place. In 1799 the Russian American Company received the monopoly of all Alaska, and it at once organized a colony of "one hundred and thirty-seven souls" at Sitka and Ounalashka, principally natives of the latter place, and planted the settlements which still exist on the islands, and after many years of most faulty management of the sealing business they came to regard it with so good an eye to its preservation and perpetuation, that their rules and regulations in regard to these points are still in force, no subsequent observation having suggested an improvement on them until the date of the writer's arrival on the islands, April, 1872.

Too much credit cannot be given to certain agents of the old Russian company, and a countryman of ours, in 1868-'69,* who have by their attention and action saved this most interesting and valuable exhibition of animal life from the wanton, improvident destruction which has been visited upon the great fur-seal rookeries of the Southern Ocean.

The fact that the fur-seals frequent these islands, and those of Bering and Copper, on the Russian side, to the exclusion of all other land, is at first a little singular; but when we come to examine the subject we find that these animals, when they come out to lie two or three months on the land, as they must do by their habit during the breeding-season, require a cool, moist atmosphere; also, firm and dry land, or dry rock, upon which to take their positions and remain for the season; if the rookery-ground is hard and flat, puddles are formed, making a slime, which very quickly takes the hair off the animals; hence they carefully avoid any such landing. If they occupy a sandy shore, the rain beats the sand into their large, sensitive eyes, and into their fur, so that they are obliged from irritation to leave. The Seal Islands now under discussion offer very remarkable advantages for landing, especially Saint Paul, where the ground of basaltic rock and of volcanic tufa or cement slopes up gradually from the sea, making a suitable resting-place for millions of these intelligent animals, which lie out here two and three months every year in perfect peace and contentment.

There is no ground of this character offered elsewhere in the country, on the Aleutians, on the mainland, or on Saint Matthew's, or Saint Lawrence; the latter islands were surveyed during the past season to settle this question, and the notes will be found in the appendix.

* H. M. Hutchinson.

I. DESCRIPTION OF THE ISLANDS.

The Prybilov group of fur-seal islands occupy the most isolated portion of any land in Bering Sea, the three nearest land-points to them being nearly equidistant; Saint Matthew's and Nunivok Islands, Cape Newenham, on the mainland, and Ounalashka Island, all about one hundred and eighty miles off; and in this location ocean-currents from the great Pacific, to the southward, warmer than the normal temperature of their latitude, ebb and flow around them on their way to the Arctic and elsewhere, and give rise in this way during the summer months and early autumn to constant thick, humid fogs and drizzling mists which hang in heavy banks over the islands and sea, seldom breaking away to indicate a pleasant day.

By the middle or end of October, high, cold winds carry off the moisture and clear up the air, and by the end of January or early in February, usually bring down from the north and northwest great fields of broken ice, not very heavy or thick, but still covering the whole surface of the sea, shutting in the land completely, and hushing the wonted roar of the surf for a month or six weeks at a time. In exceptionally cold seasons, for three and even four months the coast will be ice-bound; and winters, on the other hand, occur, like the last one, (1873-'74,) in which not even the sight of an ice-floe was recorded, and there was very little skating on the little lakes, but this is not often the case. The breaking up of winter-weather usually commences about the first week in April, the ice beginning to leave or dissolve at that time or a little later, so that by the 1st or the 5th of May generally, the beaches and rocky sea-margins are clear and free from ice and snow; although snow occasionally lies in gullies and leeward hill-slopes, where it has drifted during the winter, until the end of July and middle of August. Fog, damp, thick, and heavy, closes in about the end of May, and this, the usual sign of summer, holds on steadily until the middle or end of October.

The periods of change are exceedingly irregular in autumn and spring, but in summer the uniformity of the weather, with cool, moist, shady, gray fog, is constant, and to this certainty of favorable climate, coupled with the perfect isolation and exceeding fitness of the ground, is due, without doubt, the preference for it manifested by the warm-blooded animals which come here every year, to the practical exclusion of all other ground, in thousands and hundreds of thousands, to breed.

The climate of these islands has received careful attention, as will be seen by reference to the report of Mr. Charles P. Fish, of the United States Signal-Service, to which reference may be made for more detailed information upon the subject. I simply remark here that the winter of 1872-73 was one of great severity, and, according to the natives, such as is very seldom experienced; but cold as it was, however, the lowest marking by thermometer was but 12° Fahrenheit below zero, and that for a few hours only during a day in February, while the mean of the month was 18° above. The coldest month, March, gave a mean of 12° above, while the mean of a usual winter is no lower than 22° or 26° ; but the high north winds which I experienced during that winter were blowing more than three-fourths of the time, and made all outdoor exercise impracticable. On a day in March, for example, its velocity was at the rate of eighty-eight miles per hour, with as low a temperature as -4° ! With a wind blowing but twenty or twenty-five miles an hour, at a much higher temperature, as at 15° or 16° above zero, it is necessary to be most thoroughly wrapped up to guard against freezing, if any journey is to be made on foot.

There are here, virtually, but two seasons, winter and summer. To the former belong November and the following months up to the end of April, with a mean of 20° to 28° , while the transition to summer is but a slight elevation in temperature, only 15° to 20° ; of the summer months July is perhaps the warmest, usually with a mean of 46° to 50° in ordinary seasons.

It is astonishing how rapidly snow melts here at a single degree above freezing, and after several consecutive days in April or May at 34° and 36° , grass begins to grow, even if it be under melting drifts and the frost is many feet in depth under it. In the appendix I have placed a table, compiled from the report of Mr. Fish, above referred to, as interesting in showing the character of a very severe winter on the Seal Islands.

The formation of these islands was recent, geologically speaking, and due to direct volcanic agency, which lifted them abruptly though gradually from the sea-bed, building upon them below the water's-level as they rose, and subsequently above, by spout-holes or craters, from which water-puddled breccia and volcanic ashes and tufa were thrown. Soon after the elevation and deposition of the igneous matter, all volcanic action must have ceased, though the clearly blown-out throat and smooth, sharp-cut, funnel-like walls of a crater on Otter Island (one of

the group, six miles south of Saint Paul's) would seem to indicate quite recent action, and this is the only place on the Prybilov Islands where anything has been discharged from a crater at so late a date.

Since the period of the upheaval of the group under discussion the sea has done much to modify and enlarge the most important island, Saint Paul's, while the others, Saint George and Otter, being lifted abruptly above the power of water and ice to carry and deposit sand, soil, and bowlders, are but little changed.

SAINT PAUL'S ISLAND is the largest and far the most important and valuable of the whole group. Upon my first arrival there in April, 1872, I was surprised to find that no steps had been taken to obtain an accurate or even approximately correct idea of the size and shape of it. I at once set to work upon it, and give herewith as the result of this labor the first definite figures as to its dimension and area, together with a map showing the outline and topography, with special sketches of the area and position of each fur-seal "rookery" or breeding-ground.

The Reef Point of the island stands in latitude $57^{\circ} 8'$ north, and west longitude $170^{\circ} 12'$, being the most southerly land. The island is in its greatest length, between northeast and southwest points, 13 miles air-line, and in greatest width a little less than six. It has a superficial area of about 33 square miles, or 21,120 acres, of diversified, rough, and rocky uplands, small, rounded hills, which either set down boldly to the sea, or fade into wet, mossy flats and dry drifting sand-dune tracts. It has 42 miles of shore-line, $16\frac{1}{2}$ of which are used by the fur-seals *en masse*.

At the time of its first upheaval above the sea it must have presented the appearance of ten or twelve little rocky-bluff islets or points, upon some of which were craters, vomiting breccia and cinders, but with little or no lava overflowing; the plutonic power after this ceased to act, and the sea commenced the work of building on to the skeleton thus created, and to-day so thorough and successful has it been 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 the scattered islets, within the present area of the island, are completely bound together by bars of sand and bowlders, which are raised above the highest tides by winds that whirl the sand up

as it drives out from the wash of surf, and rocks lifted and pushed up by ice-fields.

The sand which plays so important a part in the formation of Saint Paul's Island, and which is almost entirely wanting on and around the others in this group, is largely composed of *Foraminifera*, together with *Diatomacea* mixed in with the volcanic base. It changes color like a chameleon as it passes from wet to dry, being a rich steely-black at the surf-margin, then drying out to a soft purplish brown and gray, succeeding to tints most delicate, of reddish and pale gray when warmed by the sun and drifting with the wind. The sand-dune tracts on this island are really attractive in the summer at certain times when the weather is pleasant; the most luxuriant grass and a variety of beautiful flowers exist in profusion on them.

As these sand and boulder bars were forming on Saint Paul's Island, in making across from inlet to inlet, they inclosed small collections of sea-water, thus giving rise to a number of lakes, which nearly all become fresh; in them are no reptiles or fish, but a great number of minute *Rotifera* sport about in all of them whenever the water is examined; several water-plants and algæ flourish, especially so in the large lake, which is very shallow.

The total absence of a harbor in the group is much to be regretted. The village of Saint Paul, as will be seen by reference to the map, is located so as to command the best landings that can be made from vessels during the prevalence of any winds other than southerly; from these there is no shelter for vessels, unless they run around to the north side, where they are unable to hold communication or to discharge. At Saint George matters are still worse, for all northerly, westerly, and easterly winds drive the shipping away from the village roadstead, and weeks often pass at either island before a cargo is landed at its destination. The approach to Saint Paul during thick weather is very hazardous, for the land is mostly low, and does not loom up like Saint George through the fog; there are, besides, numerous reefs making out, which are not found around the other island. Captain Baker carefully sounded out these localities last summer, while waiting for us, and I have placed the result of this valuable work on my chart, so that the next captain of a revenue-vessel coming here will be able to feel his way in with some degree of security.

SAINT GEORGE'S ISLAND is next in order of importance and

size, and in regard to its size, shape, &c., I found the same want of knowledge experienced at Saint Paul's; a survey, which I immediately made on my first arrival, June, 1873, gives to the island a length of not quite ten and a half miles by four and a quarter between points of the greatest width. It has an area of about twenty-seven square miles; has twenty-nine 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, which rises everywhere else, save at the village-front, abruptly from the water, which breaks boldly at the bases of the lofty cliffs all around. Nearly half of the shore-line of Saint Paul is a sand-beach, while on Saint George there is less than a mile of it all put together, viz, a few hundred yards in front of the village, the same extent at the Garden Cove, southeast side, and less than half a mile at Zapadnie, on the south side. Several thousand sea-lions hold exclusive though shy possession of half a mile of good landing on the east side.

"*Tolstoi Mees*," or East Cape, lies in north latitude $56^{\circ} 37' 1''$,* and the west end, or "*Dalnoi Mees*," $56^{\circ} 38' 3''$,* with west longitudes of $169^{\circ} 27'$ * and $169^{\circ} 44'$ *, respectively, while the village, on the north shore, is in $56^{\circ} 39' 16''.6$, $169^{\circ} 19' 6''$.

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 height of 920 feet at the reach of greatest elevation, and runs clear around the island to Zapadnie, a distance of some ten miles, without affording a single passage-way up from or down to the sea. Upon the innumerable ledges and in countless chinks and crannies millions of water-fowl breed during the summer-months.

The general elevation of Saint George, while not great, is on an average three times as great as that of Saint Paul, which is quite low, and slopes gently to the sea east and north. But Saint George rises abruptly, with exceptional spots for landing. The highest land on Saint George is 930 feet, and the summit of the high bluffs before mentioned; that on Saint Paul is *Boga Slov* Hill, 600 feet. All elevations on either island 10 or 12 feet above sea-level are rough and hummocky, with

* These observations are taken from Russian authority, and are several miles out of the way, but the only ones available. That of the village was determined by Lieutenant Maynard last summer, July 10, and may be considered accurate.

the exception of the summits of a few cinder-hills. The supply of water is abundant and good. The only living stream of water on the Seal Islands is found on Saint George, a small clear brook that empties into the Garden Cove; but the area covered by fresh-water lakes on this island is very much less than that of Saint Paul.

Weathered out or washed from the basalt and pockets of olivine on the islands are aggregates of augite, seen most abundant on the summit slopes of Ahlucheyeh Hill, Saint George. Specimens from the stratified bands of old, friable, gray lavas, so conspicuous on the bluffs of the north shore of this 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 phonolitic rock, in which numerous small crystals of spinel are found. A dike with well-defined walls of old, close-grained, clay-colored lava is close by the village of Saint George, about a quarter of a mile east from the landing, in the face of breccia bluffs that rise from the sea. It is the only example of its kind on these islands.

The foundations of the islands, all of them, are basalt, some compact, grayish-white, but most of them exceedingly porous and ferruginous; and upon this solid floor are many hills of brown and red basaltic tufas, cinder-heaps, &c. "Polovina Sopka," the second point in elevation on Saint Paul's, (550 feet,) is almost entirely built up of red scorïæ and breccia. The bluffs at the shore, "Polovina Point," show the hard basaltic underpinning upon which the hill rests. The tufas on both islands decompose and weather into fertile soil, which the severe climate renders useless. There is not a trace of a granitic or gneissic rock found *in situ*. Several metamorphic boulders have been collected, which were dropped upon the beaches by ice-floes, brought down by the strong northwesterners from the Asiatic coast.

The black-brown tufa and breccia bluffs at the East Landing, Saint Paul's Island, rise abruptly from the sea there 60 to 80 feet, with stratified horizontal bands of a light-gray calcareous conglomerate or cement, in which are imbedded sundry fossils characteristic of the Tertiary age, such as *Cardium grœnlandicum*, *decoratum*, *Astarte pectuncula*, &c. This is the only locality in the Prybilov Islands where any paleontological evidence of their age can be found.

OTTER ISLAND ranks third in the group, and lies six miles south-southwest from the "Reef Point" of Saint Paul's Island. It is about a mile and a quarter in greatest length by less than half a mile in extreme width. The east, south, and west shores are bold and bluff, not to be approached by men, and hardly by seals, during rough weather; but the north shore, for most of its extent, rises quite gradually from the surf; the beach is, however, broken and rocky, with no sand. The highest point is the summit of the bluffs on the west end, some 300 feet. A small shallow lake lies near the north shore and landing; water impure and uncertain.

On this island there is no breeding-ground occupied by the fur-seals, but the non-breeding seals lie out here in large numbers off and on during the season.

WALRUS ISLAND, fourth and last, is of little or no commercial importance, but a very interesting spot—a mere table-rock, elevated but slightly above surf-wash, a quarter of a mile in length and a hundred yards in width, and, like Otter Island, has bold water all around, and, better still, entirely free from reefs or sunken rocks. It lies six miles south-southeast from northeast point of Saint Paul's. There is no fresh water on it.

It is not resorted to by the fur-seals, but several hundred male walrus (*Rosmarus*) are found here most of the year, and a few sea-lions breed there. On account of rough weather, fogs, &c., the island is seldom visited by the natives of Saint Paul, and then only during the eggng-season, in June and July, when the island is literally swarming with breeding water-fowl.

The opportunity afforded here of seeing the strange walrus-herds to the very best advantage is not equaled by any other place in the Territory. Here can also be plainly seen the movements and habits of myriads of nesting water-fowl.

Vegetation on these islands, with the exception of the last named, 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 seem to be denied to them by climatic conditions, though I am strongly inclined to believe that any of the hardy shrubs and trees indigenous at Sitka and Kodiak would grow here if transplanted properly on some of the southern hill-slopes most favored by soil, drainage, and position for shelter; but they would never mature their seed, owing to the want of sunlight to ripen, so that reproduce-

tion of their kind would not follow. There are, however, ten or twelve species of grasses growing in every variety, from close, curly, compact tufts on the seal-grounds, to tall stalks, standing in favorable seasons waist-high; the "wheat" of the north, (*Elymus*,) together with over a hundred varieties of annuals, perennials, sphagnum, cryptogamic plants, &c., all flourishing in their respective positions, and covering nearly every point upon which plants can grow with a living coat of the greenest of all greens, as there is not sunlight enough to ripen any deep tinge of yellow into it—so green that it gives a deep-blue tint to gray noonday shadows, contrasting pleasantly with the varied russets, reds, yellows, and grays of the lichen-covered rocks and the bronzed purple of the wild wheat on the sand-dune tracts in autumn, and the innumerable blue, yellow, pink, and white blossoms everywhere interspersed. Occasionally by looking closely into the thickest masses of verdure our common wild violet will be found. The floral display predominates greatly on Saint Paul, owing to the absence of the same extent of warm sand-dune country on the other islands.

By the end of August and first week in September of normal seasons, the small edible berries (*Empetrum nigrum* and *Rubus chamaemorus*) are ripe, which are found in considerable quantities, the former being small, watery, and black, about the size of an English or black currant, and the other resembling an unripe and partly-decayed raspberry. They are the only fruit afforded by the islands, and are of course keenly relished by the natives.

There are very few insects on the Seal Islands. A large flesh-fly appears during the summer in a striking manner, and settles upon the long grass-blades which flourish on the killing-grounds especially, settling by tens of millions, causing the vegetation over the whole slaughtering-field and vicinity to fairly droop to the earth as though beaten down by a tornado of wind and rain. Our common house-fly is not present, and those just mentioned never come into the dwellings unless by accident. It does not annoy man or beast. There are no mosquitoes. A small gnat flits about, inoffensive, taking shelter in the grass.

Aside from the seal-life on the Prybilov Islands, there are no indigenous mammalia with the exception of blue and white foxes, and the lemming, (*Myodes obensis*,) which latter is restricted, singularly enough, to the island of Saint George, where

it is exceedingly abundant. Its burrows and paths under and among the grassy hummocks and mossy flats literally checker every square rod of land there covered with this vegetation; and although Saint Paul's Island lies but twenty-nine miles to the northwest, not a single one of these active, curious little animals is found there.

The foxes (*Vulpes lagopus*) are also, of their kind, restricted to these islands, not being found elsewhere, except stray examples, which get cast away on the ice at Attou or Saint Matthew's, and find here among the countless chinks and crevices in the basaltic formation comfortable holes for their accommodation and retreat, feeding fat upon sick and pup seals, waterfowl, and eggs during the summer, and living through the winter upon the bodies of seals left upon the breeding-grounds and the carcasses upon the killing-fields.

The islands are as yet free from rats, but mice have been brought long ago in ships' cargoes, and are a great pest in the winter.

As might be inferred from their formation, these islands possess no mineral wealth of economic value whatever.

Stock cannot be profitably raised here; the proportion of severe winter is too great, as from three, at least, to perhaps six months of the year they would require feeding and watering, with good shelter. To furnish animals with hay and grain is a costly matter, and the dampness of the growing or summer season on both islands renders hay-curing impracticable.

Perhaps a few head of hardy Siberian cattle might pick up a living through a rough winter on the north shore of Saint Paul among the grassy sand-dunes there, with nothing more than shelter and water given them, but the care of them would hardly return expenses, as the winter-grazing ground would not support any great number of animals, it being less than two square miles in extent, and half of this area being unproductive.

I am strongly inclined to think that reindeer would make a successful issue with any struggle here that they might have for existence, and be the source of an excellent supply, summer and winter, of fresh meat for the agents of the Government and the company who may be living upon the islands. The Russians, as well as the present occupants of the place, were in the habit of keeping, and still do keep, a few head of cattle, and a number of hogs and chickens throughout winters for table use,

but it is without profit, except as a luxury. The natives take their poultry into their houses, and relish their pork after the hogs have fed fat upon seal-carrion, and therefore it is profitable to them.

In the appendix will be found a detailed chapter upon the ornithology of these islands, but the great exhibition of pinnipedia preponderates over every other form of animal life. Still the spectacle of birds nesting and breeding, as they do on Saint George's Island, to the number of millions, flocking the high basaltic bluffs, (a shore-line of that character twenty miles in length,) black, brown, and white, as they perch or cling to the cliffs in the labor of incubation, is a sight of exceeding interest and constant novelty, affording the naturalist opportunity for investigation into the most minute details of the reproduction of these vast flocks of circumboreal water-fowl. Saint Paul's Island, owing to the low character of its shore-line, a large portion of which is but slightly elevated above the sea and is sandy, is not visited by such myriads of birds as are seen at Saint George; but the small rock, Walrus Island, is fairly covered with sea-fowls, and the Otter Island bluffs are crowded to their utmost. The variety in these millions of breeding-birds is not great, since it consists of only ten or twelve names, and the whole list belonging to the Prybilov Islands, stragglers and migratory, contains but forty species. Conspicuous among the last-named class is the robin, which was brought from the mainland, evidently against its own will, by a storm or gale of wind, as must also be the case with the solitary hawks and owls occasionally noticed here.

After the dead silence of a long ice-bound winter, the arrival in the spring of large, noisy flocks of "choochkies" (*Phalaris microceros*) is most cheerful and interesting. These are bright, fearless little birds, with bodies generally plump and fat, and come usually in chattering flocks by the 1st to the 5th of May. They are caught by the people, to any number required, in hand scoop-nets, as they fly to and from their nests, made in the cliffs and among bowlders. They are succeeded about the 20th July by large flocks of fat, red-legged turn-stones, likewise edible, (*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, to feed fat upon the flesh-flies and their eggs, which swarm over the killing-grounds; these handsome, red-legged birds go familiarly among the seals,

chasing flies, gnats, &c. They are followed, as they leave in September, by several species of jacksnipe, (*Fringa* and *Charadrius*,) which, however, depart by the end of October and early in November, and when 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 by absolute silence, marking out, as it were, in lines of sharp and vivid contrast, summer's life and winter's death.

I have been unable to discover a single representative of the reptiles on the islands, and a small list only of the fishes and molluscs rewarded the most careful search. The presence of such great numbers of seals in the water about the islands during five and six months of every year renders all fishing abortive, unless expeditions are made seven or eight miles, at least, from the land, with the exception of halibut, which the natives capture within two or three miles of the reef-point and south shore during July and August; but the weather is usually, after this season, too stormy and cold for the fishermen to venture in their bidarkies during the fall or spring.

II. THE NUMBERS OF FUR-SEALS WHICH ANNUALLY VISIT THE ISLANDS.

Until my arrival on the Seal Islands, April, 1872, no steps had been taken toward ascertaining the extent or the importance of these interests of the Government by either the Treasury agent in charge, or the agent of the company leasing the islands. This was a matter of no especial concern to the latter, but was of the first importance to the Government. It had, however, failed to obtain a definite knowledge upon the subject, on account of the inaccurate mode of ascertaining the number of the seals which had been adopted by its agent, who relied upon an assumption of the area of the breeding "rookeries," but who never took the trouble to ascertain the area and position of these great seal-grounds intrusted to his care.

After a careful study of the subject during two whole seasons, and a thorough review of it during this season of 1874, in company with my associate, Lieutenant Maynard, I propose to show plainly and in sequence the steps which have led me to a solution of the question as to the number of fur-seals on the Prybilov Islands, together with the determination of means by which the agent of the Government will be able to correctly report upon the condition of the seal-life from year to year.

At the close of my investigation for the season of 1872, the fact became evident that the breeding-seals obeyed implicitly a fine, instinctive *law of distribution*, so that the breeding-ground occupied by them was always covered by seals in an exact ratio, greater or less, to the area to be held; that they always covered the ground evenly, never crowding in at one place and scattering at another; that the seals lay just as thickly together where the rookery was a small one of only a few thousand, as at Naspeel, near the village, as they did where a million of them came together, as at Northeast Point.

This fact being determined, it is at once plain *that just as the breeding-grounds of the fur-seal on these islands expand or contract in area from their present dimensions, so the seals will have increased or diminished.*

Impressed, therefore, with the necessity and the importance of obtaining the exact area and position of these breeding-grounds, I surveyed them in 1872-73 for that purpose, and resurveyed them this season of 1874; the result has been carefully drawn and plotted out, as presented in the accompanying maps.

The time for taking these boundaries of the rookeries is during the week of their greatest expansion, or when they are as full as they are to be for the season, *and before the regular system of compact, even organization breaks up*, the seals then scattering out in pods or clusters, straying far back, the same number covering then twice as much ground in places as they did before, when marshaled on the rookery-ground proper; the breeding-seals remain on the rookery perfectly quiet and *en masse* for a week or ten days during the period of greatest expansion, which is between the 10th and 20th of July, giving ample time for the agent to correctly note the exact boundaries of the area covered by them; this step on the part of the Government officer puts him in possession every year of exact data upon which to base a report as to the condition of the seal-life, as compared with the year or years previous. In this way my record of the precise area and position of the fur-seal breeding-grounds on Saint Paul's Island in the season of 1872, and that of Saint George in the season of 1873, correctly serves as a definite basis for all time to come upon which to found authoritative reports from year to year as to any change, increase, or diminution of the seal-life. It is, therefore, very important that the Government should have an agent in charge of these novel and valuable interests who is capable, by virtue of education

and energy, to correctly observe and report the area and position of the rookeries year by year.

With a knowledge of the superficial area of these breeding-grounds, the way is opened to a very interesting calculation as to the number of the fur-seals upon them. For an estimate based apparently upon good foundations, the following is the plan by which I have been guided:

When the adult males and females (fifteen of the latter to every one of the former) all arrive upon the rookery, I think a space a little less than two feet square to each female is a large one for that required by each animal, in obedience to its habit, and may safely be said to be under the mark; now, *every female* or "*cow*" on its two feet square doubles herself, that is, *brings forth her young*, and in a few days, or about a week after its birth, she visits the water, and is not one-quarter of the time on land again during the season. In this way it is clear that the female seals *almost double their number* on the rookery-grounds without causing the expansion of the same beyond the limits that would be required by the adults alone; for every 100,000 breeding-seals will be found to consist of more than 85,000 females and less than 15,000 males, and in a few weeks after the landing of the females, they will show about 180,000 males, females, and *young*, on the same area of ground occupied previous to the birth of the "pups."

Now the males, being treble and quadruple the size of the females, require about four feet square for their use on this same ground, but as they are less than one-fifteenth the number of the females, they therefore occupy only one-eighth of the breeding-ground of the 100,000 supposed, and this surplus area of the males is more than balanced by the 15,000 to 20,000 virgin females which come on to this breeding-ground for the first time to meet the males; they come, rest a few days or a week, and retire, leaving no young to show their presence on the island. Taking all these points into consideration, I quite safely calculate upon two square feet to every animal, big and little, on the breeding-grounds. Without following this system of computation, a person may look over these swarming myriads of seals, guessing vaguely and wildly at any number, from one million up to six or seven.

Below are the figures made from my survey of the area and position of the breeding-grounds of the fur-seal on Saint Paul's

Island, July 10-18, 1872. It is the first survey ever made on the island :

	Seals—♂ ♀ ○
"Novastoshnah," or Northeast Point, has 15,840 feet of sea-margin, with 150 feet of average depth, making ground for	1, 200, 000
"Polavina" Rookery has 4,000 feet of sea-margin, with 150 feet of average depth, making ground for	300, 000
"Lukannon" Rookery has 2,270 feet of sea-margin, with 150 feet of average depth, making ground for.	170, 000
"Keetavie" Rookery has 2,200 feet of sea-margin, with 150 feet of average depth, making ground for	165, 000
"Reef" Rookery has 4,016 feet of sea-margin, with 150 feet of average depth, making ground for	301, 000
"Garbutch" Rookery has 3,660 feet of sea-margin, with 100 feet of average depth, making ground for.	183, 000
"Nahspeel" or Village Rookery has 400 feet of sea-margin, with 40 feet average depth, making ground for	8, 000
"Lagoon" Rookery has 750 feet of sea-margin, with 100 feet of average depth, making ground for	37, 000
"Tolstoi" Rookery has 3, 000 feet of sea-margin, with 150 feet of average depth, making ground for	225, 000
"Zapadnie" Rookery has 5,880 feet of sea-margin, with 150 feet of average depth, making ground for	441, 000

A grand total for Saint Paul's Island of males, females, and young, of..... 3, 030, 250

The breeding-grounds on Saint George's Island, surveyed July 12-15, 1873, gave the following figures; also the first survey ever made here :

"Eastern" Rookery has 900 feet of sea-margin, with 60 feet of average depth, making ground for	25, 000
"Little Eastern" Rookery has 750 feet of sea-margin, with 40 feet of average depth, making ground for	13, 000
"North" Rookery has 2,000 feet of sea-margin, with 25 feet of average depth, making ground for	25, 000

"North" Rookery has 750 feet of sea-margin, with 150 feet of average depth, making ground for	52, 000
"Starry Ateel" Rookery has 500 feet of sea-margin, with 125 feet of average depth, making ground for	30, 420
"Zapadni" Rookery has 600 feet of sea-margin, with 60 feet of average depth, making ground for.	18, 000

A grand total for Saint George's Island of males, females, and young, of	163, 420
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These figures show a grand total of 3,193,670 breeding-seals and their young, and *this aggregate is entirely exclusive of the great numbers of the non-breeding seals*, which are never permitted to come upon the same ground with the females by the males in charge. This class of seals, to which the killing is confined, come up on the land and sea-beach between the rookeries, going to and from the sea at irregular intervals during the season. It has no systematic, definite method, like the breeding-class, of filling up to certain bounds and keeping so for several weeks at a time, and is, therefore, beyond reach for ground upon which to found calculation, and I can only give an estimate based upon my close observation with especial reference to this subject, and this is my conclusion :

The *non-breeding seals*, consisting of all the yearlings and all the males under six or seven years, seem nearly equal in number to the breeding-seals, and I put them down at 1,500,000 as a fair estimate, and make the sum of the seal-life on the Prybilov Islands over *four million seven hundred thousand*.

The seals after leaving these islands in the autumn and early winter do not visit land again until the time of return, next April, May, and June, to the grounds here, or those of the Russian "Copper" and "Bering" Islands. They spread themselves out over the vast North Pacific, following schools of fish, or frequenting shoals and banks where an abundance of fishy food is found. They can sleep with the greatest comfort and soundness on the surface of the water, and in this state they are often surprised by the natives of the northwest coast, all the way up and down, from the Columbia River to Bering Sea. On the killing-grounds at Saint George, June, 1873, the natives would frequently call my attention to seals that they were skinning, in which buck-shot were imbedded and encysted just under the

hide in the blubber. From one animal fifteen shot were taken, and the holes which they must have made in the skin were entirely healed so as not to leave a scar. These bullets were undoubtedly received from the natives of the northwest coast, anywhere between the Straits of Fuca and the Aleutian Islands, used by them in attempting the capture of the animals some season or seasons previously. A small number of seals, not definitely known, however, are taken by the Indians every year along the coasts above mentioned, who surprise them while soundly asleep in the water, either by shooting or spearing. The number taken in this way every year will not average 5,000; some seasons more, some seasons less.

That these animals are preyed upon extensively by killer-whales, (*Orca gladiator*), sharks, and other foes now unknown, is at once evident; for were they not held in check by some such cause, they would quickly multiply to so great an extent that Bering Sea itself could not contain them, and the present annual killing of one hundred thousand out of a yearly surplus of over a million males does not, in an appreciable degree, diminish the seal-life, or interfere in the slightest with its regular perpetuation on the breeding-grounds every year. We may properly look upon this number of four and five millions of fur-seals, as we see them here every year on these islands, as the maximum limit of increase assigned by natural laws. I think I make this clear in my chapter upon the habits of these valuable and interesting animals, without a knowledge of which it is not possible for any one to fully appreciate the truth of these generalizations. Before, however, the subject of the possible increase or diminution of the seal-life is taken up for discussion, it is best to consider the—

III. MANNER IN WHICH THE SEALS ARE ANNUALLY TAKEN.

Taking the seals.—By reference to the habits of the fur-seal, it is plain that two-thirds of all the males that are born (and they are equal in number to the females born) are never permitted by the remaining third, strongest by natural selection, to land upon the same ground with the females, which always herd together *en masse*. Therefore, this great band of bachelor seals, or “holluschickie,” is compelled, when it visits land, to live apart entirely, miles away frequently, from the breeding-grounds, and in this admirably perfect manner of nature are those seals which can be properly killed without injury

to the rookeries selected and held aside, so that the natives can visit and take them as they would so many hogs, without disturbing in the slightest degree the peace and quiet of the breeding-grounds where the stock is perpetuated.

The manner in which the natives capture and drive the holuschickie up from the hauling-grounds to the slaughtering-fields near the villages and elsewhere, cannot be improved upon, and is most satisfactory.

In the early part of the season large bodies of the young bachelor seals do not haul up on land very far from the water, a few rods at the most, and the men are obliged to approach slyly and run quickly between the dozing seals and the surf, before they take alarm and bolt into the sea, and in this way a dozen Aleuts, running down the long sand-beach of English Bay, some driving-morning early in June, will turn back from the water thousands of seals, just as the mold-board of a plow lays over and back a furrow of earth. As the sleeping seals are first startled they arise, and seeing men between them and the water, immediately turn, lope and scramble rapidly back over the land; the natives then leisurely walk on the flanks and in the rear of the drove thus secured, and direct and drive them over to the killing-grounds.

A drove of seals on hard or firm grassy ground, in cool and moist weather, may with safety be driven at the rate of half a mile an hour; they can be urged along with the expenditure of a great many lives in the drove, at the speed of a mile or a mile and a quarter even per hour, but this is highly injudicious and is seldom ever done. A bull-seal, fat and unwieldy, cannot travel with the younger ones, but it can lope or gallop as it were over the ground as fast as an ordinary man can run for a hundred yards, but then it falls to the earth supine, utterly exhausted, hot and gasping for breath.

The seals, when driven thus to the killing-grounds, require but little urging; they are permitted to frequently halt and cool off, as heating them injures their fur; they never show fight any more than a flock of sheep would do, unless a few old seals are mixed in, which usually get so weary that they prefer to come to a stand-still and fight rather than to move; this action on their part is of great advantage to all parties concerned, and the old fellows are always permitted to drop behind and remain, for the fur on them is of little or no value, the pelage very much shorter, coarser, and more scant than in the

younger, especially so on the parts posteriorly. This change in the condition of the fur seems to set in at the time of their shedding, in the fifth year as a rule.

As the drove progresses the seals all move in about the same way, a kind of a walking-step and a sliding, shambling gallop, and the progression of the whole body is a succession of starts, made every few minutes, spasmodic and irregular. Every now and then a seal will get weak in the lumbar region, and drag his posterior after it for a short distance, but finally drops breathless and exhausted, not to revive for hours, days perhaps, and often never. Quite a large number of the weaker ones, on the driest driving-days, are thus laid out and left on the road; if one is not too much heated at the time, the native driver usually taps the beast over the head and removes its skin. This will happen, no matter how carefully they are driven, and the death-loss is quite large, as much as 3 or 4 per cent. on the longer drives, such as three and four miles, from Zapadne or Polavina to the village on Saint Paul's, and I feel satisfied that a considerable number of those rejected from the drove and permitted to return to the water die subsequently from internal injuries sustained on the drive from overexertion. I therefore think it improper to extend drives of seals over any distance exceeding a mile or a mile and a half. It is better for all parties concerned to erect salt-houses and establish killing-grounds adjacent to all of the great hauling-grounds on Saint Paul's Island should the business ever be developed above the present limit. As matters now are, the ninety thousand seals belonging to the quota of Saint Paul last summer were taken and skinned in less than forty days within one mile from either the village, or salt-house on North-east Point.

Killing the seals.—The seals when brought up to the killing-grounds are herded there until cool and rested; then squads or "pods" of fifty to two hundred are driven out from the body of the drove, surrounded and huddled up one against and over the other, by the natives, who carry each a long, heavy club of hard wood, with which they strike the seals down by blows upon the head; a single stroke of a heavy oak bludgeon, well and fairly delivered, will crush in at once the slight, thin bones of a seal's skull, laying the creature out lifeless; these strokes are usually repeated several times with each animal, but are very quickly done.

The killing-gang, consisting usually of fifteen or twenty men at a time, are under the supervision of a chief of their own selection, and have, before going into action, a common understanding as to what grades to kill, sparing the others which are unfit, under age, &c., permitting them to escape and return to the water as soon as the marked ones are knocked down; the natives then drag the slain out from the heap in which they have fallen, and spread the bodies out over the ground just free from touching one another so that they will not be hastened in "heating" or blasting, finishing the work of death by thrusting into the chest of each stunned and senseless seal a long, sharp knife, which touches the vitals and bleeds it thoroughly; and if a cool day, another "pod" is started out and disposed of in the same way, and so on until a thousand or two are laid out, or the drove is finished; then they turn to and skin; but if it is a warm day, every "pod" is skinned as soon as it is knocked down.

This work of killing as well as skinning is performed very rapidly; for example, forty-five men or natives on Saint Paul's during June and July, 1872, in less than four working-weeks drove, killed, skinned, and salted the pelts of 72,000 seals.

The labor of skinning is exceedingly severe, and is trying to an expert, requiring long practice before the muscles of the back and thighs are so developed as to permit a man to bend down to and finish well a fair day's work.

The body of the seal, preparatory to skinning, is rolled over or put upon its back, and the native makes a single swift cut through the skin down along the neck, chest, and belly, from the lower jaw to the root of the tail, using for this purpose a large, sharp knife. The fore and hind flippers are then successively lifted, and a sweeping circular incision is made through the skin on them just at the point where the body-fur ends; then, seizing a flap of the hide on either one side or the other of the abdomen, the man proceeds to rapidly cut the skin clean and free from the body and blubber, which he rolls over and out from the skin by hauling up on it as he advances with his work, standing all the time stooping over the carcass so that his hands are but slightly above it or the ground. This operation of skinning a fair-sized seal takes the best men only a minute and a half, but the average time on the ground is about four minutes.

Nothing is left of the skin upon the carcass save a small

patch of each upper lip, on which the coarse mustache grows, the skin on the tip of the lower jaw, the insignificant tail, together with the bare hide of the flippers.

The blubber of the fur-seal is of a faint yellowish white, and lies entirely between the skin and the flesh, none being deposited in between the muscles. Around the small and large intestines a moderate quantity of hard, firm fat is found. The blubber possesses an extremely offensive, sickening odor, difficult to wash from the hands. It makes, however, a very fair oil for lubricating, burning, &c.

The flesh of the fur-seal, when carefully cleaned from fat or blubber, can be cooked, and by most people eaten, who, did they not know what it was, might consider it some poor, tough, dry beef, rather dark in color and overdone. That of the pup, however, while on the land and milk-fed, is tender and juicy but insipid.

The skins are taken from the field to the salt-house, where they are laid out open, one upon another, "hair to fat," like so many sheets of paper, with salt profusely spread upon the fleshy sides, in "kenches" or bins. After lying a week or two salted in this style they are ready for bundling and shipping, two skins to the bundle, the fur outside, tightly rolled up and strongly corded, having an average weight of twelve, fifteen, and twenty-two pounds when made up of two, three, and four year old skins respectively.

The company leasing the islands are permitted by law to take one hundred thousand, and no more, annually; this they do in June and July; after that season the skins rapidly grow worthless by shedding, and do not pay for transportation and tax. The natives are paid forty cents a skin for the catch, and keep a close account of the progress of the work every day, as it is all done by them, and they know within fifty skins, one way or the other, when the whole number have been secured each season. This is the only occupation of some three hundred and fifty people here, and they naturally look well after it. The interest and close attention paid by these Aleuts on both islands to this business was both gratifying and instructive to me while stationed there.

The common or popular notion regarding seal-skins is that they are worn by those animals just as they appear when offered for sale. This is a very great mistake; few skins are less attractive than the seal-skin as it is taken from the creature. The fur is not visible, concealed entirely by a coat of stiff over-

hair, dull gray, brown, and grizzled. The best of these raw skins are worth only \$5 to \$10, but after dressing they bring from \$25 to \$40; and it takes three of them to make a lady's sack and boa. In order that it may be apparent that there is reason for this great advance in price over the raw quotation, I take great pleasure in submitting a description of the process, kindly furnished me by a leading furrier practically and skillfully conversant with the subject, probably the only person in the country long familiar with it. His communication is as follows:

“ALBANY, *October 22, 1874.*

“SIR: The Alaska Commercial Company sold in London, December, 1873, about sixty thousand skins taken from the islands leased by our Government of the catch of 1873. The remainder of the catch, about forty thousand, were sold in March. This company have made the collection of seal from these islands much more valuable than they were before their lease, by the care used by them in curing the skins, and taking them only when in season. We have worked this class of seal for several years—when they were owned by the Russian American Fur Company, and during the first year they were owned by our Government.

“When the skins are received by us in the salt, we wash off the salt, placing them upon a beam somewhat like a tanner's beam, removing the fat from the flesh-side with a beaming-knife, care being required that no cuts or uneven places are made in the pelt. The skins are next washed in water and placed upon the beam with the fur up, and the grease and water removed by the knife. The skins are then dried by moderate heat, being tacked out on frames to keep them smooth. After being fully dried, they are soaked in water and thoroughly cleansed with soap and water. In some cases they can be unhaired without this drying-process, and cleansed before drying. After the cleansing-process they pass to the picker, who dries the fur by stove-heat, the pelt being kept moist. When the fur is dry he places the skin on a beam, and while it is warm he removes the main coat of hair with a dull shoe-knife, grasping the hair with his thumb and knife, the thumb being protected by a rubber cob. The hair must be pulled out, not broken. After a portion is removed the skin must be again warmed at the stove, the pelt being kept moist. When the outer hairs have been mostly removed, he uses a beaming-knife to work out the finer hairs, (which are shorter,) and the

remaining coarser hairs. It will be seen that great care must be used, as the skin is in that soft state that too much pressure of the knife would take the fur also; indeed, bare spots are made; carelessly-cured skins are sometimes worthless on this account. The skins are next dried, afterward dampened on the pelt side, and shaved to a fine, even surface. They are then stretched, worked, and dried; afterward softened in a falling-mill, or by treading them with the bare feet in a hogshead, one head being removed and the cask placed nearly upright, into which the workman gets with a few skins and some fine, hard-wood sawdust, to absorb the grease while he dances upon them to break them into leather. If the skins have been shaved thin, as required when finished, any defective spots or holes must now be mended, the skin smoothed and pasted with paper on the pelt-side, or two pasted together to protect the pelt in dyeing. The usual process in the United States is to leave the pelt sufficiently thick to protect them without pasting.

"In dyeing, the liquid dye is put on with a brush, carefully covering the points of the standing fur. After lying folded, with the points touching each other, for some little time, the skins are hung up and dried. The dry dye is then removed, another coat applied, dried, and removed, and so on until the required shade is obtained. One or two of these coats of dye are put on much heavier and pressed down to the roots of the fur, making what is called the ground. From eight to twelve coats are required to produce a good color. The skins are then washed clean, the fur dried, the pelt moist. They are shaved down to the required thickness, dried, working them some while drying, then softened in a hogshead, and sometimes run in a revolving-cylinder with fine sawdust to clean them. The English process does not have the washing after dyeing.

"I should perhaps say that, with all the care used, many skins are greatly injured in the working. Quite a quantity of English dyed seal were sold last season for \$17, damaged in the dye.

"The above is a general process, but we are obliged to vary for different skins; those from various parts of the world require different treatment, and there is quite a difference in the skins from the Seal Islands of our country—I sometimes think about as much as in the human race.

"Yours, with respect,

"GEO. C. TREADWELL & CO.

"H. W. ELLIOTT, Esq."

From this subject of the manner in which the sealing-business is conducted on the islands and elsewhere, we naturally turn to the—

IV. PRESENT CONDITION OF THE SEAL-LIFE AND ITS VALUE.

A question frequently asked in regard to these islands is this: "At the present rate of killing the seals, it will not be long before they are exterminated; how much longer will they last?" The answer is, that as long as matters are conducted on the Seal Islands as they now are, one hundred thousand male seals, under the age of five years and over one, may be safely taken every year without the slightest injury to the regular birth-rate or natural increase, provided the animals are not visited by any plague or pestilence, or any such abnormal cause for their destruction, beyond the control of man, and to which, like any other great body of animal life, they must ever be subject.

From my calculations already given it will be seen that a million "pups," or young seals, are born upon these islands every year. Of this million, one-half are males. These 500,000 young males leave the islands for sea, when they are between five and six months old, very fat and hearty, having suffered but a trifling loss in number (about 1 per cent.) while on and about the islands, about which there are no enemies whatever; but after they get well down into the Pacific in quest of food, they form the most helpless of their kind to resist or elude sharks, killers, &c., and they are so diminished in number by these natural enemies, that when they return to the Prybilov Islands in the following year, July, they will not present more than one-half of the number with which they left the ground of their birth the previous season; that is, 250,000. By this time these survivors of last year's birth have become strong, active swimmers, and when they leave again, as before, in the fall, they are as able as any others of their older classes to take care of themselves, and at least 225,000 of them safely return in the second season after birth, and are very slightly diminished after that during their natural lives of fifteen to twenty years each; and the same will hold good with the females.

Now, the number of bulls required for the annual stock of 225,000 virgin cows, to be saved for this service every year, is by their law and habit *only one-fifteenth of the number of cows*, as on all the breeding-grounds one male will have on an average

fifteen cows; but to make sure that we save two-year-old bulls enough every season, we will more than double this proportion and set aside *one-fifth* of the young males in question, and that will leave 180,000 seals in good condition that can be safely killed every year without the slightest injury to the perpetuation of the stock itself.

In the above showing I have put the largest estimate upon the loss sustained at sea by the youngest seals, too large I am morally certain, but I wish to place the matter in the very worst light in which it can be put, and to give the seals the full benefit of every doubt.

With regard to the *increase* of the seal-life, I do not think it within the power of human management to promote this end to the slightest appreciable degree beyond its present extent and condition in a state of nature; for it cannot fail to be evident, from my detailed description of the habits and life of the fur-seal on these islands during a great part of the year, that could man have the same supervision and control over this animal during the *whole* season which he has at his command while they visit the land, he might cause them to multiply and increase, as he would so many cattle, to an indefinite number, only limited by time and means; but the case in question, unfortunately, takes the fur-seal six months out of every year far beyond the reach, or even cognizance, of any one, where it is exposed to known powerful and destructive natural enemies, and many others probably unknown, which prey upon it, and, in accordance with a well-recognized law of nature, keep it at about a certain number which has been for ages, and will be for the future, as affairs now are, *its maximum limit of increase*. This law holds good everywhere throughout the animal kingdom, regulating and preserving the equilibrium of life in a state of nature. Did it not hold good, these Seal Islands and all Bering Sea would have been literally covered, and have swarmed with them long before the Russians discovered them; but there were no more seals when first seen here by human eyes in 1786-'87 than there are now, in 1874, as far as all evidence goes.

With reference to the amount of ground covered by the seals when first discovered by the Russians, I have examined every foot of the shore-line of both islands, where the bones, &c., might be lying on any deserted ground since then, and, after carefully surveying the new ground now occupied by the seals,

and comparing this area with that which they have deserted, I feel justified in stating that, for the last twelve or fifteen years at least, the fur-seals on these islands have not diminished, nor have they increased as a body to any noteworthy degree; and during all this time the breeding-grounds have never been disturbed, and they have been living in a perfectly quiet and natural condition. Without some natural check upon this life, with a million of young born every year, during the last ten at least, the annual taking of a hundred thousand males would not in the slightest degree retard the increase which would set in at once were it not for this check aforesaid.

What can be done to promote their increase? We cannot cause a greater number of females to be born every year; we do not touch or disturb these females as they grow up and live, and we save more than enough males to serve them. Nothing more can be done, for it is impossible to protect them from deadly enemies in their wanderings for food.

This great body of four and five millions of hearty, active animals must consume an enormous amount of food every year. They cannot average less than five pounds of fish each per diem, (this is not half enough for an adult male,) which gives the consumption of over *three million tons* of fish every year!

To get this immense food-supply the seals are compelled to disperse over a very large area of the North Pacific and fish. This brings them into contact more and more with their enemies as they advance south, until they reach a point where their annual destruction from natural foes is equal to their increase, and at this point their number will remain fixed. About the Seal Islands I have failed to notice the least disturbance among these animals by anything in the water or out, and from my observation I am led to believe that it is not until they descend well to the south in the North Pacific that they meet with sharks and voracious killer-whales.*

In view, therefore, of all these facts, I have no hesitation in saying quite confidently that, under the present rules and regulations governing the sealing interests on these islands, the increase or diminution of the life will amount to nothing; that the seals will continue for all time in about the same number and condition.

To test this theory of mine, I have put the Government in

* "In the stomach of one of these animals (year before last) *fourteen* small harp-seals were found."—*Michael Carroll's Report, Canadian Fisheries, 1872.*

possession of data which will serve as a correct guide from year to year.

As the seals come to land boldly first and last, and are not wild or wary, the breeding-grounds may and should be inspected throughout, every few days, by the agent in charge, from the time of the early arrivals in May until the period of general departure in the autumn, in order that he may map down and fix in black and white the precise boundaries assumed by the breeding-seals for the season, giving the result at the close of his labors of an accurate survey of the *area* and *position* of the ground covered during the season by the cows, bulls, and pups on the rookeries, so that he can at once detect any change that may and is likely to occur in their hauling and numbers for the next season.

This is the only way in which an agent of the Government can correctly report, year after year, as to the condition of the seal-life on these grounds, detecting any increase or diminution of the same as season succeeds season. This is a step imperatively necessary for a Government agent to take, and should not be neglected.

During the first week of inspection some of those arriving earliest will frequently take flight to the water when approached, but these runaways soon return. By the end of May, however, they will hardly move to the right or left when you attempt to pass through them. At this time, about two weeks before the females begin to come in a body, they become entirely indifferent to man or anything else save their own kind, and so continue the rest of the season.

The seals upon the rookeries and hauling-grounds are not affected by the smell of blood and carrion arising from the killing-grounds or from the stench of blubber-fires which burn in the native villages. This trait is well illustrated by the attitude of the two rookeries near the village of Saint Paul's. The breeding-ground on the spit at the head of the lagoon is not more than forty yards from the great killing-grounds, being separated only from the seventy or eighty thousand rotting carcasses by a slough less than ten yards wide. The seals can smell the blood and carrion upon this field from near the time they land in the spring until they leave in the autumn; while the general southerly summer-winds waft to them the odor and sounds of a native village not over two hundred rods south of them. All this has no effect upon the seals, for the rookery, as

the natives declare, has been slightly but steadily increasing. The seals everywhere on the breeding-grounds will become speedily habituated to close observation when it is quiet and undemonstrative, and take little notice of the approach of the observer.

The seals will be found to change a little every year from rookery to rookery, but the aggregate number will be steadily about the same. The condition of the seal-life this season of 1874 compares very favorably with that of 1872, as will be seen from extracts from my notes taken on the ground :

“NORTHEAST POINT, *July 18, 1874.*

“Quite a strip of ground near Webster’s house has been deserted this season, but a small expansion is observed on Sea Lion Hill. The rest of the ground is as mapped in 1872, with no noteworthy increase in any direction. The condition of the animals and their young, excellent ; small irregularities in the massing of the families due to rain ; sea-lions about the same ; none on the west shore of the point.”

“The aggregate of life on this great rookery is about the same as in 1872, the ‘holluschickie,’ or killable seals, hauling as well and as numerous as before. The proportions of the different ages among them, of two, three, and four year olds, pretty well represented.”

“POLAVINA, *July 18, 1874.*

“Stands as it did in 1872 ; breeding and hauling grounds in excellent condition ; the latter, on Upper Polavina, are changing down upon Polavina sand-beach, trending for three miles toward Northeast Point. The numbers of the ‘holluschickie’ on this ground of Polavina, where they have not been disturbed now for some five years to mention in the way of taking, do not seem to be any greater than they are on the hauling-grounds adjacent to Northeast Point and the village, from which they are driven almost every day during this season of killing.”

“LUKANNON AND KETAVIE, *July 19, 1874.*

“Not materially changed in any respect from its condition at this time in 1872.”

“GORBOTCH, *July 19, 1874.*

“Just the same. Condition excellent.”

“REEF, *July 19, 1874.*

“A slight contraction on the south sea-margin of this ground, compensated for by expansion under the bluffs on the north-west side. Condition excellent.”

"NASPEEL, *July 20, 1874.*

"A diminution of one-half at least. Very few here this year. It is no place for a rookery; not a pistol-shot from the natives' houses."

"LAGOON, *July 20, 1874.*

"No noteworthy change; if any, a trifling increase. Condition good."

"TOLSTOI, *July 21, 1874.*

"No perceptible change in this rookery from its good shape of 1872. The condition excellent."

"ZAPADNIE, *July 22, 1874.*

"An extension or increase of 2,000 feet of shore-line, with an average depth of 50 feet of breeding-ground, has been built on to Upper Zapadnie toward Tolstoi; the upper rookery proper has not altered its bearings or proportions; the sand-beach belt between it and Lower Zapadnie deserted by the breeding-seals almost entirely, and a fair track for the holluschickie left clear, over which they have traveled quite extensively this season, some 20,000 to 25,000 lying out to-day. Lower Zapadnie has lost in a noteworthy degree about an average of 20 feet of its depth, which, however, is much more than compensated for by the great increase to the upper rookery.

"A small beginning had been made for a rookery on the shore just southwest from Zapadnie Lake, in 1872, but this year it has been entirely abandoned."

On Saint George a survey gives for this season the following in comparison with that of 1873:

"ZAPADNIE, *July 8, 1874.*

"This rookery shows a slight increase upon the figures of last year, about 5,000. Fine condition."

"STARRY ATEEL, *July 6, 1874.*

"No noteworthy change from last year."

"NORTH ROOKERY, *July 6, 1874.*

"No essential change from last year; condition very good."

"LITTLE EASTERN, *July 6, 1874.*

"A slight diminution of some 2,000 or so. Condition excellent."

"EASTERN ROOKERY, *July 7, 1874.*

"A small increase over last year of about 3,000, making the aggregate seal-life similar to that of last season, with the certainty of a small increase.

“The unusually early season, this year, brought the rookery-bulls on to the ground very much in advance of the general time; they landed as early as the 10th of April, but the arrival of the cows was as late as usual, corresponding to my observations during the past two seasons.

“The general condition of the animals of all classes is most excellent—they are sleek, fat, and free from any taint of disease.”

In this way it must be plain that the exact condition of these animals can be noted every season, and should a diminution be noticed, due to any cause known or unknown, the killing can be promptly stopped. Four years have passed, with the end of this season, in which 100,000 young males have been annually taken, and the effect on the seal-life cannot be seen; it has not injured it, to a certainty, and it has not promoted an increase. Two years more will make the matter conclusive, for then, if the breeding-grounds are as well supplied with males as they now are, then it will be evident that enough are saved every year for that service.

We know pretty well now how many we can take without injury, but we do not know how many more than 100,000 can be. This problem of developing these interests to their full importance should not be taken in hand for a few years yet, not until the present system which I have drawn up for the watching of the rookeries has been in operation for three or four years; then, if it is advisable, on account of the superabundance of male seal-life, and the market will stand the increase of raw material, the killing may be very gradually increased from year to year, but not over *five thousand* each season. The rookeries, like a barometer, will show a falling off of necessary bulls when the killing has reached a point where the increase is detrimental. This can be seen at once by the proper persons and the killing checked without delay, in ample time to prevent harm.

In this chapter I have given a translation of Bishop Veniaminov's history, the only one written, and very valuable as illustrative of the manner in which the Russians conducted affairs on the Prybilov Islands; but it is at once apparent that much of it was written necessarily from hearsay and not based upon fact or personal observation, hence many grave errors are contained in it.

THE PROPRIETY OF LEASING THE ISLANDS.

It will be remembered that at the time this question was before Congress much opposition to the principle of leasing was made, on the ground that the Government would realize more by taking the whole management of the business into its own hands. As to what arguments were used on either side of the question I am ignorant, but after a careful and impartial survey of the subject on the ground itself, and in the trade, I am satisfied that those members of the House and Senate who, by their votes June, 1870, directed the Secretary of the Treasury to lease the Seal Islands of Alaska to the highest bidder, did the only correct and profitable thing that could be done in the matter, both with regard to the preservation of the seal-life in its original integrity, and its own pecuniary gain; and to make this statement of mine perfectly evident, the following facts may be presented:

First. When the Government took possession of these interests in 1868-'69, *the gross value of a seal-skin then in the best market, London, was less than the present tax and royalty paid upon it by the lessees!*

Second. By the action of the intelligent business men who took the lease, in stimulating and encouraging the dressers of the raw material, and in combining with leaders of fashion abroad, the demand for the fur has been greatly increased, and the price of the raw material has doubled, so that while the Government gets and nets nearly half of the gross sales, yet the lessees have a good margin of 15 to 20 per cent. at least on their capital, sustained entirely by their business capacity and energy.

Third. The Government, should it attempt to manage this business, could not secure the services of such men as those who compose the business management of the Alaska Commercial Company without paying salaries to four and five agents as large or larger than that given to the President of the United States. This, however, the Government might cheerfully do, did it guarantee the selection and appointment of such men as those above mentioned, but it does not follow under our system of government, or any other that I know of, that a large salary indicates a corresponding amount of ability on the part of its recipient; an imbecile or a very common man is just as apt

to secure it as not. Ordinary men cannot conduct this business successfully.*

Fourth. As matters now stand, the greatest and best interests of the lessees are identical with those of the Government; that is, the preservation and, if possible, the increase of the seal-life; and if these lessees had it in their power, which they certainly have not, to ruin these interests by a few seasons of rapacity, they are too prudent to do so.

Fifth. The frequent changes made in the office of the Secretary of the Treasury, who now, very properly, has the control of the business as it stands, do not guarantee on his part the close, careful scrutiny likely to be exercised by the lessees, who have but one purpose to carry out; and 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 the preservation of the seal-life, as it is their interest to do.

It is frequently urged with great persistency by misinformed

*Another great obstacle to the success of the business, if controlled entirely by the Government, would arise in the disposal of the skins after they have been brought down from the islands. The Government would need to offer them at public auction in this country, and would be at the mercy of any well-organized combination of buyers; the Government agents conducting the sale could not counteract the efforts of such a combination as successfully as the agents of a private corporation, who can look after their interests in all the markets of the world and are supplied with money to use in manipulation of the market.

On this ground I feel quite confident 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 Government officer supplied with, say, \$100,000, to expend in "working the market," and intrusted with the disposal of 100,000 seal-skins, whenever he could so do to the best advantage of the Government, and were this agent a man of first-class business energy and ability, I think it quite likely the same success might attend his labor in the London market that distinguishes the management of the Alaska Commercial Company; but the usual cry of fraud and robbery that would be raised against him, however honest he might be, would be such as to bring the whole business into positive disrepute or constant suspicion. The Government officer in this matter is placed at a great disadvantage should any such line of action be adopted, and the most profitable course is for the Government not to offer in the markets through agents, but to pursue its present policy, levy a tax, and watch carefully the condition of the seal-life from year to year, as the killing is increased and the business developed to its full extent.

In this way Alaska may be made to yield, by a tax laid on its Seal Islands alone, a very handsome rate of interest upon the money paid for the entire Territory.

or jealous authority that the lessees can and do take thousands of skins in excess of the limit of law, and that this catch in excess is slyly shipped to China and Japan from the islands, &c.

To show the folly of any such move as this 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 do all the driving and skinning for the company; no others are permitted or asked to land upon the islands to do this work as long as the inhabitants of the islands are equal to it. Every skin taken by the natives is counted by themselves, as they get forty cents per pelt for the labor; and at the expiration of every day's labor 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 1 per cent. of the whole catch,) and they have it recorded every evening by those among themselves who are specially charged with the duty. Thus, were 150,000 skins taken, or 200,000, the natives would know it as quickly as it was done, and would demand their compensation for the labor; and were any ship to approach the islands at any hour of the day or night, these people would know it at once, and would be aware of any shipment of skins that might be attempted. It would be common talk among the three hundred and seventy inhabitants, and thus leave it an open affair to any person who might come upon the ground charged with investigation. These people are constantly going to and from Ounalashka, where they have intimate intercourse with bitter enemies of the company, to whom they would not hesitate to tell the whole state of affairs on the islands. Should anything, therefore, be done contrary to the law, the act would be promptly reported by these people, even if the Treasury agents were in collusion with the company, which, however, is simply out of the question.

The Treasury agents count these skins into the ship, and one at least of their number goes down to San Francisco upon the vessel, where they are all counted out again by the custom-house officers of that port. Of the one hundred thousand skins annually taken, the company's steamer "Alexander" usually carries down between sixty and seventy thousand, while the balance of the catch are put into the hold of a sailing-vessel

at Ounlalaskha, and counted again and certified to by the Treasury agent.

It will at once be seen by examining the state of affairs and the conditions upon which the lease is granted, that the most scrupulous care in fulfilling the terms of the contract is the best and most profitable course for the lessees to pursue; that it would be downright folly in them to deviate in the slightest degree from the letter of the law, and thus lay themselves open at any time to discovery and the loss of their contract; their action can be investigated at any time by Congress, of which they are aware. They cannot bribe these three hundred and seventy-odd people on the islands to secrecy any more than they can conceal their action from them on the sealing-fields; and any man of average ability can go among these people and inform himself as to the most minute details of the sealing-catch from the time the lease was granted, should he have reason to suspect the honesty of the Treasury agents.

I therefore have no hesitation in stating that as far as the relationship existing between the Alaska Commercial Company and the Government is concerned, the best interests of the latter are honestly and faithfully served, simply because it is the very best policy for the former so to do; that all the conditions of the lease are most scrupulously complied with and observed, and that the lessees hold themselves ready at any moment to comply with any just and proper modification of the regulations that time may develop.

With regard to the profits of this company upon their yearly catch of one hundred thousand seals, the agents of the Government have no concern whatever; after they have observed the faithful fulfillment of the terms of the contract existing between the company and the Government, the amount of their profit is a pure matter of business over which the lessees have entire control, and in regard to which they should not be subjected to impertinent inquisition.

THE CONDITION OF THE NATIVES ON THE SEAL ISLANDS.

This has been wonderfully improved by the action of the lessees during the short time they have had control of affairs there. The truth of this will be realized by any one who may take the trouble to contrast the present condition of the people on these islands with what it was previous to the granting of the lease, and with that also of the people of their class who are now

living upon the Aleutian Islands and the mainland. The inquirer will learn that these people, now so well and comfortably clad, fed, and housed, were at the time of the transfer of the Territory so poor and ill-provided for that they could not in many instances cover their nakedness; that they existed in absolute squalor; whereas they are now living in snug houses, such as our laboring classes occupy in the United States; that they earn and receive in coin, in less than two working-months every year, more than the same number of our common workmen receive on an average for a whole year's service; and also that for all extra work other than of seal-skinning, such as loading and unloading the company's vessels, building, grading, &c., these people are paid by the day from fifty cents to one dollar, according to the character of service rendered.

The agents of the company here do not pay the least attention to or interfere with the private life and personal relations of the people among themselves; and let me here state, to the credit of these people, that the peaceful and harmonious manner in which they live together as a rule, during nine idle months at least every year, would contrast most favorably with the lives of an equal number of our own working classes were they suddenly brought to these islands and put on the same footing. I will only hint at the insubordination and utter worthlessness of such a community after six or eight months of torpidity and isolation.

It is true that the natives here have an inordinate fondness for liquor, and would destroy themselves were they not restrained in this propensity by the difficulty of obtaining this demoralizing beverage, and hence the importance of the liquor prohibition, which should be rigorously enforced.

Only a small proportion of the present population are descendants of the pioneers who were brought by the several Russian companies in 1787-'88—a colony of 137 souls—recruited principally from the Aleuts at Ounalashka and Atka. Their early life here was one of much hardship, and on several occasions they were in actual need. They lived in a co-operative manner at first, in large barracoons or barrabkies, partly underground, economizing in this way their limited supply of firewood, being dependent upon the sea for such drift-timber as might chance to lodge as the currents, deflected from the Yukon and elsewhere, sweep around the islands; but during the

past twenty-five or thirty years they have all come into the general ownership and occupation of a hut to a family.

The Russian Fur Company, controlling the islands, maintained on Saint Paul and Saint George a store and an agent, the people supporting a priest and building a church upon each island, and living in this manner very dirty, poor, and miserable, they were brought into contact with the Americans at the time of the transfer of the Territory.

The people are now supplied without charge with a physician and medical stores on each island, and also a school; but the school is not well attended except by the very young children, principally the little girls, although every winter fifteen or twenty of the boys and young men are taught the Russian alphabet and church-service by three or four of the elder persons. The non-attendance at school is not to be ascribed merely to indisposition on the part of the children and parents to attend the English schools established by the Alaska Commercial Company on both islands. The view expressed to the writer by one of the oldest and most intelligent of the people may be explanatory of their feeling and consequent action.

"I do not," said old Philip Vollkov, "have any objection to the attendance of my children, nor have my neighbors to that of theirs, on your (English) school; but if our boys and young men neglect their Russian lessons, who is going to take our places when we die, in our church, at our christenings, and at our burials?" To any one familiar with the teachings of the Greek Catholic faith the objection of Vollkov is well taken; but it is to be hoped that in the course of time, however, the Russian church-service may be conducted in English, for until then no satisfactory work can be done by an English school-teacher among them in the way of education.

Up to the time of the transfer of the islands to the Alaska Commercial Company the inhabitants all lived in huts or sod-walled and dirt-roofed houses or barrabkies, partly underground. Most of these huts were, and are, damp, dark, and exceedingly filthy. Under the Russian *régime* the people generally here had some excuse for such squalor; but as the case now stands it is due to the improvidence or shiftlessness of the natives themselves if they are living in this unclean condition and wear an appearance of discomfort. The use of seal-fat for fuel causes the deposit upon everything within doors of a thick coating of greasy, black soot, strongly impregnated with a rank,

moldy, and indescribably offensive odor. In early times they were obliged to burn blubber very largely, having no other fuel at command than the precarious supply of drift-wood that the ocean-currents might bring them; but by the terms of the lease they are now supplied with a sufficient quantity of coal to make them quite comfortable during the winter.

Since the Alaska Commercial Company have taken possession of the islands, the natives are being quite rapidly put into neat and habitable houses, and plenty of lumber is distributed among those who have not as yet been removed to patch and make comfortable their old huts, and at the expiration of three more seasons the whole population of above eighty families will be occupants of as many suitable houses, where they will live more healthily.

The example of the agents of the company on both islands and the assistant agent of the Treasury on Saint George during the last three years, who have maintained perfect order, neatness, and industry about their buildings and business, has been a silent but powerful one for the better among the people. The intercourse of these gentlemen with the natives is always courteous, pleasant, and often generous, when deserved; giving the simple inhabitants a slow but steady elevation toward morality, sobriety, and industry, such as they never have had before, having been treated like so many animals by the Russians; and the conduct of most of the United States revenue and military officers and men stationed here between the transfer of the Territory and the granting of the lease cannot be described as other than disgraceful, their behavior being marked by drunkenness, debauchery, and brawls, their habits soon rendering the name *American* offensive to even these simple people.

The population of Saint Paul is, at the present writing, 220 men, women, and children; that of Saint George, 138. It has neither much increased nor diminished during the last fifty years, but would have fallen off had not recruits been regularly drawn from the mainland and other islands, the births not being equal to the deaths. In view of the great improvement in their condition, it may be reasonably anticipated that these people will at least hold their own, even though they do not increase to any remarkable degree.

As an incentive and encouragement for their good behavior, they have been assured that as long as they are capable and willing to perform the labor of skinning the seal-catch, so long

will they enjoy the exclusive privilege of participating in this labor and its reward. As to the especial fitness of these people for the labor connected with the sealing business, no comment is needed; nothing better in the way of manual service, skilled and rapid, could be rendered by any other body of men equal in numbers. They appear to shake off the periodic lethargy of winter, and rush with enthusiasm into the severe exercise and duty of capturing, killing, and skinning the seals.

Seal-meat is their staple food, and the village of Saint Paul, 220 souls, consumes about 400 pounds per diem, and they are permitted every fall to kill about 5,000 pups, or an average of 22 or 23 to each man, woman, and child. The pups will dress 10 pounds. This shows an average consumption of 515 pounds of seal-meat to each person during the year. In addition, the natives eat a great deal of butter and sweet crackers. If these people could get all they desire, they would consume about 500 pounds of butter and 450 pounds sweet crackers per week, and indefinite quantities of sugar. Of this article, 150 pounds a week is allowed them in this village. If unable to get sweet crackers, they consume about 300 pounds of hard or pilot bread, and, in addition to this, about 600 pounds of flour per week; of tobacco, 50 pounds; candles, 75 pounds; rice, 50 pounds each per week; they burn over 600 gallons of kerosene oil during the year; vinegar is used in limited quantities, about 50 gallons per season; mustard and pepper, $\frac{1}{2}$ to $1\frac{1}{2}$ pounds per week for the whole village; beans they reject; split pease, a few; salt meats they will take reluctantly if given to them, but will never buy them; they use a little coffee during the year, about 100 pounds; canned fruit they will purchase to any quantity, and would bankrupt themselves to obtain it, if the opportunity were afforded; potatoes they sometimes demand, as well as onions, but these vegetables cannot be brought here to advantage.

The question will naturally be asked, How do these people employ themselves throughout the long nine months in which they have little or nothing to do? It may be answered that they are entirely idle during most of this period. Some of the men are, however, disagreeable exceptions, as they are enthusiastic gamblers, passing whole nights at their sittings, even during the sealing-season, playing games at cards taught them by the Russians and persons who have been on the islands since the transfer of the Territory. But the majority of the men, women, and children, being compelled to make no exertion to

obtain the necessaries of life—such as seal-meat, hard bread, tea, &c.—sleep most of the time when unoccupied in cooking, eating, and the daily observance of the routine of the Greek Catholic Church. Their religious duties alone preserve them from absolute stagnation; for, in obedience to its teachings, they attend church quite regularly, make and receive calls on their saints' days, which are very numerous, and their birth-days are generally enlivened with home-brewed beer, or "quass," upon which all classes become more or less intoxicated. They add to these entertainments of the *emannimik* the music of the accordeon, an instrument of which they are very fond; and a great number of the women in particular can play indifferently a limited selection of airs, many of which are the old battle-songs and ballads so popular during the rebellion, and which the soldiers quartered here in 1869 taught them. From the soldiers, also, they learned to dance various figures, and to waltz. These dances, however, the old folks do not enjoy, and they seldom indulge in them, unless under the influence of beer.

From the following statement it will be seen that these people are doing better work every succeeding season; for example, 90,000 seals were taken this year in sixteen days less time than it took to get 75,000 in 1871, viz:

In Saint Paul's Island, 1871, 55 days' work of 66 men secured 75,000 seals.

In 1872, 50 days' work of 71 men secured 75,000 seals.

In 1873, 40 days' work of 71 men secured 75,000 seals.

In 1874, 39 days' work of 84 men secured 90,000 seals.*

This shows plainly that they are in better physical condition than at first; it furnishes also *undeniable proof of the undiminished supply of killable seals.*

INHABITANTS OF SAINT PAUL, JULY 1, 1870, TAKEN FROM
PHILIP VOLKOV'S LISTS, AUGUST 8, 1873.

[The names in *italics* are either dead or absent from the island at the present writing.]

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|----------------------------------|--------------------------------|
| 1. <i>Philip Keemachneek.</i> | 6. <i>Mareena, his wife.</i> |
| 2. <i>Effroseenia, his wife.</i> | 7. <i>Alexsander, his son.</i> |
| 3. <i>Ivan, his son.</i> | 8. <i>Sylvester, his son.</i> |
| 4. <i>Danelo, his son.</i> | 9. <i>Efeem Anoolanak.</i> |
| 5. <i>Vasseele Seedoolee.</i> | 10. <i>Matroona, his wife.</i> |

* This increase of 15,000 on Saint Paul was made this season with a similar reduction on Saint George; the proportion of seal-life being small on the latter compared with the former.

11. *Simeon, adopted son.*
12. *Marka Aveelyah.*
13. *Feeleechat, his wife.*
14. Peter Peeshenkov.
15. Matroona, his wife.
16. Ivan Eemanov.
17. Anna, his wife.
18. Yeagor, his son.
19. Loobov, his step-daughter.
20. Maxseem, his step-son.
21. Maria, his niece.
22. Nickolai Krukov.
23. Peter Krukov.
24. Agrafeena, his wife.
25. Ivan Korchooteen.
26. Ooleeana, his wife.
27. Yahkov Koochootin.
28. Lookahria, his sister.
29. *Natalia Makooleena.*
30. Maria Paranchina.
31. Kesar Shabbylean.
32. Agrafeena, his wife.
33. Neckon, his son.
34. *Ripsimia Plottnikova.*
35. Avdotia, her daughter.
36. Prokoopee Meeseekin.
37. Eveduxsia, his wife.
38. Avdotia Meeseekina, his
step-mother.
39. Anna, daughter of Meeseekin.
40. Deemeetree Veatkin.
41. Evelampia Veatkin.
42. Balakshin, (Benedict.)
43. Matroona, his wife.
44. Meexhae, his son.
45. Balakshin, 2d, (Benedict.)
46. Stepan Krukov.
47. Natalia, his wife.
48. Avdokia Seeribneekova,
(widow.)
49. Timofay, her son.
50. Olga, her daughter.
51. Paraskeevie, her daughter.
52. Akooleena, her daughter.
53. Michael Barrhov.
54. Malania, his wife.
55. Agnes, his daughter.
56. Daniel, his nephew.
57. Avdotia Schepeteenah,
(widow.)
58. Tahreentee, her son.
59. Elarie, her son.
60. Hee-une-iah, her daughter.
61. Kerick Booterin, 1st chief.
62. Seeg-lee-teekiah, his wife.
63. *Patalamon, his son.*
64. Kerick, his son.
65. Salomayee, his daughter.
66. Ooleeta, his daughter.
67. George Booterin, his son.
68. Carp Booterin.
69. Lookariah Booterin.
70. Alexander Pancov.
71. Porfeerie, his son.
72. Avdotia, his step-daughter.
73. Paraskeevie, his step-
daughter.
74. Yakov Sootyahgin.
75. Eeroadea, his wife.
76. Feedosayee Saydeek.
77. Anesia, his wife.
78. Anna, his daughter.
79. Feoktista, his god-mother.
80. Dayneese Saydeek.
81. *Baiz yahzeekov, (Erlampia.)*
82. *Anna, his wife.*
83. *Maria, his daughter.*
84. Maroon Nakock.
85. Paraskeevie, his wife.
86. Zachar, his step-son.
87. ———, nephew.
88. Paraskeevie, niece.

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|---|---|
| 89. Natalia Habaroova. | 127. Ahkakee, her son. |
| 90. Pavel Habarov, her son. | 128. ———, daughter. |
| 91. <i>Paul Shies-neekov, (priest.)</i> | 129. ———, daughter. |
| 92. <i>Meeh-ah-elo, his son.</i> | 130. ———, daughter. |
| 93. Meeloveedova, Alexsandra,
(widow.) | 131. ———, daughter. |
| 94. Simeon, her son. | 132. Alexsayee Neederazov. |
| 95. <i>Alexsandra, her daughter.</i> | 133. Akooleena, his wife. |
| 96. Antone, her son. | 134. Christeena, his daughter. |
| 97. Marcia, her daughter. | 135. Agrafeena, his daughter. |
| 98. Kerick Artamanov. | 136. Keer Saydeek. |
| 99. Olga, his wife. | 137. Yealeena, his wife. |
| 100. Melania, his daughter. | 138. <i>Maria, his daughter.</i> |
| 101. Vasseleesee, his daughter. | 139. Ivan Mandrigan. |
| 102. Kah-sayn-yah, his
daughter. | 140. Tatahyahn, his wife. |
| 103. Gearman Artamanov. | 141. Vasseeslee, his son. |
| 104. Anna Tarantayvah,
(widow.) | 142. Marfa, his daughter. |
| 105. Anna, her daughter. | 143. Feelat Teetov. |
| 106. Stepan Bayloglazov. | 144. Peter, his son. |
| 107. Yealeena, his wife. | 145. Yeaon, his son. |
| 108. <i>Sayrgee, his son.</i> | 146. Yeagor Arkashav. |
| 109. Anna, his daughter. | 147. Alexsandra, his wife. |
| 110. Paraskeevie, his adopted
girl. | 148. Martin, his step-son. |
| 111. Ermolie Cushing. | 149. Nekolaie, his step-son. |
| 112. Faokla, his wife. | 150. Stepan, his step-son. |
| 113. Faokla, his daughter. | 151. Kereek, his son. |
| 114. Oolyahnah, his daughter. | 152. Arsaynee, his son. |
| 115. Aggie Cushing, his son. | 153. Tatayahnah, his daughter. |
| 116. Antone Sootyahgen. | 154. Timofay Evanov. |
| 117. Oolyahnah, his wife. | 155. Fevronia, his daughter. |
| 118. Meetrofan, his son. | 156. Paymen Kooznitzov. |
| 119. <i>Meehaie, his son.</i> | 157. Oseep Baizyahzeekov. |
| 120. Yakhov Mandrigan. | 158. Alexsandra, his wife. |
| 121. Afanashia, his wife. | 159. Paul, his son. |
| 122. <i>Lookayleean, his son.</i> | 160. Kahsaynyah, his step-
daughter. |
| 123. Maria, his daughter. | 161. Avdokia, his step-daugh-
ter. |
| 124. Oseep Pahomov. | 162. <i>Kahsaynyah, his daughter.</i> |
| 125. Varvarah, his wife. | 163. <i>Ivan Paranchin.</i> |
| 126. Maria Seedova, (widow.) | 164. Zaharov Evemainov. |
| | 165. Keereenayah, his wife. |
| | 166. Fevronia, his daughter. |

167. Ivan Hapov.
 168. Anna, sister-in-law.
 169. *Alexsandra, his daughter.*
 170. Ivan, his son.
 171. Yeagor Korhootin.
 172. Zachar Saydeek.
 173. Oosteenia, his wife.
 174. Vasseelee, his son.
 175. Marvra, his daughter.
 176. *Nekon, his nephew.*
 177. Feelip Saydeek.
 178. Stepan Skahvortsov.
 179. Philip Vollkov.
 180. Ellen, his daughter.
 181. Matroona, his daughter.
 182. Markiel Vollkov, his son.
 183. Gavreelo Korchurgin.
 184. Lukaylean, his son.
 185. *Ivan Sootyahgen.*
 186. Heeyoniah, his wife.
 187. Aneesia, his daughter.
 188. Emelian Sootyahgen.
 189. Marko Korhootin.
 190. Dareyah, his wife.
 191. Ivan, his son.
 192. Zeenovia, his daughter.
 193. Timofay Glottov.
 194. Maria, his wife.
 195. ———, *his son.*
 196. Ivan, his son.
 197. Yeafeemia, his daughter.
 198. Iraklin Mandrigan.
 199. Oosteenie, his wife.
 200. Eeon, his son.
 201. Paul Soovorrov.
 202. Vassa, his wife.
 203. ———, *his son.*
 204. Akyleena, his mother.
 205. *Agrafeena, his adopted girl.*
 206. Eefeem Korhootin.
 207. Palahgayee, his wife.
 208. *Peter, his son.*
 209. Luka Mandrigan.
 210. Eereena, his wife.
 211. Neekeeta Yitchmainov.
 212. Christeena, his daughter.
 213. Domenah, his daughter.
 214. Taheesah, his daughter.
 215. Ivan Yitchmamov.
 216. Michael Korzerov.
 217. Alexsandra, his wife.
 218. Stepan Korzerov.
 219. Paul Korzerov.
 220. *Ivan Kozlov.*
 221. Palahgayah, his mother.
 222. Feodor, her son.
 223. *Eveducksia, her daughter.*
 224. Platone Tarakanov.
 225. Marfa, his wife.
 226. *Akoolena, his mother.*
 227. Kerick Tarakanov.
 228. Domian M. Kok, (John Frater.)
 229. Oolyahnah, his wife.
 230. Anna, his daughter.
 231. Salomayah, Artomanov's daughter.
- White men in charge.*
1. Dr. McIntyre.
 2. H. W. McIntyre.
 3. Dr. Cramer.
 4. *John M. Morton.*
 5. Chas. Bryant.
 6. D. Webster.
 7. ———, *a cooper.*
 8. ———, *a carpenter.*

Annual division or cash settlement made by the natives on Saint Paul's Island, among themselves, the proceeds of their work in taking and skinning 75,000 seals, at 40 cents per skin, \$50,000, with extra work connected with it, making \$30,637.37.

Seventy-four shares, proportioned as follows:

December 31, 1872.—37 first-class shares, at.... \$451 22 each.
 23 second-class shares, at . 406 99 each.
 4 third-class shares, at... 360 97 each.
 10 fourth-class shares, at.. 315 85 each.

The shares do not represent more than forty-five able-bodied men.

Annual division or cash settlement made by the people on Saint George's Island, among themselves, the proceeds of their work in taking and skinning 25,000 seals, at 40 cents per skin, \$10,000.

Aug. 1, 1873.—17 shares, each 961 skins, or \$384.40. \$6,294 80
 2 shares, each 935 skins, or \$374... 748 00
 3 shares, each 821 skins, or \$328.40. 985 20
 1 share, 820 skins, or \$328... .. 328 00
 3 shares, each 770 skins, or \$308... 924 00
 3 shares, each 400 skins, or \$160... 480 00

Twenty-nine shares, or the twenty-nine laboring sealers; of this number two are women. Only twenty-five of them are able-bodied men.

The divisions above are the result of their own choice. They make this apportionment among themselves without advice or suggestion from the agents of the company. These people have \$3,320 on interest in the office of the Alaska Commercial Company at this date, and have credit on the books for \$31,800; and when the division is made up on Saint Paul at the regular annual time of settlement in December, \$30,000 will be added to the above exhibit.

The people here are occupying, rent-free at the present time, thirty frame houses built by and belonging to the Alaska Commercial Company on the Seal Islands. Twenty of these houses are new frame, 11 by 20 feet.

These people have their misers and spendthrifts, but it will be seen that very few of them care much for saving their money, inasmuch as only four or five of them have as yet taken any steps toward such action. One man on Saint Paul has over \$1,800 saved, and drawing interest at 9 per cent. to-day.

THE HISTORY OF THE BUSINESS AS CONDUCTED BY THE
RUSSIANS.

[Translated by the writer from Veniaminov's Zapieskie, &c., Saint Petersburg, 1842, vol. ii, pp. 568. *]

From the time of the discovery of the Prybilov Islands, up to 1805, (or that is, until the time of the arrival in America of General Resanov,) the taking of fur-seals on both islands progressed without count or lists, and without responsible heads or chiefs, because then (1787 to 1805 inclusive) there were a number of companies represented by as many agents or leaders, and all of them vied with each other in taking as many as they could before the killing was stopped. After this, in 1806 and 1807, there were no seals taken, and nearly all the people were removed to Ounalashka.

In 1808 killing was again commenced, but the people in this year were allowed to kill only on Saint George; on Saint Paul hunters were not permitted this year or the next: it was not until the fourth year after this that as many as half the number previously taken were annually killed. From this time (Saint George, 1808, and Saint Paul, 1810) up to 1822, taking fur-seals progressed on both islands without any economy and with slight circumspection, as if there were a race in killing for the most skins. *Cows were taken in the drives and killed*, and were also driven from the rookeries to places where they were slaughtered.

It was only in 1822 that G. Moorayvev (governor) ordered that young seals should be spared every year for breeding, and from that time there were taken from the Prybilov Islands, instead of 40,000 to 50,000, which Moorayvev ordered to be spared in four successive years, no more than 8,000 to 10,000. Since this, G. Chestyahkov, chief ruler after Moorayvev, estimated that from the increase resulting from the legislation of Moorayvev, which was so honestly carried out on the Prybilov Islands that in these four years the seals on Saint Paul increased to double their previous number, he could give an order which increased the number to be annually slain to 40,000, and this last order or course directed for these islands demanded as many seals as could be got, but with all possible exertion hardly 28,000 were obtained.

After this, when it was most plainly seen that the seals were, on account of this wicked killing, steadily growing less and less

* The italics are mine, and the translation is nearly literal, as might be inferred by the idiom here and there.—H. W. E.

in number, the directions were observed for greater caution in killing the grown seals and young females which came in with the droves of killing-seals, and to endeavor to separate, if possible, these from those which should be slain.

But all this hardly served to do more than keep the seals at one figure or number, and hence did not cause an increase. Finally, in 1834, the governor of the company, upon the clear (or "handsome") argument of Baron Wrangel, which was placed before him, resolved to make new regulations respecting them, to take effect in the same year, (1834,) and, following this, on the island of Saint Paul only 4,000 were killed instead of 12,000.

On the island of Saint George the seals were allowed to rest in 1826 and 1827, and since that time greater caution and care have been observed, and head-men or foremen have kept a careful count of the killing.

From this it will be seen that no anxiety or care as to the preservation of the seal-life began until 1805, (*i. e.*, with the united companies.)

It is further evident that all half-measures, seen or not seen, were useful no longer, as they only served to preserve a small portion of the seal-life, and only the last step (1834) with the present people or inhabitants has proved of benefit. And if such regulations of the company continue for fifteen years, (*i. e.*, until 1849,) it may be truly said that then the seal-life will be attracted quite rapidly under the careful direction of head-men, so that in quite a short time a handsome yield may be taken every year. In connection with this subject, if the company are moderate and these regulations are carried out, the seal-life will serve them and be depended upon as shown in this volume, Table No. 2.

Nearly all the old men think and assert that the seals which are spared every year, ("zapooskat kotov,") *i. e.*, those which have not been killed for several years, are truly of little use for breeding, lying about as if they were outcasts or disfranchised always. About these seals, they show that after the seals were spared, they were always less than they should be, as, for instance, on the island of Saint George, after two years of saving or sparing of 5,500 seals, in the first year they got, instead of 10,000 or 8,000, as expected, only 4,778.

But this diminution, which is shown in the most convincing manner, (1,) is due to wrong and injustice, because it would not

have been otherwise with any kind of animals—even cattle would have been exterminated; because a great many here think and count that the seal-mother brings forth her young in her third year, *i. e.*, the next two years after her own birth. As it is well shown here, the spared seals (“zapooskie”) were not more than three years old, and therefore it was not possible to discern the correct or true numbers as they really were. Taking the females killed by the people, together with all the seals which were purposely spared, it was seen that the seal-mothers did not begin to bear earlier *than the fifth year* of their lives. Illustrative of this is the following:

(a) On the island of Saint George, after the first “zapooska,” in 1828, the killing of five-year-old seals was continued gradually up to five times as many as at first; with those of five years old, the killing stopped; then next year twelve times as many six-year-olds were observed on the islands as compared with their number of the last years, and with or in the seventh year came seven times as many. This shows that females born in 1828 did not begin to bear young until their fifth year, and become with young accordingly; that the large ones did not appear or come in six years, (from 1828,) as is evident, for in the fifth year all the females did not bring forth.

b. It is known that the male seals cannot become “seecatchies” (adult bulls) earlier than their fifth or sixth year; following this, it may be said that the female bears earlier than the fourth year.

c. If the male seal cannot become a bull (“seecatchie”) earlier than the fifth year, then, as Buffon remarks, “animals can live seven times the length of the period required for their maturity;” therefore a *seecatch* cannot live less than thirty years, and a female not less than twenty-eight.*

Taking the opinion of Buffon for ground in saying that animals do not come to their full maturity until one-seventh

* “This remark is sustained by the observation of old men, and especially by one of the best creoles, Shiesneekov, who was on the island of Saint Paul in 1817, and who knows of one “seecatch,” (known by a bald head,) which in that time had already a large herd of cows or females, surrounded and hunted by a like number of females and strong, savage old bulls; therefore it may be safely thought that this bull did not get his growth until his fifth year, and at this time he could not have been less than ten years old; and this same bull came every year to the island and the same place for fifteen years in succession, up to 1832, and it was only in the later years that his harem grew smaller and smaller in number.”

of their lives has passed, it goes also to prove that the female seal cannot bear young before her fourth year.

It is without doubt a fact that female seals do not begin to bear young before their fifth year, *i. e.*, the next four years after the one of their birth, and not in the third or fourth. Certainly we can allow that some females bear in their fourth year; that, however, is not the rule, but the exception. To make it more apparent that females cannot bear young in their third year, consider the two-year-old females, and compare them with "see-catchie" (adult bulls) and cows, (adult females,) and it will be evident to all that this is impossible.

Do the females bear young every year; and how often in their lives do they bring forth?

To settle this question is very difficult, for it is impossible to make any observations upon their movements; but I think that the females in their younger years (or prime) bring forth every year, and as they get older, every other year; thus (according to people accustomed to them) they may each bring forth in their whole lives from ten to fifteen young, and even more. This opinion is founded on the fact that never (except in one year, 1832) have an excessive number of females been seen without young; that cows not pregnant hardly ever come to the Prybilov Islands; that such females cannot be seen every year. As to how large a number of females do not bear, according to the opinions and personal observations of the old people, the following may be depended upon with confidence: not more than one-fifth of the mature or "effective" females are without young; but to avoid erroneous impressions or conflicting statements between others and myself, I have had but one season, ("trayt") in which to personally observe and consider the multiplication of seals.

There is one more very important question in the consideration of the breeding or the increase of seals, and that is, *of the number of young seals born in one year, how many are males; and is the number of males always the same in proportion to the females?*

Judging from the holluschickie accumulated from the "zaposka" in 1822-'24 on the island of Saint Paul, and in 1826-'27 on the island of Saint George, the number of young males was very variable; for example, on the island of Saint Paul, in three years 11,000 seals were spared, and in the following three years there were killed 7,000, *i. e.*, about two-thirds of the number

saved; opposed to this, on the island of Saint George, from 8,500 spared seals in two years, less than 3,000 were taken, hardly one-third.

Why this irregularity? Why should more young males be born at one time, and at another less? Or why should there be years in which many cows do not bear young?

According to the belief of the people here, I think that of the number of seals born every year, half are males, and as many females.

To demonstrate the above-mentioned conditions of seal-life, the table, No. 1, has been formed of the number of seals annually killed on the Prybilov Islands from 1817 to 1838, (when this work was ended.)

From this it will be seen that—

1. No single successive year presents a good number of seals killed as compared with the previous year; the number is always less.

2. The annual number of seals killed was not in a constant ratio.

3. And, therefore, in the regular hunting-season there is less need or occasion during the next fifteen years to demand the whole seal kind.

4. Fewer seals were killed in those years generally following a previous year in which there were larger numbers of the "holluschickie;" that is, when the young males were not completely destroyed, and more were killed when the number of "holluschickie" was less.

5. The number of "holluschickie" is a true register or showing of the numbers of seals; *i. e.*, if the "holluschickie" increase and exist like the young females, and conversely.

6. Holluschickie break from the (common) herd and gather by themselves no earlier than the third year, as seen in the case of the spared seals on the islands of Saint George and Saint Paul, the latter from 1822-'24, 1835-'37, inclusive; the former from 1826-'27.

7. The number of seals killed on the island of Saint George after two years ("zapooska") was resumed and gradually increased to five times as many.

8. In the fifth year from the first "zapooskie" (or saving) it became possible to count or reckon on the number remaining, and six-year-olds began to appear twelve times as numerous, and seven-year-olds came in numbers sevenfold greater than

their previous small number; and, therefore, the number of three-year-old seals was quite constant.

9. If on the island of Saint George, in 1826-'27, the seals had not had this rest, ("zapooska,") and the killing had been continued, even at the diminished ratio of one-eighth, in 1840 or 1842 there would not have been a single seal left, as appears by the following table:

	Seals.		Seals.
1825.....	5,500	1833.....	1,360
1826.....	4,400	1834.....	1,190
1827.....	3,520	1835.....	1,040
1828.....	2,816	1836.....	850
1829.....	2,468	1837.....	700
1830.....	2,160	1838.....	580
1831.....	1,890	1839.....	500
1832.....	1,554	1840.....	400

10. Following two years of "zapooska," (saving,) the seal-life is enhanced for more than ten years, and the loss sustained by the company in the time of "zapooskov" (about 8,500) is made good in the long run. The case may be thus stated: If the company had not spared the seals in 1826-'27, they would have received, from 1826 to 1838, (twelve years,) no more than 24,000, but by making this zapooska regulation for two years they got in ten years 31,576, and, beyond this, they can yet take 15,000 without another, or any, zapooska.

11. And in this case, where such an insignificant number of seals was spared on Saint George, (about 8,500,) and in such a short time, (two years,) the result was at once significant every year; that is, three times more appeared than the number spared. The result, therefore, must be large annually on the island of Saint Paul, where, in consequence of the last orders or directions of the governor, already four years of saving have been in force, in which time over 30,000 seals have been left for breeding.

On this account, and in conformity with the above, I here present a table, a prophesy of the seals that are to come in the next fifteen years from 7,060 seals saved on the island of Saint Paul in 1835.

On the island of Saint Paul, at the direction of the governor, a "zapoosk" or saving was made of 12,700 seals; that is, before the year 1834 there were killed 12,700 seals, and on the following year, if this saving had not been made, according to the testimony of the inhabitants, no more than 12,200 seals would or

could have been taken from the islands, it being thought that this number (12,200) was only one twenty-fifth of the whole; but instead of killing 12,200, only 4,052 were taken, leaving in 1835, for breeding, 8,148 fresh young seals, males and females, together.

In making this hypothetical table of seals that are to come, I take the average killing, that is, one-eighth part, and proceed on the supposition that the number of saved seals will not be less than 7,060.

In the number of 7,060 seals we can calculate upon 3,600 females; that is, a slight majority of males. With the new females born under this "zapooska" I place half of those born the first year, and so on.

Females, in the twelve or eighteen years next after their birth, must become less in number from natural causes, and by the twenty-second year of their lives they must be quite useless for breeding.

Of the number of seals which may be born during the next four years of "zapooska," or longer, we may take half for females. This number is included in the table, and the males, or "holluschickie," make up the total.

From the II Table, observe that—

1. Old females, that is, those which in 1835 were capable of bearing young, in 1850 must be canceled, (minus.) They probably die in proportion of one-eighth of the whole number every year.

2. For the first four years of zapooska, until the new females begin to bear, their number will be generally less.

3. A constant number of seals will continue during the first six years of their zapooska; in twelve years these seals will double, in fourteen years they will have increased threefold; and after fifteen years of this zapooska or saving of 7,060, in the first year 24,000 may be taken from them, in the second 28,000, in the third 32,000, in the fourth 36,000, in the fifth 41,000; thus in five years more than 160,000 can be taken. Then, under the supervision of persons who will see that one-fifth of the seals be steadily spared, 32,000 may be taken every year for a long time.

4. Moreover, from the production of fifteen years "zapooska" there can be taken from 60,000 to 70,000 holluschickie, which, together with 160,000 seals, makes 230,000.

5. If this "zapooska" for the next fifteen years is not made

for the seal-life, diminution will certainly ensue, and all this time, with all possible effort, no more than 50,000 seals will be taken.

Here it should be said that this hypothetical table of the probable increase of seals is made on the supposition of the decrease of females, and an average is taken accordingly. Furthermore, on the island of Saint Paul, in 1836-'37, instead of 7,900 seals being killed, but 4,860 were taken. Hence it follows that these 1,500 females thus saved in two years, and which are omitted from the table, will also make a very significant addition to the incoming seals.*

* I give this chapter of Veniaminov's without abridgment, although it is full of errors, to show that while the Russians gave this matter evidently much thought at headquarters, yet they failed to send some one on to the ground, who, by first making himself acquainted with the habits of the seals from close observation of their lives, should then be fitted to prepare rules and regulations founded upon this knowledge. These suggestions of Veniaminov were, however, a vast improvement on the work as it was conducted, and they were adopted at once, but it was not until 1845 that the great importance of never disturbing the breeding-seals was recognized.

H. W. E.

TABLE II.—Showing the number of seals that will visit the island in the next twenty-two years, a prophesy made by Veniaminov in 1834.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	1835.	1836.	1837.	1838.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.
1	1835.	3,600	0	0	0	900	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,000	800	400	500			
2	1836.	0	3,150	0	0	0	785	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,000	700	300	100		
3	1837.		0	2,755				680	918	918	918	918	918	918	918	918	918	900	600	300	100	
4	1838.			2,410					600	805	805	805	805	805	805	805	805	700	700	700	600	300
5	1839.				2,110					450	700	700	700	700	700	700	700	700	700	600	600	400
6	1840.					1,845				From old ar rivals	450	615	615	615	615	615	615	615	615	615	600	500
7	1841.					900				From new comers	152	200	200	200	200	200	200	200	200	200	150	100
8	1842.						1,580			From new ones	420	315	525	525	525	525	525	525	525	525	500	500
9	1843.						1,985			From new ones	325	451	572	572	572	572	572	572	572	572	500	500
10	1844.							2,930		From new ones	630	909	909	909	909	909	909	909	909	909	909	909
11	1845.								1,130		From new ones	258	376	376	376	376	376	376	376	376	376	376
12	1846.									900		From new ones	880	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188
13	1847.										From new ones	725	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241
14	1848.										From new ones	5,275	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241
15	1849.										From new ones	5,275	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241
Total ♀	3,600	3,150	2,755	2,410	2,110	2,745	3,565	4,225	4,898	5,323	6,000	6,805	7,990	9,333	10,754	12,369	14,153	16,148	18,216	20,250	20,105	19,358
Total ♂	3,660	3,150	2,755	2,410	2,110	2,745	3,435	4,215	4,102	5,378	6,090	6,795	8,010	9,267	10,746	12,331	14,147	16,102	18,184	20,254	20,097	19,342
All...	7,000	6,300	5,500	4,820	4,220	5,490	7,000	8,500	9,700	10,700	12,000	13,600	16,000	18,600	21,500	24,700	28,300	32,250	36,400	41,640	40,200	38,700

From this table behold that—

a. Every fifteen years, from 3,600 females, there can be received in sixteen years 24,700 seals; in sixteen years still more; and in twenty years 41,640.

b. In the twenty-first year the incomers begin to diminish, provided that if in the mean time, or the following sixteen years, a certain number of young seals are not left to breed; and if every year a known number are left to breed, then in all following years the yield will never be less than 20,000 every year.

TABLE III.—*Calculation as to the coming of the seals on the island of Saint George, made up from two years, and based upon that experience, (1827-'28.)*

Year.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	Grand total.
	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.	
1 1826	2,200					450	700	700	700	700	700	700	
2 1827	Breeding	2,050					360	600	600	600	600	600	
3 1828	Light		1,700	1,500	1,200	1,000	700	550	400	250	100	50	
Females	2,200	2,050	1,700	1,500	1,200	1,450	1,760	1,850	1,700	1,550	1,400	1,350	
Holluschickie	2,200	2,050	1,600	1,500	1,200	1,450	1,760	1,800	1,700	1,500	1,500	1,400	
Total	4,400	4,100	3,300	3,000	2,400	2,900	3,520	3,650	3,400	3,050	2,900	2,750	30,870

The actual taking of seals was as follows :

	Seals.
In 1828	4,778
In 1829	3,661
In 1830	2,834
In 1831	3,084
In 1832	3,296
In 1833	3,212
In 1834	3,051
In 1835	2,528
In 1836	2,550
In 1837	2,582
Total	31,476

From this table it will be seen that up to 1833 my calculation makes a yield of	Seals.
While the actual result was	30,870
	31,476

Difference of

606

The difference determines that the hypothesis upon which the table is based is correct.

A CONFERENCE WITH THE NATIVES OF THE SEAL ISLANDS,
JULY 25-26, 1874.

For the purpose of learning what these people might have to say in regard to the seal business as it is now conducted, Lieutenant Maynard and myself asked the chiefs to select those men among themselves who knew most in regard to the matter, especially those who had been most in the habit of noting the rookeries, and have them meet us privately to hear what they might feel disposed to do if they had anything to say in the matter; and accordingly some fifteen of them, oldest and wisest, including all the chiefs of Saint Paul and one that belongs to Saint George, met us. We had a smart Russian creole for interpreter, a sailor from our own vessel, and sat for two long evenings with them in conference. The result may be summed up as follows:

In regard to the condition of the seal-life, the natives are both watchful and solicitous, but do not present any argument against the annual killing of 100,000 young males over one year and under five, as is now conducted; that is, 90,000 on Saint Paul and 10,000 on Saint George; but the Saint Paul people have a very natural and strong feeling that they should *alone* reap the benefit that arises from the increase in the number killed on their island; that the \$6,000, which is represented by the additional 15,000 killed last summer on this island, should be shared among themselves, and feel a little sore about having the Saint George people come over here to do this work and take the proceeds, which they did on their own island (Saint George) last year. They do not think 90,000 any too many on Saint Paul, if they *alone* shall kill the animals and take the reward; but suddenly, when it is found that they are to be paid only for the original erroneous *pro rata*, 75,000, they become very fearful of the result of killing 90,000, with as many five-year-old bulis as have been killed this summer. As this solicitude is due to no other reason than this very perceptible anxiety, its expression must be taken with some reservation. But this constant anticipation of injurious results, even if there exist no grounds for apprehension, is of great advantage to both the agents of Government and the company; for the public may rest assured that the first evidence of any decrease of seal-life on these rookeries of Saint Paul will be at once observed by the jealous eyes of their many native keepers, even were there no agents of

either party now in control capable of discerning it, which is not likely, however, to be the case.

We explained to them, in return, that the law which limited the killing on Saint George to 25,000, and on Saint Paul to 75,000, was based upon the imperfect information furnished by the agents of the Government sent to the islands, and that killing 25,000 out of 100,000 on an island where there was not one-twentieth of the number of seals that were on the ground where the remaining 75,000 were taken, was entirely wrong, and must be corrected, for the best interests of all parties concerned; and that they had no right to profit at the expense of their brethren on Saint George, who were expected, at the time the law was made, to share equally with them the proceeds of this labor, and in this spirit the defective law was framed. This explanation appeared to relieve their minds.

They spoke to us with great satisfaction of the bettered condition in which they are living as compared with the state in which they lived but a short time since. A very perceptible shade of gloom settled on the countenances of all when we assured them that the Government could not permit any more "quass" or beer drunkenness among them. We set forth the propriety of this course on the part of the Secretary of the Treasury as justified by the following reasons:

1. They are at present living without the restraint of policemen and prisons, fines, &c., which we employ for the suppression of such disorder in our own land, and it was best for them to live sober and avoid the necessity of having such institutions.

2. That they were, by the great generosity of the Government and the company, allowed to enjoy the sole privilege of participation in the sealing-labor and its good reward, by which they were enabled to live in such comfort and ease; that if they indulged in drinking they would drop out from the skinning-gangs, and be unable in a few years to attend properly to their duty on the killing-grounds; that then the company would have the power and would be justified in procuring others to do this work, and that then but a short time would elapse before the labor of persons not addicted to drink would crowd them and their children out of their comfortable possession.

In the course of our conversation with them in regard to the events of early days on the island, they gave the following as facts, relying on the "vivid imaginations and faithful memories"

with which they are credited by the man who, of all men, best knew them, Veniaminov:

"In 1835, on the 'Lagoon' rookery, there were only two bulls; the cows were, however, in number excessive; about as many as are on 'Na Speel' to-day, (2,000.) On 'Zapadnie' about one thousand cows, bulls, and pups; at Southwest Point there was nothing; two small rookeries were on the north shore of Saint Paul, near a place called 'Maroonitch;' they have been deserted, however, by the seals for a long time; the oldest man on the island, Zachar Seedick, aged 57, has never seen them there; has only heard of it.

"On Northeast Point there were seven small rookeries running around the point; only fifteen hundred cows, pups, and bulls, all told; this number includes the 'holluschickie,' which in those days lay in among the breeding-seals, there being so few bulls that they were permitted to do so. On 'Polavina' there were about five hundred cows, bulls, pups, and 'holluschickie;' on 'Lukannon' and 'Ketavie,' about three hundred; only ten bulls on 'Ketavie,' so few young males lying in all together that they took no note of them on these rookeries; on the 'Reef' and 'Gorbotch,' about one thousand only; of these some eight hundred, 'holluschickie' included, lying in with the breeding-seals; there were about twenty old bulls only on Gorbotch, and but ten on the Reef; on 'Nau Speel' there were about a hundred. The village was here then as now.

"In 1845 we took the young males alone, respecting the sexes for the first time; took only about twenty a day on Northeast Point; on the Reef, all the way from one hundred and fifty to two hundred a day.

"In 1857 the breeding-rookeries were nearly as large as they are now; *but have been rather gradually increasing* ever since. Prior to 1835 the village was up at the little fresh-water lake, and the seals are reported, previous to this date, many years, to have run all over the present village ground, very much as they do at Zapadnie to-day."

In regard to the numbers of the fur-seal when the Russians first took possession of the ground, in 1787, the present generation, descendants of these pioneers, have only a general vague impression that the seals were somewhat more numerous in the first days of Russian occupation than they are now.

With regard to the probable truth of the foregoing statement of the natives to us, I can only call attention to the fact that

the entire sum of seal-life, as given by them, is 4,100 of all classes; now, Bishop Veniaminov publishes an authentic record of the killing on these islands from 1817 to 1837, (the time in which he finished his work,) by which it will be seen that in this year of 1835, 4,052 seals were killed and taken; and if the account of the natives was true, that would leave on the island only 50 for 1836, in which year, however, 4,040 were killed, and in 1837 4,220, and there was a steady increase in the killing by the Russians up to 1850, when they governed their catch by the market alone.

This great diminution of the seal-life, setting in at 1817 and running on steadily in decline until 1834, when it began to mend, is well accounted for by Veniaminov's account. From this it will be seen that after greedy Russian companies on these islands had killed seals for over fifteen years in unknown numbers without causing any great change in the ratio of numbers, a diminution began gradually to set in, which became obvious in 1817, and attained its maximum in 1834-'35, when hardly a tithe of the former numbers appeared on the ground; but from that year change in the management, &c., promoted an increase, and they steadily augmented up to their former great numbers, by 1855-'57 reaching a maximum at which they have remained, as far as my investigations throw light on the subject; a few years more of proper observation on the ground here will settle the matter to the satisfaction of all concerned.

A variety of reasons have been given for this diminution, but the case is clear that as the animals to be slain were selected at random on the breeding-grounds from males and females, they gradually, in consequence of this incessant molestation, began to shun the islands, seeking some other land, and there breeding, in spite of many natural difficulties; but as soon, however, as the Russians began to respect the principle of never driving or killing the females, the seals gradually regained their confidence, and finally returned to these islands, the most convenient and best adapted for their occupation in the northern hemisphere. This was the reason for their disappearance at that time, or they were suffering from the ravages of some unknown distemper.

CHAPTER VII.

THE HABITS OF THE FUR-SEAL, ETC.

THE SEAL-LIFE ON THE PRYBILOV ISLANDS may be classed under four heads, as follows, viz :

The FUR-SEAL, (*Callorhinus ursinus*,) Kautickie of the Russians.

The SEA-LION, (*Eumetopias stellerii*,) See vitchie of the Russians.

The HAIR-SEAL, (*Phoca vitulina*,) Nearhpah of the Russians.

The WALRUS, (*Rosmarus arcticus*,) Morsjee of the Russians.

Of the above, the hair-seal is the animal upon which popular and, indeed, scientific opinion is founded as to what a seal appears like, and has in this way given to the people a false idea of its relatives, above enumerated, and has made it exceedingly difficult for the naturalist to correctly discriminate between them; for, although it belongs to the same family, it does not even have a generic affinity to those seals with which it has been persistently confounded, viz, the fur-seal and sea-lion, no more so than has the raccoon to the black or grizzly bear, both being as nearly related to each other.

A detailed description of this seal, *Phoca vitulina*, is quite unnecessary, as species of the genus are common pets all over the world where zoölogical gardens are established, and its grotesquely stuffed skin is still more frequently to be met with.

It differs, however, so completely in shape and habit from its congeners on these islands, that it may be well, so as to preserve a sharp line of distinction, to state that it seldom comes up from the water more than a few rods, at the most, generally resting at the margin of the surf-wash; it takes up no position on land to hold and protect a harem, preferring the detached water-worn rocks which occasionally project out a little above the sea-level and are only wet entirely over by heavy storms; and the animal when it is disturbed immediately goes to sea. Upon these small spots of rocky, wet isolation from the main island, and some secluded places on the north shore, the "nearhpah," as the natives call it, brings forth its young, which is a

single pup, perfectly white, weighing about three or four pounds. This pup grows rapidly, and weighs, in three to four months, forty or fifty pounds, and at that time has a coat of soft, steel-gray hair on the head, limbs, and abdomen, with the back most richly mottled and barred lengthwise with dark-brown and brown-black. When they appear in the spring, following, this gray tone to their color has become a dingy ocher, and the mottling appears well over the head and on the upper side or back of the flippers, or feet, correspondingly dim.

There is no appreciable difference as to color or size between the sexes.

They are not polygamous, as far as I have observed.

They are exceedingly timid and wary at all times, and in this way they are diametrically opposed, not by shape alone, but by habit and disposition, to the fur-seal and sea-lion.

Their skin is of little value compared with that of the fur-seal, and their chief merit is the relative greater juiciness and sweetness of their flesh to those who are in any way partial to seal-meat.

I desire also to correct a common error, made in comparing *Phocidæ* with *Otaridæ*, where it is stated that, in consequence of the peculiar structure of their limbs, their progression on land is "*mainly accomplished* by a wriggling, serpentine motion of the body, slightly assisted by the extremities." This is not so; for, when excited to run or exert themselves to reach the water suddenly, they strike out quickly with *both fore feet*, simultaneously lift and drag the whole body, without any wriggling whatever, from 6 inches to a foot ahead and slightly from the earth, according to the violence of the effort and the character of the ground; the body then falls flat, and the fore-flippers are free for another similar action, and this is done so earnestly and rapidly that in attempting to head off a young nearhpah from the water I was obliged to leave a brisk walk and take to a dog-trot to do it. The hind feet are not used when exerted in rapid movement at all, and are dragged along in the wake of the body, perfectly limp. They do use their posterior parts, however, when leisurely climbing up and over rocks, or playing one with another, but it is always a weak effort, and clumsy. These remarks of mine, it should be borne in mind, apply only to the *Phoca vitulina*, that is found around these islands at all seasons of the year, but in very small numbers. I have never seen more than twenty five or thirty at any

one time, but I think its principle of locomotion will be found to apply on land to all the rest of its genera.

The scarcity of this species and of all its generic allies is notable in the waters of the North Pacific as compared with those of the circumpolar Atlantic, where the hair-seals are found in immense numbers, giving employment every year to a fleet of sailing and steam vessels which go forth from St. John's, Halifax, and elsewhere, fitted for seal-fishing, taking over three hundred thousand of these animals each season, the principal object being the oil rendered from them, the skins having but small commercial value.*

THE FUR-SEAL, (*CALLORHINUS URSINUS*.)

Which repairs to these islands to breed, &c., in numbers that seem almost fabulous, is by far the highest organized of all the Pinnipedia, and, indeed, for that matter, when land and water are fully taken into account, there is no other animal superior to it from a purely physical point of view; and few creatures that can be said to exhibit a higher order of instinct, approaching even intelligence, belonging to the animal kingdom.

Regarding a male six to seven years old, and full grown, when he comes up from the sea in the spring on to his station for the breeding-season, we have an animal that will measure $6\frac{1}{2}$ to $7\frac{1}{4}$ feet in length, from tip of nose to end of tail, and weighing at least 400 pounds, and sometimes as much, perhaps, as 600. (?) The head, which in comparison with the immense thick neck and shoulders, seems to be disproportionately small; but as we come to examine it we will find that it is mostly all occupied by the brain; the light frame-work of the skull supports an expressive pair of large bluish-hazel eyes, and a muzzle and jaws of nearly the same size and form observed in any full-blooded Newfoundland dog, with the difference of having no flabby, hanging lips; the upper lips support a white and yellowish-gray mustache, long, and, when not torn in combat, luxuriant, composed of heavy stiff bristles.

Observe it as it comes leisurely swimming on toward the land; how high above the water it carries its head, and how deliberately it surveys the beach, after having *stepped* up on it;

* An excellent and, I have every reason to believe, correct description of this seal-fishery in the North Atlantic has been published by Michael Carroll, who writes in a manner indicative of great familiarity with the business.

it may be truly said to step with its fore flippers, for they regularly alternate as it moves up, carrying the head well above them, at least three feet from the ground, with a perfectly erect neck.

The fore feet, or hands, are a pair of dark bluish-black flippers, about 8 or 10 inches broad at their junction with the body, running out to an ovate point some 15 to 18 inches from this union, which is at the carpal joint, corresponding to our wrist; all the rest of the fore-arm, the ulna, radius, and humerus, being concealed under the skin and thick blubber folds of the main body and neck, concealed entirely at this season when it is so fat; but later, when flesh or fat has been consumed by absorption, they come quite plainly into view.

On the upper side of these flippers, the hair straggles down finer and fainter, as it comes down to a point close to and slightly beyond where the phalanges and the metacarpal bones are jointed, similar to the spot where our knuckles are placed, and there ends, leaving the skin bare and wrinkled in places at the margin of the inner side, showing five small pits containing abortive nails, which are situated immediately over the union of the phalanges with their cartilaginous continuations to the end of the flipper.

On the under side of the flipper the skin is entirely bare from the end up to the body connection, deeply and regularly wrinkled with seams and furrows, which cross one another, so as to leave a kind of sharp diamond-pattern.

But we observe as the seal moves along that, though it handles its fore limbs in a most creditable manner, it brings up its rear in quite a different style; for after every second step ahead with the fore feet it arches its spine, and with it drags and lifts together the hinder limbs to a fit position under its body for another movement forward, by which the spine is again straightened out so as to take a fresh hitch up on the posteriors. This is the leisurely and natural movement on land when not disturbed, the body being carried clear of the ground.

The radical difference in the form and action of the hinder feet cannot fail to strike the eye at once. They are one-seventh longer and very much lighter and more slender; they, too, are merged in the body like those anterior; nothing can be seen of the leg above the tarsal joint.

The shape of this hind flipper is strikingly like a human foot, provided the latter were drawn out to a length of 20 or 22

inches, the instep flattened down and the toes run out into thin, membranous, oval-tipped points, only skin-thick, leaving three strong cylindrical grayish horn-colored nails, half an inch long, back six inches from these skinny toe-ends, without any nails to mention on the big and little toes.

On the upper side of this foot the hair comes down to the point where the metatarsus and phalangeal bones joint and fades out; from this junction the phalanges, about six inches down to the nails, are entirely bare and stand ribbed up in bold relief on the membrane which unites them as a web; the nails mark the ends of the phalangeal bones and their union in turn with the cartilaginous processes, which run rapidly tapering and flattening, out to the ends of the thin toe-flaps.

Now, as we look at this fur-seal's progression, that which seems most odd is the gingerly manner (if I may be allowed to use the expression) in which it carries these hind-flippers; they are held out at right angles from the body directly opposite the pelvis, the toe-ends and flaps slightly waving and curling or drooping over, supported daintily, as it were, above the earth, only suffering its weight behind to fall upon the heels, which are opposed to each other scarcely five inches apart.

We shall, as we see him again later in the season, have to notice a different mode of progression, both when lording it over his harem or when he grows shy and restless at the end of the breeding-season, and now proceed to notice him in the order of his arrival and that of his family, his behavior during the long period of fasting and unceasing activity and vigilance and other cares which devolve upon him, as the most eminent of all polygamists in the brute world; and to fully comprehend this exceedingly interesting animal, it will be necessary to refer to my drawings and paintings made from it and its haunts.

The adult males are first to arrive in the spring on the ground deserted by all classes the preceding year.

Between the 1st and 5th of May, usually, a few bulls will be found scattered over the rookeries pretty close to the water. They are at this time quite shy and sensitive, not yet being satisfied with the land, and a great many spend day after day before coming ashore idly swimming out among the breakers a little distance from the land, to which they seem somewhat reluctant at first to repair. The first arrivals are not always the oldest bulls, but may be said to be the finest and most ambitious of their class; they are full-grown and able to hold their

stations on the rocks, which they immediately take up after coming ashore.

I am not able to say authoritatively that these animals come back and take up the same position on the breeding-grounds occupied by them during the preceding season; from my knowledge of their action and habit, and from what I have learned of the natives, I should say that very few, if any of them, make such a selection and keep these places year after year. One old bull was pointed out to me on the Reef Garbutch Rookery as being known to the natives as a regular visitor at, close by, or on the same rock every season during the past three years, but he failed to re-appear on the fourth; but if these animals came each to a certain place and occupied it regularly, season after season, I think the natives here would know it definitely; as it is, they do not. I think it very likely, however, that the older bulls come back to the same rookery-ground where they spent the previous season, but take up their positions on it just as the circumstances attending their arrival will permit, such as fighting other seals which have arrived before them, &c.

With the object of testing this matter, the Russians, during the early part of their possession, cut off the ears from a given number of young male seals driven up for that purpose from one of the rookeries, and the result was that cropped seals were found on nearly all the different rookeries or "hauling-grounds" on the islands after. The same experiment was made by agents two years ago, who had the left ears taken off from a hundred young males which were found on Lukannon Rookery, Saint Paul's Island; of these the natives last year found two on Novashtosh-nah Rookery, ten miles north of Lukannon, and two or three from English Bay and Tolstoi Rookery, six miles west by water; one or two were taken on Saint George's Island, thirty-six miles to the southeast, and not one from Lukannon was found among those that were driven from there; and, probably, had all the young males on the two islands been driven up and examined, the rest would have been found distributed quite equally all around, although the natives say that they think the cutting off of the animal's ear gives the water such access to its head as to cause its death; this, however, I think requires confirmation. These experiments would tend to prove that when the seals approach the islands in the spring, they have nothing but a general instinctive appreciation of the fit-

ness of the land as a *whole*, and no especial fondness for any *particular spot*.

The landing of the seals upon the respective rookeries is influenced greatly by the direction of the wind at the time of approach to the islands. The prevailing winds, coming from the northeast, north, and northwest, carry far out to sea the odor or scent of the pioneer bulls, which have located themselves on different breeding-grounds three or four weeks usually in advance of the masses; and hence it will be seen that the rookeries on the south and southeastern shores of Saint Paul's Island receive nearly all the seal-life, although there are miles of eligible ground on the north shore.

To settle this question, however, is an exceedingly difficult matter; for the identification of individuals, from one season to another, among the hundreds of thousands, and even millions, that come under the eye on a single one of these great rookeries, is really impossible.

From the time of the first arrivals in May up to the 1st of June, or as late as the middle of this month, if the weather be clear, is an interval in which everything seems quiet; very few seals are added to the pioneers. By the 1st of June, however, or thereabouts, the foggy, humid weather of summer sets in, and with it the bull-seals come up by hundreds and thousands, and locate themselves in advantageous positions for the reception of the females, which are generally three weeks or a month later, as a rule.

The labor of locating and maintaining a position in the rookery is really a serious business for those bulls which come in last, and for those that occupy the water-line, frequently resulting in death from severe wounds in combat sustained.

It appears to be a well-understood principle among the able-bodied bulls that each one shall remain undisturbed on his ground, which is usually about ten feet square, provided he is strong enough to hold it against all comers; for the crowding in of fresh bulls often causes the removal of many of those who, though equally able-bodied at first, have exhausted themselves by fighting earlier, and are driven by the fresher animals back farther and higher up on the rookery.

Some of these bulls show wonderful strength and courage. I have marked one veteran, who was among the first to take up his position, and that one on the water-line, where at least fifty or sixty desperate battles were fought victoriously by him

with nearly as many different seals, who coveted his position, and when the fighting-season was over, (after the cows have mostly all hauled up,) I saw him, covered with scars and gashes raw and bloody, an eye gouged out, but lording it bravely over his harem of fifteen or twenty cows, all huddled together on the same spot he had first chosen.

The fighting is mostly or entirely done with the mouth, the opponents seizing each other with the teeth and clenching the jaws; nothing but sheer strength can shake them loose, and that effort almost always leaves an ugly wound, the sharp canines tearing out deep gutters in the skin and blubber or shredding the flippers into ribbon-strips.

They usually approach each other with averted heads and a great many false passes before either one or the other takes the initiative by griping; the heads are darted out and back as quick as flash, their hoarse roaring and shrill, piping whistle never ceases, while their fat bodies writhe and swell with exertion and rage, fur flying in air and blood streaming down—all combined make a picture fierce and savage enough, and, from its great novelty, exceedingly strange at first sight.

In these battles the parties are always distinct, the offensive and the defensive; if the latter proves the weaker he withdraws from the position occupied, and is never followed by his conqueror, who complacently throws up one of his hind flippers, fans himself as it were, to cool himself from the heat of the conflict, utters a peculiar chuckle of satisfaction or contempt, with a sharp eye open for the next covetous bull or "see-catch."*

The period occupied by the males in taking and holding their positions on the rookery offers a favorable opportunity in which to study them in the thousand and one different attitudes and postures assumed between the two extremes of desperate conflict and deep sleep—sleep so sound that one can, by keeping to the leeward, approach close enough, stepping softly, to pull the whiskers of any one taking a nap on a clear place; but after the first touch to these whiskers the trifier must jump back with great celerity, if he has any regard for the sharp teeth and tremendous shaking which will surely overtake him if he does not.

The neck, chest, and shoulders of a fur-seal bull comprise

* "See-catch," native name for the bulls on the rookeries, especially those which are able to maintain their position.

more than two-thirds of his whole weight, and in this long thick neck and fore limbs is embodied the larger portion of his strength; when on land, with the fore feet he does all climbing over rocks, over the grassy hummocks back of the rookery, the hind flippers being gathered up after every second step forward, as described in the manner of walking; these fore feet are the propelling power when in water, almost exclusively, the hinder ones being used as rudders chiefly.

The covering to the body is composed of two coats, one being of short, crisp, glistening over-hair, and the other a close, soft, elastic pelage, or fur, which gives distinctive value to the pelt.

At this season of first "hauling up" in the spring, the prevailing color of the bulls, after they dry off and have been exposed to the weather, is a dark, dull brown, with a sprinkling of lighter brown-black, and a number of hoary or frosted-gray coats; on the shoulders the over-hair is either a gray or rufous-ocher, called the "wig;" these colors are most intense upon the back of the head, neck, and spine, being lighter underneath. The skin of the muzzle and flippers, a dark bluish black, fading to a reddish and purplish tint in some. The ears and tail are also similar in tint to the body, being in the case of the former a trifle lighter; the ears on a bull fur-seal are from an inch to an inch and a half in length; the *pavilions* tightly rolled up on themselves so that they are similar in shape and size to the little finger on the human hand, cut off at the second (phalangeal) joint, a shade more cone-shaped, for they are greater in diameter at the base than at the tip.

I think it probable that the animal has and exerts the power of compressing or dilating this scroll-like *pavilion* to its ear, accordingly as it dives deep or rises in the water; and also, I am quite sure that the hair-seal has this control over the *meatus externus*, from what I have seen of it; but I have not been able to verify it in either case by observation; but such opportunity as I have had, gives me undoubted proof of the greatest keenness in hearing; for it is impossible to approach one, even when sound asleep; if you make any noise, frequently no matter how slight, the alarm will be given instantly by the insignificant-looking auditors, and the animal, rising up with a single motion erect, gives you a stare of astonishment, and at this season of defiance, together with incessant surly roaring, growling, and "spitting."

This spitting, as I call it, is by no means a fair or full expres-

sion of the most characteristic sound and action, peculiar, so far as I have observed, to the fur-seals, the bulls in particular. It is the usual prelude to their combats, and follows somewhat in this way: when the two disputants are nearly within reaching or striking distance, they make a number of feints or false passes at one another, with the mouth wide open and lifting the lips or snarling, so as to exhibit the glistening teeth, and with each pass they expel the air so violently through the larynx as to make a rapid choo-choo-choo sound, like the steam-puffs in the smoke-stack of a locomotive when it starts a heavy train, and especially when the driving-wheels slip on the rail.

All the bulls now have the power and frequent inclination to utter four entirely distinct calls or notes—a hoarse, resonant roar, loud and long; a low gurgling growl; a chuckling, sibilant, piping whistle, of which it is impossible to convey an adequate idea, for it must be heard to be understood; and this spitting, just described. The cows* have but one note—a hollow, prolonged, *bla-a-ting* call, addressed only to their pups; on all other occasions they are usually silent. It is something like the cry of a calf or sheep. They also make a spitting sound, and snort, when suddenly disturbed. The pups "*bla-at*" also, with little or no variation, the sound being somewhat weaker and hoarser than that of their mothers for the first two or three weeks after birth; they, too, spit and cough when aroused suddenly from a nap or driven into a corner. A number of pups crying at a short distance off bring to mind very strongly the idea of a flock of sheep "*baa-aa-ing*."

Indeed, so similar is the sound that a number of sheep brought up from San Francisco to Saint George's Island during the summer of 1873 were constantly attracted to the rookeries,

*Without explanation I may be considered as making use of misapplied terms in describing these animals, for the inconsistency of coupling "pups" with "cows" and "bulls," and "rookeries" with the breeding-grounds of the same, cannot fail to be noticed; but this nomenclature has been given and used by the English and American whalers and sealing-parties for many years, and the characteristic features of the seals suit the odd naming exactly, so much so that I have felt satisfied to retain the style throughout as rendering my description more intelligible, especially so to those who are engaged in the business or may be hereafter. The Russians are more consistent, but not so "pat." The bull is called "see-catch," a term implying strength, vigor, &c.; the cow, "matkah," or mother; the pups, "koticke," or little seals; the non-breeding males, under six and seven years, "holluschickie," or bachelors. The name applied collectively to the fur-seal by them is "morskije-kot," or sea-cat.

running in among the seals, and had to be driven away to a good feeding-ground by a small boy detailed for the purpose.

The sound arising from these great breeding-grounds of the fur-seal, where thousands upon thousands of angry, vigilant bulls are roaring, chuckling, piping, and multitudes of seal-mothers are calling in hollow, blating tones to their young, which in turn respond incessantly, is simply indescribable. It is, at a slight distance, softened into a deep booming, as of a cataract, and can be heard a long distance off at sea, under favorable circumstances as far as five or six miles, and frequently warns vessels that may be approaching the islands in thick, foggy weather, of the positive, though unseen, proximity of land. Night and day, throughout the season, the din of the rookeries is steady and constant.

The seals seem to suffer great inconvenience from a comparatively low degree of heat; for, with a temperature of 46° and 48° on land, during the summer, they show signs of distress from heat whenever they make any exertion, pant, raise their hind flippers, and use them incessantly as fans. With the thermometer at 55° – 60° , they seem to suffer even when at rest, and at such times the eye is struck by the kaleidoscopic appearance of a rookery, on which a million seals are spread out in every imaginable position their bodies can assume, all industriously fanning themselves, using sometimes the fore flippers as ventilators, as it were, by holding them aloft motionless, at the same moment fanning briskly with the hind flipper, or flippers, according as they sit or lie. This wavy motion of flapping and fanning gives a peculiar shade of hazy indistinctness to the whole scene, which is difficult to express in language; but one of the most prominent characteristics of the fur-seal is this fanning manner in which they use their flippers, when seen on the breeding-grounds in season. They also, when idling, as it were, off shore at sea, lie on their sides, with only a partial exposure of the body, the head submerged, and hoist up a fore or hind flipper clear of the water, while scratching themselves or enjoying a nap; but in this position there is no fanning. I say "scratching," because the seal, in common with all animals, is preyed upon by vermin, a species of louse and a tick, peculiar to itself.

All the bulls, from the very first, that have been able to hold their positions, have not left them for an instant, night or day, nor do they do so until the end of the rutting-season, which

subsides entirely between the 1st and 10th of August, beginning shortly after the coming of the cows in June. Of necessity, therefore, this causes them to fast, to abstain entirely from food of any kind, or water, for three months, at least, and a few of them stay four months before going into the water for the first time after hauling up in May.

This alone is remarkable enough, but it is simply wonderful when we come to associate the condition with the unceasing activity, restlessness, and duty devolved upon the bulls as heads and fathers of large families. They do not stagnate, like bears in caves; it is evidently accomplished or due to the absorption of their own fat, with which they are so liberally supplied when they take their positions on the breeding-ground, and which gradually diminishes while they remain on it. But still some most remarkable provision must be made for the entire torpidity of the stomach and bowels, consequent upon their being empty and unsupplied during this long period, which, however, in spite of the violation of a supposed physiological law, does not seem to affect them, for they come back just as sleek, fat, and ambitious as ever in the following season.

I have examined the stomachs of a number which were driven up and killed immediately after their arrival in the spring, and natives here have seen hundreds, even thousands, of them during the killing-season in June and July, but in no case has anything been found other than the bile and ordinary secretions of healthy organs of this class, with the exception only of finding in *every* one a snarl or cluster of worms,* from the size of a walnut to that of one's fist, the fast apparently having no effect on them, for when three or four hundred old bulls were slaughtered late in the fall, to supply the natives with "bidarkee" or canoe skins, I found these worms in a lively condition in every paunch cut open, and their presence, I think, gives some reason for the habit which these old bulls have of swallowing small bowlders, the stones in some of the stomachs weighing half a pound or so, and in one paunch I found about five pounds in the aggregate of larger pebbles, which in grinding against one another must destroy, in a great measure, these intestinal pests. The sea-lion is also troubled in the same way by a similar species of worm, and I have preserved a stomach of one of these animals in which are more than ten pounds of bowlders, some of them alone quite large. The greater size of this animal enables

*Nematoda.

it to swallow stones which weigh two and three pounds. I can ascribe no other cause for this habit among these animals than that given, as they are of the highest type of the carnivora, eating fish as a regular means of subsistence; varying the monotony of this diet with occasional juicy fronds of sea-weed, or kelp, and perhaps a crab, or such, once in a while, provided it is small and tender, or soft-shelled.

Between the 12th and 14th of June the first of the cow-seals come up from the sea, and the bulls signalize it by a universal, spasmodic, desperate fighting among themselves.

The strong contrast between the males and females in size and shape is heightened by the air of exceeding peace and amiability which the latter class exhibit.

The cows are from 4 to 4½ feet in length from head to tail, and much more shapely in their proportions than the bulls, the neck and shoulders being not near so fat and heavy in proportion to the posteriors.

When they come up, wet and dripping, they are of a dull, dirty-gray color, darker on the back and upper parts, but in a few hours the transformation made by drying is wonderful; you would hardly believe they could be the same animals, for they now fairly glisten with a rich steel and maltese-gray luster on the back of the head, neck, and spine, which blends into an almost pure white on the chest and abdomen. But this beautiful coloring in turn is altered by exposure to the weather, for in two or three days it will gradually change to a dull, rufous ocher below, and a cinereous-brown and gray-mixed above; this color they retain throughout the breeding-season up to the time of shedding the coat in August.

The head and eye of the female are really attractive; the expression is exceedingly gentle and intelligent; the large, lustrous eyes, in the small, well-formed head, apparently gleam with benignity and satisfaction when she is perched up on some convenient rock and has an opportunity to quietly fan herself.

The cows appear to be driven on to the rookeries by an accurate instinctive appreciation of the time in which their period of gestation ends; for in all cases marked by myself, the pups are born soon after landing, some in a few hours after, but most usually a day or two elapses before delivery.

They are noticed and received by the bulls on the water-line stations with much attention; they are alternately coaxed and urged up on to the rocks, and are immediately under the most

jealous supervision; but owing to the covetous and ambitious nature of the bulls, which occupy the stations reaching way back from the water-line, the little cows have a rough-and-tumble time of it when they begin to arrive in small numbers at first; for no sooner is the pretty animal fairly established on the station of bull number one, who has installed her there, he perhaps sees another one of her style down in the water from which she has just come, and in obedience to his polygamous feeling, he devotes himself anew to coaxing the later arrival in the same winning manner so successful in her case, when bull number two, seeing bull number one off his guard, reaches out with his long strong neck and picks the unhappy but passive creature up by the scruff of hers, just as a cat does a kitten, and deposits her on his seraglio-ground; then bulls number three, four, and so on, in the vicinity, seeing this high-handed operation, all assail one another, and especially bull number two, and have a tremendous fight, perhaps for half a minute or so, and during this commotion the cow generally is moved or moves farther back from the water, two or three stations more, where, when all gets quiet, she usually remains in peace. Her last lord and master, not having the exposure to such diverting temptation as had her first, he gives her such care that she not only is unable to leave did she wish, but no other bull can seize upon her. This is only one instance of the many different trials and tribulations which both parties on the rookery subject themselves to before the harems are filled. Far back, fifteen or twenty stations deep from the water-line sometimes, but generally not more on an average than ten or fifteen, the cows crowd in at the close of the season for arriving, July 10 to 14, and then they are able to go about pretty much as they please, for the bulls have become greatly enfeebled by this constant fighting and excitement during the past two months, and are quite content with even only one or two partners.

The cows seem to haul in compact bodies from the water up to the rear of the rookeries, never scattering about over the ground; and they will not lie quiet in any position outside of the great mass of their kind. This is due to their intensely gregarious nature, and for the sake of protection. They also select land with special reference to the drainage, having a great dislike to water-puddled ground. This is well shown on Saint Paul.

I have found it difficult to ascertain the average number of

cows to one bull on the rookery, but I think it will be nearly correct to assign to each male from twelve to fifteen females, occupying the stations nearest the water, and those back in the rear from five to nine. I have counted forty-five cows all under the charge of one bull, which had them penned up on a flat table-rock, near *Keetavie Point*; the bull was enabled to do this quite easily, as there was but one way to go to or come from this seraglio, and on this path the old Turk took his stand and guarded it well.

At the rear of all these rookeries there is always a large number of able-bodied bulls, who wait patiently, but in vain, for families, most of them having had to fight as desperately for the privilege of being there as any of their more fortunately-located neighbors, who are nearer the water than themselves; but the cows do not like to be in any outside position, where they are not in close company, lying most quiet and content in the largest harems, and these large families pack the surface of the ground so thickly, that there is hardly moving or turning room until the females cease to come up from the sea; but the inaction on the part of the bulls in the rear during the rutting-season only serves to qualify them to move into the places vacated by those males who are obliged to leave from exhaustion, and to take the positions of jealous and fearless protectors for the young pups in the fall.

The courage with which the fur-seal holds his position, as the head and guardian of a family, is of the very highest order, compared with that of other animals. I have repeatedly tried to drive them when they have fairly established themselves, and have almost always failed, using every stone at my command, making all the noise I could, and, finally, to put their courage to the full test, I walked up to within 20 feet of a bull at the rear and extreme end of Tolstoi Rookery, who had four cows in charge, and commenced with my double-barreled breech-loading shot-gun to pepper him all over with mustard-seed or dust shot. His bearing, in spite of the noise, smell of powder, and pain, did not change in the least from the usual attitude of determined defense which nearly all the bulls assume when attacked with showers of stones and noise; he would dart out right and left and catch the cows, which timidly attempted to run after each report, and fling and drag them back to their places; then, stretching up to his full height, look me directly and defiantly in the face, roaring and spitting

most vehemently. The cows, however, soon got away from him; but he still stood his ground, making little charges on me of 10 or 15 feet in a succession of gallops or lunges, spitting furiously, and then retreating to the old position, back of which he would not go, fully resolved to hold his own or die in the attempt.

This courage is all the more noteworthy from the fact that, in regard to man, it is invariably of a defensive character. The seal, if it makes you turn when you attack it, never follows you much farther than the boundary of its station, and no aggravation will compel it to become offensive, as far as I have been able to observe.

The cows, during the whole season, do great credit to their amiable expression by their manner and behavior on the rookery; never fight or quarrel one with another, and never or seldom utter a cry of pain or rage when they are roughly handled by the bulls, who frequently get a cow between them and tear the skin from her back, cutting deep gashes into it, as they snatch her from mouth to mouth. These wounds, however, heal rapidly, and exhibit no traces the next year.

The cows, like the bulls, vary much in weight. Two were taken from the rookery nearest Saint Paul's Village, after they had been delivered of their young, and the respective weights were 56 and 101 pounds, the former being about three or four years old, and the latter over six. They both were fat and in excellent condition.

It is quite out of the question to give a fair idea of the positions in which the seals rest when on land. They may be said to assume every possible attitude which a flexible body can be put into. One favorite position, especially with the cows, is to perch upon a point or top of some rock and throw their heads back upon their shoulders, with the nose held aloft, then, closing their eyes, take short naps without changing, now and then gently fanning with one or the other of the long, slender hind flippers; another, and the most common, is to curl themselves up, just as a dog does on a hearth-rug, bringing the tail and the nose close together. They also stretch out, laying the head straight with the body, and sleep for an hour or two without moving, holding one of the hinder flippers up all the time, now and then gently waving it, the eyes being tightly closed.

The sleep of the fur-seal, from the old bull to the young pup, is always accompanied by a nervous, muscular twitching and

slight shifting of the flippers; quivering and uneasy rolling of the body, accompanied by a quick folding anew of the fore flippers, which are signs, as it were, of their having nightmares, or sporting, perhaps, in a visionary way, far off in some dream-land sea; or disturbed, perhaps more probably, by their intestinal parasites. I have studied hundreds of all classes, stealing softly up so closely that I could lay my hand on them, and have always found the sleep to be of this nervous description. The respiration is short and rapid, but with no breathing (unless your ear is brought very close) or snoring sound; the heaving of the flanks only indicates the action. I have frequently thought that I had succeeded in finding a snoring seal, especially among the pups, but a close examination always gave some abnormal reason for it, generally a slight distemper, by which the nostrils were stopped up to a greater or less degree.

As I have said before, the cows, soon after landing, are delivered of their young.

Immediately after the birth of the pup, (twins are rare, if ever,) it finds its voice, a weak, husky *bla*at, and begins to paddle about, with eyes wide open, in a confused sort of way for a few minutes until the mother is ready to give it attention, and, still later, suckle it; and for this purpose she is provided with four small, brown nipples, placed about eight inches apart, lengthwise with the body, on the abdomen, between the fore and hinder flippers, with some four inches of space between them transversely. The nipples are not usually visible; only seen through the hair and fur. The milk is abundant, rich, and creamy. The pups nurse very heartily, gorging themselves.

The pup at birth, and for the next three months, is of a jet-black color, hair, eyes, and flippers, save a tiny white patch just back of each fore foot, and weighs from 3 to 4 pounds, and 12 to 14 inches long; it does not seem to nurse more than once every two or three days, but in this I am most likely mistaken, for they may have received attention from the mother in the night or other times in the day when I was unable to watch them.

The apathy with which the young are treated by the old on the breeding-grounds is somewhat strange. I have never seen a cow caress or fondle her offspring, and should it stray but a short distance from the harem, it can be picked up and killed

before the mother's eyes without causing her to show the slightest concern. The same indifference is exhibited by the bull to all that takes place outside of the boundary of his seraglio. While the pups are, however, within the limits of his harem-ground, he is a jealous and fearless protector; but if the little animals pass beyond this boundary, then they may be carried off without the slightest attention in their behalf from their guardian.

It is surprising to me how few of the pups get crushed to death while the ponderous bulls are floundering over them when engaged in fighting. I have seen two bulls dash at each other with all the energy of furious rage, meeting right in the midst of a small "pod" of forty or fifty pups, trampling over them with their crushing weights, and bowling them out right and left in every direction, without injuring a single one. I do not think more than 1 per cent. of the pups born each season are lost in this manner on the rookeries.

To test the vitality of these little animals, I kept one in the house to ascertain how long it could live without nursing, having taken it immediately after birth and before it could get any taste of its mother's milk; it lived nine days, and in the whole time half of every day was spent in floundering about over the floor, accompanying the movement with a persistent hoarse blaating. This experiment certainly shows wonderful vitality, and is worthy of an animal that can live four months without food or water and preserve enough of its latent strength and vigor at the end of that time to go far off to sea, and return as fat and hearty as ever during the next season.

In the pup, the head is the only disproportionate feature when it is compared with the proportion of the adult form, the neck being also relatively shorter and thicker. I shall have to speak again of it, as it grows and changes, when I finish with the breeding-season now under consideration.

The cows appear to go to and come from the water quite frequently, and usually return to the spot, or its neighborhood, where they leave their pups, crying out for them, and recognizing the individual replies, though ten thousand around, all together, should blaate at once. They quickly single out their own and attend them. It would be a very unfortunate matter if the mothers could not identify their young by sound, since their pups get together like a great swarm of bees, spread out upon the ground in "pods" or groups, while they are young,

and not very large, but by the middle and end of September, until they leave in November, they cluster together, sleeping and frolicking by tens of thousands. A mother comes up from the water, where she has been to wash, and perhaps to feed, for the last day or two, to about where she thinks her pup should be, but misses it, and finds instead a swarm of pups in which it has been incorporated, owing to its great fondness for society. The mother, without at first entering into the crowd of thousands, calls out, just as a sheep does for her lamb, listens, and out of all the din she—if not at first, at the end of a few trials—recognizes the voice of her offspring, and then advances, striking out right and left, and over the crowd, toward the position from which it replies; but if the pup at this time happens to be asleep she hears nothing from it, even though it were close by, and in this case the cow, after calling for a time without being answered, curls herself up and takes a nap, or lazily basks, and is most likely more successful when she calls again.

The pups themselves do not know their mothers, but they are so constituted that they incessantly cry out at short intervals during the whole time they are awake, and in this way a mother can pick, out of the monotonous blaating of thousands of pups, her own, and she will not permit any other to suckle.

Between the end of July and the 5th or 8th of August the rookeries are completely changed in appearance; the systematic and regular disposition of the families, or harems, over the whole extent of ground has disappeared; all order heretofore existing seems to be broken up. The rutting-season over, those bulls which held positions now leave, most of them very thin in flesh and weak, and I think a large proportion of them do not come out again on the land during the season; and such as do come, appear, not fat, but in good flesh, and in a new coat of rich dark and gray-brown hair and fur, with gray and grayish-ocher "wigs" or over-hair on the shoulders, forming a strong contrast to the dull, rusty-brown and umber dress in which they appeared during the summer, and which they had begun to shed about the 15th of August, in common with the cows and bachelor seals. After these bulls leave, at the close of their season's work, those of them that do return to the land do not come back until the end of September, and do not haul up on the rookery-grounds as a rule, preferring to herd together, as do the young males, on the sand-beaches and other rocky

points close to the water. The cows, pups, and those bulls which have been in retirement, now take possession, in a very disorderly manner, of the rookeries; also, come a large number of young, three, four, and five year old males, who have not been permitted to land among the cows, during the rutting-season, by the older, stronger bulls, who have savagely fought them off whenever they made (as they constantly do) an attempt to land.

Three-fourths, at least, of the cows are now off in the water, only coming ashore to nurse and look after their pups a short time. They lie idly out in the rollers, ever and anon turning over and over, scratching their backs and sides with their fore and hind flippers. Nothing is more suggestive of immense comfort and enjoyment than is this action of these animals. They appear to get very lousy on the breeding-ground, and the frequent winds and showers drive and spatter sand into their fur and eyes, making the latter quite sore in many cases. They also pack the soil under foot so hard and solid that it holds water in the surface depressions, just like so many rock basins, on the rookery; out and into these puddles they flounder and patter incessantly, until evaporation slowly abates the nuisance.

The pups sometimes get so thoroughly plastered in these muddy, slimy puddles, that their hair falls off in patches, giving them the appearance of being troubled with scrofula or some other plague, at first sight, but they are not, from my observation, permanently injured.

Early in August (8th) the pups that are nearest the water on the rookeries essay swimming, but make slow and clumsy progress, floundering about, when over head in depth, in the most awkward manner, thrashing the water with their fore flippers, not using the hinder ones. In a few seconds, or a minute at the most, the youngster is so weary that he crawls out upon the rocks or beach, and immediately takes a recuperative nap, repeating the lesson as quick as he awakes and is rested. They soon get familiar with the water, and delight in it, swimming in endless evolutions, twisting, turning, diving, and when exhausted, they draw up on the beach again, shake themselves as young dogs do, either going to sleep on the spot, or having a lazy frolic among themselves.

In this matter of learning to swim, I have not seen any "driving" of the young pups into the water by the old in order

to teach them this process, as has been affirmed by writers on the subject of seal-life.

The pups are constantly shifting, at the close of the rutting-season, back and forth over the rookery in large squads, sometimes numbering thousands. In the course of these changes of position they all come sooner or later in contact with the sea; the pup blunders into the water for the first time in a most awkward manner, and gets out again as quick as it can, but so far from showing any fear or dislike of this, its most natural element, as soon as it rests from its exertion, is immediately ready for a new trial, and keeps at it, if the sea is not too stormy or rough at the time, until it becomes quite familiar with the water, and during all this period of self-tuition it seems to thoroughly enjoy the exercise.

By the 15th of September all the pups have become familiar with the water, have nearly all deserted the background of the rookeries and are down by the water's edge, and skirt the rocks and beaches for long distances on ground previously unoccupied by seals of any class.

They are now about five or six times their original weight, and are beginning to shed their black hair and take on their second coat, which does not vary at this age between the sexes. They do this very slowly, and cannot be called out of molting or shedding until the middle of October, as a rule.

The pup's second coat, or sea-going jacket, is a uniform, dense, light pelage, or under-fur, grayish in some, light-brown in others, the fine, close, soft, and elastic hairs which compose it being about one-half of an inch in length, and over-hair, two-thirds of an inch long, quite coarse, giving the color by which you recognize the condition. This over-hair, on the back, neck, and head, is a dark chinchilla-gray, blending into a white, just tinged with a grayish tone on the abdomen and chest. The upper lip, where the whiskers or mustache takes root, is of a lighter-gray tone than that which surrounds. This mustache consists of fifteen or twenty longer or shorter whitish-gray bristles (one-half to three inches) on each side and back of the nostrils, which are, as I have before said, similar to that of a dog.

The most attractive feature about the fur-seal pup, and upward as it grows, is the eye, which is exceedingly large, dark, and liquid, with which, for beauty and amiability, together with

intelligence of expression, those of no other animal can be compared. The lids are well supplied with eyelashes.

I do not think that their range of vision on land, or out of the water, is very great. I have had them (the adults) catch sight of my person, so as to distinguish it as a foreign character, three and four hundred paces off, with the wind blowing strongly from them toward myself, but generally they will allow you to approach very close indeed, before recognizing your strangeness, and the pups will scarcely notice the form of a human being until it is fairly on them, whereupon they make a lively noise, a medley of coughing, spitting, snorting, blaating, and get away from its immediate vicinity, but instantly resume, however, their previous occupation of either sleeping or playing, as though nothing had happened.

But the power of scent is (together with their hearing, before mentioned) exceedingly keen, for I have found that I would most invariably awake them from soundest sleep if I got to the windward, even when standing a considerable distance off.

To recapitulate and sum up the system of reproduction on the rookeries as the seals seem to have arranged it, I would say, that—

First. The earliest bulls appear to land in a negligent, indolent way, shortly after the rocks at the water's edge are free from ice, frozen snow, &c. This is generally about the 1st to the 5th of May. They land first and last in perfect confidence and without fear, very fat, and of an average weight of five hundred pounds; some staying at the water's edge, some going away back, in fact all over the rookery.

Second. That by the 10th or 12th of June, all the stations on the rookeries have been mapped out, fought for, and held in waiting for the cows by the strongest and most enduring bulls, who are, as a rule, never under six years of age, and sometimes three, and even occasionally four times as old.

Third. That the cows make their first appearance, as a class, by the 12th or 15th of June, in rather small numbers, but by the 23d and 25th of this month they begin to flock up so as to fill the harems very perceptibly, and by the 8th or 10th of July they have most all come, stragglers excepted; average weight eighty pounds.

Fourth. That the rutting-season is at its height from the 10th to the 15th of July, and that it subsides entirely at the end of

this month and early in August, and that it is confined entirely to the land.

Fifth. That the cows bear their first young when three years of age.

Sixth. That the cows are limited to a single pup each, as a rule, in bearing, and this is born soon after landing; no exception has thus far been witnessed.

Seventh. That the bulls who have held the harems leave for the water in a straggling manner at the close of the rutting-season, greatly emaciated, not returning, if at all, until six or seven weeks have elapsed, and that the regular systematic distribution of families over the rookeries is at an end for the season, a general medley of young bulls now free to come up from the water, old males who have not been on seraglio duty, cows, and an immense majority of pups, since only about 25 per cent. of their mothers are out of the water at a time.

The rookeries lose their compactness and definite boundaries by the 25th to 28th July, when the pups begin to haul back and to the right and left in small squads at first, but as the season goes on, by the 18th August, they swarm over three and four times the area occupied by them when born on the rookeries. The system of family arrangement and definite compactness of the breeding-classes begins at this date to break up.

Eighth. That by the 8th or 10th of August the pups born nearest the water begin to learn to swim, and by the 15th or 20th of September they are all familiar more or less with it.

Ninth. That by the middle of September the rookeries are entirely broken up, only confused, straggling bands of cows, young bachelors, pups, and small squads of old bulls, crossing and recrossing the ground in an aimless, listless manner; the season is over, but many of these seals do not leave these grounds until driven off by snow and ice, as late as the end of December and 12th of January.

This recapitulation is the sum and substance of my observations on the rookeries, and I will now turn to the consideration of the

HAULING-GROUNDS,

upon which the yearlings and almost all the males under six years come out from the sea in squads from a hundred to a thousand, and, later in the season, by hundreds of thousands,

to sleep and frolic, going from a quarter to half a mile back from the sea, as at English Bay.

This class of seals are termed "holluschukie" (or "bachelor seals") by the natives. It is with the seals of this division that these people are most familiar, since they are, together with a few thousand pups and some old bulls, the only ones driven up to the killing-grounds for their skins, for reasons which are excellent, and which shall be given further on.

Since the "holluschukie" are not permitted by their own kind to land on the rookeries and rest there, they have the choice of two methods of landing and locating.

One of these opportunities, and least used, is to pass up from and down to the water, through a rookery on a pathway left by common consent between the harems. On these lines of passage they are unmolested by the old and jealous bulls, who guard the seraglios on either side as they go and come; generally there is a continual file of them on the way, traveling up or down.

As the two and three year old holluschukie come up in small squads with the first bulls in the spring, or a few days later, these common highways between the rear of the rookery-ground and the sea get well defined and traveled over before the arrival of the cows; for just as the bulls crowd up for their stations, so do the bachelors, young and old, increase. These roadways may be termed the lines of least resistance in a big rookery; they are not constant; they are splendidly shown on the large rookeries of Saint Paul's, one of them (Tolstoi) exhibiting this feature finely, for the hauling-ground lies up back of the rookery, on a flat and rolling summit, 100 to 120 feet above the sea-level. The young males and yearlings of both sexes come through the rookery on these narrow pathways, and, before reaching the resting-ground above, are obliged to climb up an almost abrupt bluff, by following and struggling in the little water-runs and washes which are worn in its face. As this is a large hauling-ground, on which fifteen or twenty thousand commonly lie every day during the season, the sight always, at all times, to be seen, in the way of seal climbing and crawling, was exceedingly novel and interesting. They climb over and up to places here where a clumsy man might at first sight say he would be unable to ascend.

The other method by which the "holluschukie" enjoy themselves on land is the one most followed and favored. They, in

this case, repair to the beaches unoccupied between the rookeries, and there extend themselves out all the way back from the water as far, in some cases, as a quarter of a mile, and even farther. I have had under my eye, in one straightforward sweep, from Zapad-nie to Tolstoi, (three miles,) a million and a half of seals, at least, (about the middle of July.) Of these I estimated fully one-half were pups, yearlings, and "holluschukie." The great majority of the two latter classes were hauled out and packed thickly over the two miles of sand-beach and flat which lay between the rookeries; many large herds were back as far from the water as a quarter of a mile.

A small flock of the younger ones, from one to three years old, will frequently stray away back from the hauling-ground lines, out and up onto the fresh moss and grass, and there sport and play, one with another, just as puppy-dogs do; and when weary of this gamboling, a general disposition to sleep is suddenly manifested, and they stretch themselves out and curl up in all the positions and all the postures that their flexible spines and ball-and-socket joints will permit. One will lie upon his back, holding up his hind flippers, lazily waving them in the air, while he scratches or rather rubs his ribs with the fore hands alternately, the eyes being tightly closed; and the breath, indicated by the heaving of his flanks, drawn quickly but regularly, as though in heavy sleep; another will be flat upon his stomach, his hind flippers drawn under and concealed, while he tightly folds his fore feet back against his sides, just as a fish will sometimes hold its pectoral fins; and so on, without end of variety, according to the ground and disposition of the animals.

While the young seals undoubtedly have the power of going without food, they certainly do not sustain any long fasting periods on land, for their coming and going is frequent and irregular; for instance, three or four thick, foggy days will sometimes call them out by hundreds of thousands, a million or two, on the different hauling-grounds, where, in some cases, they lie so closely together that scarcely a foot of ground, over acres in extent, is bare; then a clearer and warmer day will ensue, and the ground, before so thickly packed with animal-life, will be almost deserted, comparatively, to be filled again immediately on the recurrence of favorable weather. They are in just as good condition of flesh at the end of the season as at the first of it.

These bachelor-seals are, I am sure, without exception, the most restless animals in the whole brute creation; they frolic and lope about over the grounds for hours, without a moment's cessation, and their sleep after this is short, and is accompanied with nervous twitchings and uneasy movements; they seem to be fairly brimful and overrunning with warm life. I have never observed anything like ill-humor grow out of their playing together; invariably well pleased one with another in all their frolicsome struggles.

The pups and yearlings have an especial fondness for sport-ing on the rocks which are just at the water's level, so as to be alternately covered and uncovered by the sea-rollers. On the bare summit of these water-worn spots they struggle and clamber, a dozen or two at a time, occasionally, for a single rock; the strongest or luckiest one pushing the others all off, which, however, simply redouble their efforts and try to dislodge him, who thus has, for a few moments only, the advantage; for with the next roller and the other pressure, he generally is ousted, and the game is repeated. Sometimes, as well as I could see, the same squad of "holluschukie" played around a rock thus situated, off "Nah Speel" rookery, during the whole of one day; but, of course, they cannot be told apart.

The "holluschukie," too, are the champion swimmers; at least they do about all the fancy tumbling and turning that is done by the fur-seals when in the water around the islands. The grave old bulls and their matronly companions seldom indulge in any extravagant display, such as jumping out of the water like so many dolphins, describing, as these youngsters do, beautiful elliptic curves, rising three and even four feet from the sea, with the back slightly arched, the fore flippers folded back against the sides, and the hinder ones extended and pressed together straight out behind, plunging in head first, re-appearing in the same manner after an interval of a few seconds.

All classes will invariably make these dolphin-jumps when they are suddenly surprised or are driven into the water, turning their heads, while sailing in the air, between the "rises" and "plumps," to take a look at the cause of their disturbance. They all swim with great rapidity, and may be fairly said to dart with the velocity of a bird on the wing along under the water; and in all their swimming I have not been able yet to satisfy myself how they use their long, flexible, hind feet, other

than as steering mediums. The propelling motion, if they have any, is so rapid, that my eye is not quick enough to catch it; the fore feet, however, can be very distinctly seen to work, feathering forward and sweeping back flatly, opposed to the water, with great rapidity and energy, and are evidently the sole propulsive power.

All their movements in the water, when in traveling or sport, are quick and joyous, and nothing is more suggestive of intense satisfaction and great comfort than is the spectacle of a few thousand old bulls and cows, off and from a rookery in August, idly rolling over, side by side, rubbing and scratching with the fore and hind flippers, which are here and there stuck up out of the water like lateen-sails, or "cat-o'-nine tails," in either case, as it may be.

When the "holluschukie" are up on land they can be readily separated into two classes by the color of their coats and size, viz, the yearlings, and the two, three, four, and five year old bulls.

The first class is dressed just as they were after they shed their pup-coats and took on the second the previous year, in September and October, and now, as they come out in the spring and summer, the males and females cannot be distinguished apart, either by color or size; both yearling sexes having the same gray backs and white bellies, and are the same in behavior, action, weight, and shape.

About the 15th and 20th of August they begin to grow "stagey," or shed, in common with all the other classes, the pups excepted. The over-hair requires about six weeks from the commencement of the dropping or falling out of the old to its full renewal.

The pelage, or fur, which is concealed externally by the hair, is also shed, and renewed slowly in the same manner; but, being so much finer than the hair, it is not so apparent. It was to me a great surprise to "learn," from a man who has been heading a seal-killing party on these islands during the past three years, and the Government agent in charge of these interests, that the seal never shed its fur; that the over-hair only was cast off and replaced. To prove that it does, however, is a very simple matter, and does not require the aid of a microscope. For example, take up a prime spring or fall skin, after every single over-hair on it has been plucked out, and you will have difficulty, either to so blow upon the thick, fine fur, or

to part it with the fingers, as to show the hide from which it has grown; then take a "stagey" skin, by the end of August and early in September, when *all the over-hair is present, about one-third to one-half grown*, and the first puff you expend upon it easily shows the hide below, sometimes quite a broad welt. This under-fur, or pelage, is so fine and delicate, and so much concealed and shaded by the coarse over-hair, that a careless eye may be pardoned for any such blunder, but only a very casual observer could make it.

The yearling cows retain the colors of the old coat in the new, and from this time on shed, year after year, just so, for the young and the old cows look alike, as far as color goes, when they haul up on the rookeries in the summer.

The yearling males, however, make a radical change, coming out from their "staginess" in a uniform dark-gray and gray-black mixed and lighter, and dark ocher, on the under and upper parts, respectively. This coat, next year, when they come up on the hauling-grounds, is very dark, and is so for the third, fourth, and fifth years, when, after this, they begin to grow more gray and brown, year by year, with rufous-ocher and whitish-gray tipped over-hair on the shoulders. Some of the very old bulls become changed to uniform dull grayish-ocher all over.

The female does not get her full growth and weight until the end of her fourth year, so far as I have observed, but does the most of her growing in the first two.

The male does not get his full growth and weight until the close of his seventh year, but realizes most of it by the end of the fifth, osteologically, and from this it may be, perhaps, truly inferred that the bulls live to an average age of eighteen or twenty years, if undisturbed in a normal condition, and that the cows attain ten or twelve under the same circumstances. Their respective weights, when fully mature and fat in the spring, will, I think, strike an average of four to five hundred pounds for the male and from seventy to eighty for the female.

From the fact that all the young seals do not change much in weight, from the time of their first coming out in the spring till that of their leaving in the fall and early winter, I feel safe in saying, since they, too, are constantly changing from land to water and from water to land, that they feed at irregular but not long intervals during the time they are here under observation. I do not think the young males fast longer than a week or ten days at a time, as a class.

The leave evidences of their being on these great reproductive fields, chiefly on the rookeries, such as hundreds of the dead carcasses of those of them that have been infirm, sick, killed, or which have crawled off to die from death-wounds received in some struggle for a harem; and over these decaying, putrid bodies, the living, old and young, clamber and patter, and by this constant stirring up of putrescent matter give rise to an exceedingly disagreeable and far-reaching "funk," which has been, by all the writers who have spoken on the subject, referred to as the smell which these animals have in rutting. If these creatures have any such odor peculiar to them when in this condition, I will frankly confess that I am unable to distinguish it from the fumes which are constantly being stirred up and rising out from these decaying carcasses of old seals and the many pups which have been killed accidentally by the old bulls while fighting with and charging back and forth against one another.

They, however, have a peculiar smell when they are driven and get heated; their steaming breath-exhalations possess a disagreeable, faint, sickly tone, but it can by no means be confounded with what is universally understood to be the rutting-odor among animals. The finger rubbed on a little fur-seal blubber will smell very much like that which is appreciated in their breath coming from them when driven, only stronger. Both the young and old fur-seals have this same breath-smell at all seasons.

By the end of October and the 10th of November the great mass of the "holluschukie" have taken their departure; the few that remain from now until as late as the snow and ice will permit them to do, in and after December, are all down by the water's edge, and hauled up almost entirely on the rocky beaches only, deserting the sand. The first snow falling makes them uneasy, as also does rain-fall. I have seen a large hauling-ground entirely deserted after a rainy day and night by its hundreds of thousands of occupants. The falling drops spatter and beat the sand into their eyes, fur, &c., I presume, and in this way make it uncomfortable for them.

The weather in which the fur-seal delights is cool, moist, foggy, and thick enough to keep the sun always obscured so as to cast no shadows. Such weather, continued for a few weeks in June and July, brings them up from the sea by millions; but, as I have before said, a little sunlight and the temperature as high as 50° to 55°, will send them back from the hauling-

grounds almost as quickly as they came. These sunny, warm days are, however, on Saint Paul's Island, very rare indeed, and so the seals can have but little ground of complaint, if we may presume that they have any at all.

I saw but three albino pups among the hundreds of thousands on Saint Paul's and none on Saint George. They did not differ in any respect from the other (normal) pups in size and shape. Their hair, in the first coat, was, all over, a dull ocher; the flippers and muzzle were a flesh-tone, and the iris of the eye sky-blue. The second coat gives them a dirty yellowish-white color, but it makes them exceedingly conspicuous when in among the black pups, gray yearlings, and "holluschukie."

I have also never seen any malformations or "monsters" among the pups and other classes of the fur-seal; nor have the natives recorded anything of the kind, so far as I could ascertain from them.

Another curious fact may be recorded, that, with the exception of those animals which have received wounds in combat, no sick or dying seals are seen upon the islands. Out of the great numbers, thousands upon thousands of seals that must die every year from old age alone, not one have I ever seen here. They evidently give up their lives at sea.

Table showing the weight, size, and growth of the fur-seal, (Callorhinus ursinus,) from the pup to the adult, male and female.

[The weights and measurements were taken by Mr. Samuel Falconer and the writer on the killing-grounds at Saint George's Island, in 1873.]

Age.	Length.	Girth.	Gross weight of body.	Weight of skin.	Remarks.
	<i>Inches.</i>	<i>Inches.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
One week.....	12 to 14	10 to 10½	6 to 7½	1½	A male and female, being the only one of this class handled.
Six months	24	25	33	3	A mean of ten examples, males and females alike in size.
One year.....	38	25	39	4½	A mean of six examples, males and females alike in size.
Two years.....	45	30	58	5½	A mean of thirty examples, all males, July 24, 1873.
Three years.....	52	36	87	7	A mean of thirty-two examples, all males, July 24, 1873.
Four years.....	58	42	135	12	A mean of ten examples, all males, July 24, 1873.
Five years.....	65	52	200	16	A mean of five examples, all males, July 24, 1873.
Six years	72	64	280	25	A mean of three examples, all males, July 24, 1873.
Eight to twenty years.	75 to 80	70 to 75	400 to 500	45 to 50	An estimate only, calculating on their weight when fat, and early in the season.

The females, adults, will correspond with the three-year-old males in the above table, the younger cows weighing frequently only 75 pounds, and many of the older ones going as high as 120, but an average of 80 to 85 pounds is the rule.

The five and six year old males, when they first make their appearance in May and June, are very much heavier than at the time I weighed them in July; they are then, perhaps, when fat and fresh, fully one-third heavier than the exhibit on the table, but the cows and other classes do not sustain protracted fasts, and do not vary much through the season.

THE SEA-LION, (EUMETOPIAS STELLERI,) "SEE-VITCHIE" OF THE RUSSIANS.

This animal, although much below the fur-seal with reference to intelligence and physical organization, ranks next in natural order, and can, as well as its more sagacious and valuable relative, be seen to better advantage on these islands than elsewhere, perhaps, in the world.

By looking at the plate, a glance will show at once the marked difference between this animal and the *Callorhinus*. It has a really leonine appearance and bearing, greatly enhanced by the rich, golden-rufous of its coat, ferocity of expression, and bull-dog-like muzzle and cast of eye, not round and full, but showing the white, or sclerotic coat, with a light, bright-brown iris.

Although provided with flippers to all external view as the fur-seal, he cannot, however, make use of them in the same free manner. While the fur-seal can be driven five or six miles in twenty-four hours, the sea-lion can barely go two, the conditions of weather and roadway being the same. The sea-lions balance and swing their long, heavy necks to and fro, with every hitch up behind of their posteriors, which they seldom raise from the ground, drawing them up after the fore feet with a slide over the grass or sand, rocks, &c., as the case may be, and pausing frequently to take a sullen and ferocious survey of the field and the drivers.

The sea-lion bull of Bering Sea, when full-grown and in good condition, will measure off in length 11 to 12.5 feet from nose to tip of tail, (which is seldom over 3 or 4 inches long,) and girth 10. Unfortunately, I was not able to weigh one of these big bulls, and can, therefore, only estimate this weight at a thousand pounds, while, perhaps, some of the largest and finest old fellows will touch twelve to thirteen hundred; but I doubt it.

The sea-lion is polygamous, but does not maintain any such regular system and method in preparing for and attention to its harem like that so finely illustrated on the breeding-grounds of the fur-seal. It is not numerous, comparatively speaking, and does not "haul" more than a few rods back from the sea. It cannot be visited and inspected by man, being so shy and

wary that on the slightest approach a stampede into the water is the certain result. The males come out and locate on the narrow belts of rookery-ground, preferred and selected by them; the cows make their appearance three or four weeks after them, (1st to 6th June,) and are not subjected to that intense jealous supervision so characteristic of the fur-seal harem. The bulls fight savagely among themselves, and turn off from the breeding-ground all the younger and weak males.

The cow sea-lion is not quite half the size of the male, and will measure from 8 to 9 feet in length, with a weight of four and five hundred pounds. She has the same general cast of countenance and build of the bull, but as she does not sustain any fasting period of over a week or ten days, she never comes out so grossly fat as the male or "see-catch."

The sea-lion rookery will be found to consist of about ten to fifteen cows to the bull. The cow seems at all times to have the utmost freedom in moving from place to place, and to start with its young, picked up sometimes by the nape, into the water, and play together for spells in the surf-wash, a movement on the part of the mother never made by the fur-seal, and showing, in this respect, much more attention to its offspring.

They are divided up into classes, which sustain, in a general manner, but very imperfectly, nearly the same relation one to the other as do those of the fur-seal, of which I have already spoken at length and in detail; but they cannot be approached, inspected, and managed like the other, by reason of their wild and timid nature. They visit the islands in numbers comparatively small, (I can only estimate,) not over twenty or twenty-five thousand on Saint Paul's and contiguous islets, and not more than seven or eight thousand at Saint George. On Saint Paul's Island they occupy a small portion of the breeding-ground at Northeast Point, in common with the *Callorhinus*, always close to the water, and taking to it at the slightest disturbance or alarm.

The sea-lion rookery on Saint George's Island is the best place upon the Seal Islands for close observation of these animals, and the following note was made upon the occasion of one of my visits, (June 15, 1873:)

"At the base of cliffs, over 400 feet in height, on the east shore of the island, on a beach 50 or 60 feet in width at low water, and not over 30 or 40 at flood-tide, lies the only sea-lion

rookery on Saint George's Island—some three or four thousand cows and bulls. The entire circuit of this rookery-belt was passed over by us, the big, timorous bulls rushing off into the water as quickly as the cows, all leaving their young. Many of the females, perhaps half of them, had only just given birth to their young. These pups will weigh at least twenty to twenty-five pounds on an average when born, are of a dark, chocolate-brown, with the eye as large as the adult, only being a suffused, watery, gray-blue, where the sclerotic coat is well and sharply defined in its maturity. They are about 2 feet in length, some longer and some smaller. As all the pups seen to-day were very young, some at this instant only born, they were dull and apathetic, not seeming to notice us much. There are, I should say, about one-sixth of the sea-lions in number on this island, when compared with Saint Paul's. As these animals lie here under the cliffs, they cannot be approached and driven; but should they haul a few hundred rods up to the south, then they can be easily captured. They have hauled in this manner always until disturbed in 1868, and will undoubtedly do so again if not molested.

"These sea-lions, when they took to the water, swam out to a distance of fifty yards or so, and huddled all up together in two or three packs or squads of about five hundred each, holding their heads and necks up high out of water, all roaring in concert and incessantly, making such a deafening noise that we could scarcely hear ourselves in conversation at a distance from them of over a hundred yards. This roaring of sea-lions, thus disturbed, can only be compared to the hoarse sound of a tempest as it howls through the rigging of a ship, or the playing of a living gale upon the bare branches, limbs, and trunks of a forest-grove." They commenced to return as soon as we left the ground.

The voice of the sea-lion is a deep, grand roar, and does not have the flexibility of the *Callorhinus*, being confined to a low, muttering growl or this bass roar. The pups are very playful, but are almost always silent. When they do utter sound, it is a sharp, short, querulous growling.

THE DRIVE OF THE SEA-LIONS ON SAINT PAUL'S ISLAND.

The natives have a very high appreciation of the sea-lion, or *see-vitchie*, as they call it, and base this regard upon the superior quality of the flesh, fat, and hide, (for making covers for

their skin boats, *bidarkies* and *bidarrahs*,) sinews, intestines &c.

As I have before said, the sea-lion seldom hauls back far from the water, generally very close to the surf-margin, and in this position it becomes quite a difficult task for the natives to approach and get in between it and the sea unobserved, for, unless this silent approach is made, the beast will at once take the alarm and bolt into the water.

By reference to my map of Saint Paul's, a small point, near the head of the northeast neck of the island, will be seen, upon which quite a large number of sea-lions are always to be found, as it is never disturbed except on the occasion of this annual driving. The natives step down on to the beach, in the little bight just above it, and begin to crawl on all fours flat on the sand down to the end of the neck and in between the dozing sea-lion herd and the water, always selecting a semi-bright moonlight night. If the wind is favorable, and none of the men meet with an accident, the natives will almost always succeed in reaching the point unobserved, when, at a given signal, they all jump up on their feet at once, yell, brandish their arms, and give a sudden start, or alarm, to the herd above them, for, just as the sea-lions move, upon the first impulse of surprise, so they keep on. For instance, if the animals on starting up are sleeping with their heads pointed in the direction of the water, they keep straight on toward it; but if they jump up looking over the land, they follow that course just as desperately, and nothing turns them, *at first*, either one way or the other. Those that go for the water are, of course, lost, but the natives follow the land-leaders and keep urging them on, and soon have them in their control, driving them back into a small pen, which they extemporize by means of little stakes, with flags, set around a circuit of a few hundred square feet, and where they keep them until three or four hundred, at least, are captured, before they commence their drive of ten miles overland down south to the village.

The natives, latterly, in getting this annual herd of sea-lions, have postponed it until late in the fall, and when the animals are scant in number and the old bulls poor. This they were obliged to do, on account of the pressure of their sealing-business in the spring, and the warmth of the season in August and September, which makes the driving very tedious. In this way I have not been permitted to behold the best-conditioned drives, *i. e.*, those in which a majority of the herd is made up

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of fine, enormously fat, and heavy bulls, some four or five hundred in number.

The natives are compelled to go to the northeast point of the island for these animals, inasmuch as it is the only place with natural advantages where they can be approached for the purpose of capturing alive. Here they congregate in greatest number, although they can be found, two or three thousand of them, on the southwest point, and as many more on "Seevitchie Cammin" and Otter Island.

Capturing the sea-lion drive is really the only serious business these people on the islands have, and when they set out for the task the picked men only leave the village. At Northeast Point they have a barrabkie, in which they sleep and eat while gathering the drove, the time of getting which depends upon the weather, wind, &c. As the squads are captured, night after night, they are driven up close by the barrabkie, where the natives mount constant guard over them, until several hundred animals shall have been secured, and all is ready for the drive down overland to the village.

The drove is started and conducted in the same general manner as that which I have detailed in speaking of the fur-seal, only the sea-lion soon becomes very sullen and unwilling to move, requiring spells of frequent rest. It cannot pick itself up from the ground and shamle off on a loping gallop for a few hundred yards, like the *Callorhinus*, and is not near so free and agile in its movements on land, or in the water for that matter, for I have never seen the *Eumetopias* leap from the water like a dolphin, or indulge in the thousand and one submarine acrobatic displays made constantly by the fur-seal.

This ground, over which the sea-lions are driven, is mostly a rolling level, thickly grassed and mossed over, with here and there a fresh-water pond into which the animals plunge with great apparent satisfaction, seeming to cool themselves, and out of which the natives have no trouble in driving them. The distance between the sea-lion pen at Northeast Point and the village is about ten miles, as the sea-lions are driven, and occupies over five or six days under the most favorable circumstances, such as wet, cold weather; and when a little warmer, or as in July or August, a few seasons ago, they were some three weeks coming down with a drove, and even then left a hundred or so along on the road.

After the drove has been brought into the village on the kill-

ing-grounds, the natives shoot down the bulls and then surround and huddle up the cows, spearing them just behind the fore-flippers. The killing of the sea-lions is quite an exciting spectacle, a strange and unparalleled exhibition of its kind; and I cannot do better than to refer directly and silently to my illustrations of it. The bodies are at once stripped of their hides and much of the flesh, sinews, intestines, (with which the native water-proof coats, &c., are made,) in conjunction with the throat-linings, (*oesophagus*,) and the skin of the flippers, which is exceedingly tough and elastic, and used* for soles to their boots or "*tarbosars*."

As the sea-lion is without fur, the skin has little or no commercial value; the hair is short, and longest over the nape of the neck, straight, and somewhat coarse, varying in color greatly as the seasons come and go. For instance, when the *Eumetopias* makes his first appearance in the spring, and dries out upon the land, he has a light-brownish, rufous tint, darker shades back and under the fore flippers and on the abdomen; by the expiration of a month or six week, 15th June, he will be a bright golden-rufous or ocher, and this is just before shedding, which sets in by the middle of August, or a little earlier. After the new coat has fairly grown, and just before he leaves the island for the season, in November, it will be a light sepia, or vandyke-brown, with deeper shades, almost dark upon the belly; the cows, after shedding, do not color up so dark as the bulls, but when they come back to the land next year they are identically the same in color, so that the eye in glancing over a sea-lion rookery in June and July cannot discern any noted dissimilarity of coloring between the bulls and the cows; and also the young males and yearlings appear in the same golden-brown and ocher, with here and there an animal spotted somewhat like a leopard, the yellow, rufous ground predominating, with patches of dark-brown irregularly interspersed. I have never seen any of the old bulls or cows thus mottled, and think very likely it is due to some irregularity in the younger animals during the season of shedding, for I have not noticed it early in the season, and failed to observe it at the close. Many of the old bulls have a grizzled or slightly brindled look during the shedding-period, or, that is, from the 10th August up to the 10th or 20th of November; the pups, when born, are of a rich, dark chestnut-brown; this coat they shed in October, and take one much lighter, but still darker than their parents', but not a great deal.

THE WALRUS OF BERING SEA, (*OSMODON ARCTICUS*.)

I write "the walrus of *Bering Sea*," because this animal is quite distinct from the walrus of the North Atlantic and Greenland, differing from it specifically in a very striking manner, by its greater size and semi-hairless skin.

These clumsy beasts are, at the present time, only to be seen on Walrus Island, being so shy and timid that they have deserted the other islands as they were populated by man. In early days, or when the Russians first took possession, a great many walruses were found at Northeast Point and along the south shore of Saint Paul's Island, but with the landing of the traders and sea-hunters the walrus abruptly took its departure, and Walrus Island alone is now frequented by it, being isolated and seldom visited during the year by the natives.

It is of small commercial importance; the ivory is of poor quality, mostly porous, pithy, and yellow, while the oil is of a low grade, and the hide is quite valueless. But it is the main support of the Esquimaux far to the north, where it breeds upon the ice, the females never coming down to the Prybilov Group;—only males are to be seen on Walrus Island.

On this little island I have enjoyed a fine opportunity of studying and painting these uncouth animals from life, being able to easily approach to within a slight distance from the flanks of a herd of over five hundred walrus-bulls, which lay closely packed upon a low series of basaltic tables, elevated but little from the surf-wash. I sat upon a small rocky ledge only a few feet above and from four or five heavy bulls, being, however, on the leeward side.

I was surprised to observe the raw, naked appearance of the hide, a skin covered with a multitude of pustular-looking warts and pimples, without hair or fur, deeply wrinkled with dark red venous lines, showing out in bold contrast through the thick, yellowish-brown cuticle, which seemed to be scaling off in places, as if with leprosy. They struck my eye at first in a most unpleasant manner, for they looked like bloated, mortifying, shapeless masses of flesh; the clusters of swollen, warty pimples, of a yellow parboiled flesh-color, over the shoulders and around the neck suggested unwholesomeness forcibly.

This walrus is sluggish and clumsy in the water, and is almost

helpless on the rocks out of it, and can no more move on land, like even the lowest of the seals, *Phoca*, than can the hippopotamus run with the antelope; the immense bulk and weight compared with the size and strength of its limbs renders it quite impotent for terrestrial movement. Like the seal, it swims entirely under water when traveling, not rising, however, quite so frequently to breathe; then it "blows" not unlike a whale. On a cool, quiet morning in May, I watched a herd off the east coast of the island, tracing its progress by the tiny jets of vapor thrown off as the animals rose to respire.

The adult male is about 12 feet in length from nostrils to tip of tail and has 10 or 12 feet of girth, and one bull, shot by the natives on Walrus Island, July 5, 1872, was nearly 13 feet long, with the enormous girth of 14 feet. The immense mass of blubber on the shoulders and around the neck makes the head and posteriors look small in proportion and attenuated.

The strange flattened appearance of the head will be better understood by reference to the plate, where the nostrils, eyes, and ear-spots seem to be nearly placed on top of the head, the nasal apertures especially so, opening directly over the muzzle, oval, and about an inch in their greatest diameter.

The tusks, or canines, are set firmly under the nostril-apertures, in a deep, massive, bony pocket, giving a broad, square-cut front to the muzzle. They grow down, varying in size and weight from 8 or 10 inches in length to over 2 feet, and from five pounds to fifteen, usually bowed out somewhat in the middle, the ends approaching quite closely. The larger tushes have a diameter at the heel of a little more than $2\frac{1}{2}$ inches, tapering down to less than half an inch at the tip.

The upper lips are thick and gristly, full of short, stubbed, gray-white bristles, from one-half to three inches long. There are a few bristles set, also, on the chin of the lower jaw.

The eyes are small, but prominent, placed nearly on top of the head, protruding from their sockets like those of the lobster. They are rolled about in every direction when the animal is startled. The iris and pupil is less than one-fourth of the exposed surface; the sclerotic coat bulges out from the lids, and is of a dirty, mottled coffee-yellow and brown, with an occasional admixture of white; the iris, light-brown, with dark-brown rays and spots. The animal has the power to roll the eyes when aroused, seldom moving the head more than to elevate it; but the range of sight out of water is not well

developed, at least, for, after throwing small chips of rock down upon the walrus-bulls near me, causing only a stupid stare and low grunts of astonishment, I rose gently and silently to my feet, and stood boldly up before them, not more than ten feet away, but I was not noticed; had I, however, given them a little noise, or had I been standing hundreds of yards away from them, to the windward, they would have taken the alarm instantly, and tumbled off into the sea like so many hustled wool-sacks, for their sense of smell is keen.

The ears of the walrus are on the same line at the top of the head with the nostrils and eyes, the latter being midway between. The *parilion* is a slight fleshy wrinkle, or fold, not at all raised or developed, and from what I could see of the *meatus externus*, it was very narrow and small, but they are quick and sensitive in hearing.

The head of the walrus male, full grown, is, on an average, 18 inches long between the nostrils and the post-occipital region, and weighs from sixty to eighty pounds. I can only estimate the gross-weight of a mature, well-conditioned bull at two thousand pounds. The skin alone weighs from two hundred and fifty to four hundred pounds. It is two and three inches thick on the shoulders and around the neck, and nowhere less than half an inch deep.

It feeds exclusively upon shell-fish (*Lamellibranchiata*, or clams, principally) and the bulbous roots of certain marine grasses and plants, which grow in great abundance in the many broad, shallow lagoons and bays of the mainland coast. I have taken from the paunch of a walrus over a bushel of crushed clams, shells and all, which the animal had but recently swallowed, since digestion had scarcely commenced. Many of the clams in the stomach were not even broken; and it is in digging these shell-fish that the service rendered by the enormous tusches becomes evident.

In landing and climbing over the low, rocky shelves at "Morserovia," this animal is almost as clumsy and indolent as the sloth; they crowd up from the water, one after the other, in the most ungainly manner, accompanying their movements with low grunts and bellowings; the first one up from the sea no sooner gets composed upon the rocks for sleep than the second one comes prodding and poking with its blunted tusks, demanding room also, and causing the first to change its position to another still farther off from the water; and the second is in

turn treated in the same way by the third, and so on, until hundreds will be packed together on the shore as thickly as they can lie, frequently pillowing their heads or posteriors upon the bodies of one another, and not at all quarrelsome; as they pass all the time when on land in sluggish basking or deep sleep, they seem to resort to a very singular method of keeping guard, if I may so term it, for in this herd of three or four hundred bulls under my eye, though all were sleeping, yet the movement of one would disturb the other, which would raise its head in a stupid manner, grunt once or twice, and before lying down to sleep again, in a few moments, it would strike the slumbering form of its nearest companion with its tusks, causing that animal to rouse up for a few minutes also, grunt and pass the blow on to the next in the same manner, and so on, through the whole herd; this disturbance among themselves always kept some one or two aroused, and consequently more alert than the rest.

In moving on land they have no power in the hind limbs, which are dragged and twitched up behind; progression is slowly and tediously made by a succession of short steps forward on the fore feet. How long they remain out from the water at any one time I am unable to say. Unlike the seals, they breathe heavily and snore.

The natives told me that the walrus of Bering Sea is monogamous, and that the difference between the sexes in size, color, and shape is inconsiderable; that the female brings forth her young, a single calf, in June, usually on the ice-floes in the Arctic Ocean, above Bering Straits; that the calf closely resembles the parent in general proportions and color, but that the tusks which give it its most distinguishing expression are not visible until the end of the second year of its life; that the walrus mother is strongly attached to her offspring, and nurses it later in the season in the sea; that the walrus sleeps profoundly in the water, floating almost vertically, with barely more than the nostrils above water, and can be easily approached, if care is taken, to within easy spearing-distance; that the bulls do not fight as savagely as the fur-seal or sea-lion, the blunted tusks of the combatants seldom penetrate the thick hide; that they can remain under water nearly an hour, or about twice as long as the seals, and that they sink like so many stones immediately after being shot.

These animals are seldom molested on Walrus Island, the

natives not making any use of their flesh, fat, or hides ; and when they are shot, it is usually but a wanton undertaking by the people while visiting the island in June and July. For the purpose of getting eggs, the natives come from the village on Saint Paul's twice or thrice every year, and only at this season.

As the females never come down to the Prybilov Islands, I have not had an opportunity of observing them, and have in this way not been able to see this animal as well as I could wish. The reason why this band of males, many of them old ones, should be here by themselves all through the year is not plain to me ; the natives assure me that the females, or their young, never have been seen around the shores of these islands. Over in Bristol Bay great numbers of walrus congregate on the sandy bars and flats, where they are hunted to a considerable extent for their ivory.*

From descriptions of undoubted authority, the walrus of the North Atlantic is a much smaller animal than his relative in the Pacific, and not nearly so timid. It is also covered with a coat of short brownish-gray and black hair, while the male adult of Bering Sea is almost entirely naked. The skins and skeletons of the two animals are now in the Smithsonian collection.

* No walrus are now found south of the Aleutian Islands, but not more than thirty or thirty-five years ago small numbers of these animals were killed now and then on islands between Kodiak and Oonemak Pass. The greatest number of them south of the arctic circle will now be found in Bristol Bay and on the north shore of the peninsula.

The finest baidars that I have seen in this country were the skin-boats of the Saint Lawrence natives, which were made out of dressed walrus-hides sewed with sinews. The flesh is exceedingly rank in taste and smell when fresh, and, in fact, quite as offensive to the civilized palate then as when putrid. The natives clean the small intestine and dry it, which gives them a piece of light, transparent gut-parchment, over a hundred flet in length and five to six inches broad, that serves admirably as material for water-proof coats and trousers ; the flipper-skin makes the toughest soles for their hair-seal boots, while the hide itself answers for all styles of cordage.

CHAPTER VIII.

FISH AND FISHERIES.

THE FISHERIES OF ALASKA.

The value of the interests in the Territory classed under this head has been greatly overrated by writers, who have created an impression that there are extensive banks upon which cod may be taken, of the same quality and with the same success that attends the labors of fishermen on the Newfoundland Banks. This is untrue; but salmon, herring, and halibut are abundant, the salmon being the most valuable fishing interest, and only one of real commercial importance on the whole northwest coast.

There are not on this coast the variety and excellence of fish that is common to the Atlantic seaboard, and the shad and scup runs of the East are without a parallel in these waters. There are but few species here that have an economic value in regard to the subsistence of the natives, from Bering Straits to Dixon's Sound, viz: the salmon, cod-fish, sculpins or rock-cod, (*Sebastes*), and halibut. Of the first, there is, both in quality and quantity, enough to warrant commercial activity and importance; of the second, the quantity and quality are insufficient, in a business point of view, provided even the demand was always equal to the supply. Halibut might be cured in a small way; but the rock-cod and sculpins are worthless, except to the Indians, when unable to procure either salmon or cod; the famous "oolichan" is confined to the Nasse River.

These fish are distributed throughout the Territory as follows; and first in the order of importance is—

1. *Salmon*.—Almost every stream, big or little, that empties into the sea or its bays, throughout the whole Territory, islands, and mainland, is visited at regular periods by one or more species of this genus, in greater or less numbers, with the widest range of variation in quality; the runs of this fish in May and June up the large rivers in this Territory being enormous.

During the last ten or twelve years steps have been taken by competent men on the Frazer River and the Columbia to utilize and turn to profit these great runs of the finest fish; but the industry of salting them for exportation failed, and a new

business—that of *canning* the fish—is being engaged in extensively on the Columbia River; and, it would seem, with a fair profit, capital might be advantageously employed in the prosecution of salmon-canning at the mouths of all the principal streams in this country, as there is enough of the raw material to employ a large number of men several months in the year in its preservation and profitable disposition; and I see no reason why this industry should not become one of great importance in the Territory.

The demand for canned salmon will grow in proportion as it becomes known, for it is a superior article of food, either plain as it comes in the can, or pickled quickly after opening.

2. *Cod*.—This fish is the most widely distributed of any belonging to the waters of Alaska or the North Pacific and Bering Sea. It will be found on soundings, wherever a hook may be dropped in Bering Sea, south of the latitude of Saint Lawrence Island, all around the Aleutian Islands, the Alaskan Peninsular, Kodiak, and becomes scarce and fails to the eastward as far as Kenai and Copper River, and then from Sitka and Prince of Wales Island to Fort Simpson, where it is only caught for a few weeks in the year, when running in schools, passing usually up toward the north.

The immense area frequented by this fish will be at once appreciated by glancing at the map and noting the soundings, which show that nearly the whole of Bering Sea bounded or staked out by our islands is a single great bank, and that large areas south of the Aleutian Islands, the Peninsular, and Kodiak, are shoaled off in a similar manner. Nevertheless, the catch and quality of Alaskan cod is much inferior to our eastern fisheries.

There is cod enough, however, of fair quality, to supply the immediate home-consumption of a large population, should there ever be such in the history of the Territory, but the fishing-grounds are not valuable enough to induce capitalists to engage in taking and curing fish for exportation. This matter has been honestly tested by experienced fishermen, who have been trained on the eastern banks, and is therefore beyond doubt. At present, however, in securing the small supply required by local demand, the characteristic impatience of the people of this coast is strikingly shown; for, even could they sell their fish caught in the north at as good a rate as that of the imported stock, they, as a class, would be dissatisfied with the small profits.

The coast-cod average in this Territory, "from the knife," about three to five pounds, and the deep or outer water cod, of the same species, average about eight or ten, but they are not as plentiful as the smaller. The best banks in the Territory are those south of Unga Island, about the Shumagins and south of Kodiak. The catch is best off Unga.

3. *Halibut*.—Found throughout the Territory on soundings south of the sixtieth parallel of north latitude. Halibut are quite abundant and of excellent quality, but the climate is such that the fishermen cannot properly dry or cure them for exportation, even in small cargoes. They are, however, not abundant enough for exportation, and must therefore be regarded as only of local importance.

The other fish—*rock-cod*, *sculpin*, *white-fish*—peculiar to the rivers, &c., which are found along the coast and in the bays and estuaries, possess no special merit, and have no commercial importance, but they are valuable factors to the natives' existence.

It will be observed that the waters of the Territory of Alaska are well stocked with fish for home use; in the salmon interests, the natural wealth is great, and will doubtless be utilized sooner or later by *canning*, but that the experiment of salting cod and salting salmon has not been profitable for sale in the Australian, South American, and even in our own market. There are twelve to thirteen small cod-fishing vessels that supply the San Francisco trade, but it is a significant fact that out of this number nine or ten deserted the Alaskan banks last season, and went on nearly two thousand miles farther into the Ochotsk for their catch, where the fish are superior in quality and more plentiful.

It will not be untrue to assert, from what is now known in regard to the fishing-interests of Alaska, that there is nothing there that can be considered parallel or at all equal to the runs of cod, scup, shad, and mackerel of the New England coast, save the periodic visit of salmon, which come in truly magnificent number and condition.

In the small harbor of Woods's Hole, Mass., Professor Baird caught in his nets, during one summer, *over seventy species of food-fishes*. That cannot be done in the North Pacific, no matter when or where the naturalist or fisherman may choose to try. The variety and number of piscatorial life in this region is poor indeed when compared with that of the North Atlantic.

CHAPTER IX.

ORNITHOLOGY OF THE PRYBILOV ISLANDS.

BY DR. ELLIOTT COUES, U. S. A.

(Based on Mr. H. W. Elliott's manuscripts and collections.*)

Mr. Elliott's manuscripts and specimens having been submitted to me for elaboration in the present connection, an account of the birds of the islands is herewith rendered. His collections furnish the data for most of the technical portions of the memoir, while the biographical notices are, in substance, his own; these are placed between quotation-marks. The nomenclature and sequence of the species are adapted to the present paper from the latest systematic work upon American ornithology, the author's "Key to North American Birds," in which may be found a diagnosis of each species and variety not herewith described. The numeral prefix of each species is that which it bears in the author's "Check-List of North American Birds."

With the scientific names are given the English, and, in general, the Russian equivalents—the latter between quotation-marks. In most cases the synonyms and references of special pertinence are added.

GENERAL REMARKS ON THE BIRDS OF THE ISLANDS.

"While a few species of water-fowl come to these islands in innumerable numbers for the purpose of breeding, yet the list of birds to be met with here is a small one. It is, however, of exceeding interest to the naturalist, comprising many *desiderata* scarcely obtainable elsewhere.

"Over fifteen miles of the bold, high, basaltic, bluff shoreline of Saint George's Island is fairly covered with hundreds of thousands of nesting gulls (*Rissa*) and arries, (*Uria*), while

* The scientific readers of this report will, I am sure, approve of the reference of my MSS. to Dr. Coues for elaboration, as the revision of synonymy has become a serious matter in regard to the nomenclature of natural science, and, already, too many writers have added to existing confusion in this respect by attempting to do that which others than themselves are much better qualified for.—H. W. E.

down in the countless chinks and holes over the entire surface of the north side of this island millions of 'chooch-kies' (*Simorhynchus microceros*) breed, filling the air and darkening the light of day with their cries and fluttering forms. On Walrus Island the nests of the great white gull of the north (*Larus glaucus*) can be visited and inspected, as well also as those of the sea-parrot or puffin, (*Fratercula*), shags or cormorants, (*Graculus*), and the red-legged kittiwake, (*Larus brevirostris*.) These are all accessible on every side, affording the observer an unequaled opportunity of noticing these birds through the breeding-season, from its beginning in May until the end in September.

"Not one of the water-birds found on and around the islands is exempted from a place in the native's larder; even the delectable shags, 'oreelie,' are unhesitatingly eaten by the people, and indeed furnish, during the winter-season especially, an almost certain source of supply for fresh meat. The large, gaily-colored eggs of the 'arrie' (*Lomvia arra*) are gathered in June and July, without stint, for use, and might be packed away in lime-water by the barrel, so as to keep through the year, if any provident or thoughtful action was taken in the matter. Walrus Island would alone supply the whole demand from year to year. On the occasion of my visit there, July 5, 1872, six men loaded a bidarrahi, capable of carrying four tons, exclusive of crew, down to the water's edge with eggs, in less than three working-hours.

"During the winter-months the birds are almost wholly absent. They begin to make their first appearance, in any number, for the season, early in May, and by the middle or end of September the great body of the millions that have bred during this time go to sea, and are not again noted, save a few stragglers now and then, until they re-assemble next May, for the repetition of their reproductive processes. The stress of severe weather in the winter-months, driving snow-storms, and floating ice-floes brought down from the north, which shut the islands in, still, cold, and quiet, are cause enough for the disappearance of the water-fowl.

"The position of the islands is such as to lie somewhat outside of the migratory path pursued by the birds on the mainland, and, owing to this reason, they are only visited by a few stragglers from that quarter, and also from the Asiatic side. One

species, (*Strepsilas interpres*,) however, comes here every summer, for three or four weeks' stay, in great number, and gets so fat in feeding upon the larvæ found on the killing-grounds that it often bursts open when it falls, after being shot on the wing. Our robin (*T. migratorius*) was seen by myself, near Saint Paul's Village, one cool morning in October, (the 15th,) and the natives told me that it had been noticed before in this way, never staying more than a few days or a week, and being brought there, undoubtedly, by some storm or gale of wind taking it up and off from its path over the mainland. In the same manner hawks, owls, and numerous strange water-fowl visit the islands, but never remain there long.

"The Russians tried the experiment of bringing up from Sitka and Ounalashka a number of ravens, with the view of stimulating them to live and breed upon these islands, where they would be almost invaluable as scavengers; but the birds invariably, sooner or later, and within a short time, took flight for the mainland or the Aleutian Islands. At the time of present writing the Alaska Commercial Company have sent up to the village of Saint Paul's a number of domestic pigeons, and the experiment will be tried with them.

"The natives have always, and still do, keep a small number of chickens; and, where poultry is taken into the winter living-rooms of these people, they get return in eggs. But the maintenance of a hennery, owing to the long season of cold, stormy weather, compelling the chickens to hunt shelter for weeks at a time, is impracticable, regarded with a view of profitable recompense for time and care.

"Walrus Island is the most favorable spot, in this whole Alaskan country, to observe the nesting and breeding birds of Bering Sea. It is a low, lava rock, seven miles to the eastward of Northeast Point, with an area of less than five acres, rugged and bare of all vegetation, save a species of close-growing curly grass. Here the *Lomvia arra* and many gulls, cormorants, sea-parrots, and auks come to lay their eggs in countless numbers. The face and brow of the low, cliff-like sea-front are occupied almost exclusively by the 'arries,' (*Lomvia arra*,) which lay a single egg each, on the surface of the bare rock, and stand straddling over it while hatching, only leaving at irregular and short intervals to feed. Hundreds of thousands of these birds alone are thus engaged about the 29th of June

on this little island, standing stacked up together like so many bottles, as thickly as they can be stowed, making all the time a deep, low, hoarse, grunting noise. They quarrel among themselves incessantly, and in this way roll thousands of eggs off into the sea, or into crevices and fissures, where they are lost and broken.

"The 'arrie' lays but one egg. If this is removed or broken, she will soon lay another; but, if undisturbed after depositing the first, she undertakes the hatching at once. The size, shape, and coloration of this egg are exceedingly variable. A large proportion of the eggs become so dirty, by rolling here and there in the excrement while the birds tread and quarrel over them, as to be almost unrecognizable. The shell is very tough, and the natives, when gathering them, fill tubs, baskets, &c., on the cliffs, carry them down to the general heap collected near the boats' landing, and pour them out upon the rocks with a single flip of the hand, just as a basket of apples would be emptied; and, after this, they are again quite as carelessly handled when loaded into the 'bidarra,' sustaining through it all very little injury.

"The small grassy interior of the island, which is sharply margined by the surrounding breeding-belt of 'arries' on the shore-line, is the only place, I believe, in this sea where the great white gull (*Larus glaucus*) breeds. Among the little grassy tussocks here, it builds a nest of dry grass, sea-ferns, &c., very nicely laid up and rounded, and in which it lays usually three eggs, sometimes only a couple; in exceptional instances I have seen four. These big gulls could not breed on either of the other islands in this manner, for the foxes there would have the upper hand instantly; and the bird is too large to settle on the narrow shelf-edges of the cliffs, like the smaller gulls and other water-fowls.

"The red-legged kittiwake, (*Larus brevirostris*), and its cousin, *Larus tridactylus*, build in the most amicable manner together on the faces of the cliffs, associated with cormorants, sea-parrots, and auks, all together, and, with the exception of the latter, the nests are easy of access.

"As we land, the 'arries' fly from their eggs off and around for a short distance, and then settle down into the sea in platoons or files, swaying hither and thither with the movement of swell and tide, trailed out over the water like great whip-lashes.

Watch a boat as it approaches one of these swimming phalanxes and alarms it; out the birds sprawl, half swimming and half flying, making a noise like a shower of hail-stones falling upon a roof, as the scare spreads from bird to bird, until the whole vast flock is beating the water with a hundred thousand wings in almost vain endeavor to rise from the calm surface, for these birds in still weather have great difficulty in taking flight. They, however, succeed well and quickly when heavy swells or little wavelets lift them. A gull, on the contrary, rises gracefully and easily from the water, and, indeed, is the most attractive bird on the wing of all water-fowl."

"I have time after time been struck by the wonderful temerity of the foxes, (on Saint George's Island especially,) while secretly watching them as they were climbing up and down the faces of almost inaccessible cliffs, seeking eggs. They go on a full run or a stealthy tread over the brows of cliffs that fairly overhang the sea six and nine hundred feet below. They always bring the eggs up in their mouths, and carry them back from the brink of the precipice, where they leisurely suck them, usually biting the shell out at the large end. The 'arrie' suffers the most from these enemies, which are the only natural foes that the bird-kind has to contend with on these solitary islands."

1. ***Turdus migratorius***, LINN.—*Robin*. "Rap-o-loof."

Casual, and rarely seen; never resident. (Spec., October, 1872.)

"I was most agreeably surprised, one cool morning early in October, while walking up on the Village Hill, Saint Paul's Island, to see a robin, a red-breasted robin, silent and gloomy, hopping and fluttering before me. It had evidently been brought to the island by the gale which blew two days previously, and was even now casting about for a good chance to leave. In order that I might observe the length of time this old friend of mine would stay with us, I did not shoot him, but strolled out to the locality every morning and evening until the end of the third day, when I missed him. The natives recognized it as a chance visitor, though seen almost every year in this manner. Two weeks later I observed a small flock of *Ægiolhi*, (red polls,) which were passing over the island, alighting here and there to feed. They are regularly seen migrating to the southward every fall."

50a. **Anorthura troglodytes** var. **alascensis**, (Bd.) COUES.—

Alaskan Winter Wren. "Limmer-shin."

Troglodytes alascensis, BAIRD. Trans. Chicago Acad., i, 315, pl. 30, fig. 3, (1869.) Saint George's Is.

Anorthura alascensis, COUES. Key N. A. Birds, 87, (1872.)

Anorthura troglodytes var. *alascensis*, COUES. *Ibid.*, 351.

Troglodytes hyemalis var. *alascensis*, DALL. Proc. Cala. Acad. Sci., (Feb. 8, 1873.)

This interesting local form of *Anorthura* differs from the ordinary North American bird in its superior size and darker brown colors, and in the much greater length and caliber of the bill. In young birds the difference is less strongly marked. The dimensions of an adult in Mr. Elliott's collection are as follows: bill, along culmen, .58; wing, 1.90; tail, 1.30; tarsus, .62; middle toe and claw, .64. The corresponding dimensions of an average specimen of var. *hyemalis* are: .39, 1.80, 1.20, .62, .58.

"This brave little bird was first brought into notice by Mr. Dall, who collected a single specimen while on the island in 1868, and sent it to the Smithsonian Institution. In his brief note accompanying it he speaks of its being abundant there, while I, in 1873, shot almost every one that I saw, and yet at the end of the season, August 4, I had but seven specimens. It was seldom seen, but then again in 1874 they were quite numerous.

"It is not a migratory bird, but remains permanently upon the island. Its nest is built in small, deep holes and crevices in the cliffs. I have not myself seen it, but the natives say that it lays from eight to ten eggs, in a nest made of soft, dry grass and feathers, roofed over, with an entrance at the side to the nest-chamber, thus being of elaborate construction.

"The male is very gay during the period of mating and incubation, flying incessantly from plant to plant or rock to rock, singing a rather shrill and very loud song, and making, for a small bird, a great noise.

"I shot the young, fully fledged, on the 28th of July, differing only from the parent in having a much shorter bill, and in a general darker and more diffuse coloration.

"Although Saint Paul's Island is but twenty-seven miles to the northwest from Saint George's, not a single specimen of this little wren has been seen there. I made, during the whole season of 1872, unavailing search for it.

"The native name, 'limmer-shin,' signifies a 'chew of tobacco,'

and is given on account of the resemblance of this wee bird in size and color to a tobacco-quid."

Mr. W. H. Dall found this species to be resident and abundant on the rocky cliffs of Amaknak Island, Ounalashka, where, he says, "it is quite familiar and bold. It builds in the crevices of the rocks, but I was not able to find the nest. It has a cheerful and melodious note, and is, to some extent, gregarious, three or four being usually seen together. It was not seen in the Shumagins, though it may occur there."

144a. **Leucosticte tephrocotis** var. **griseinucha**, (BRDT.)

COUES.—Gray-eared Finch. "Pahtoshkie."

Linaria griseinucha, BRANDT. "Orn. Ross., (1842.)"

Leucosticte griseinucha, BP. Consp. Av., i, 537, (1850.)—BP. et SCHLEGEL. Monog. *Loxiens* 5, pl. xli, (young,) (1850.)—BD. B. N. Amer., 430, (1858.)—DALL et BANN. Trans. Chicago Acad. i, 282, (1869.)—COOP. B. Cal. i, 161, (1870.)—DALL, Pr. Cala. Acad., (Feb., 1873.)

Leucosticte tephrocotis var. *griseinucha*, COUES. Key, 130, fig. 77, (1872.)

Leucosticte griseogenys, GOULD. P. Z. S., 104, (1843,) and Voy. Sulphur, i, 42, pl. xxii, (1844.)

Leucosticte littoralis, BD. Trans. Chicago Acad., i, 317, pl. xxviii, fig. 1, (1869.)—COOP. B. Cal. i, 163, (1869.)—DALL. Proc. Cala. Acad., (Feb., 1873.)

Leucosticte tephrocotis var. *littoralis*, COUES. Key, 130, (1872.) (Cf., *ibid.*, 352.)

Numerous beautiful specimens of the adults of both sexes in high breeding attire, and others illustrating the earliest plumage of the young, are in the collection. There are no appreciable outward distinctions of sex. The bill at this season is black, the ash and black of the head are pure and well defined, the chocolate brown is rich, and the rosy tends to crimson. The very young birds are dark, sooty gray, overlaid with brown; a lighter and more rusty shade of the same edges the wing-feathers, and the bill is in part light colored.

Although this form is much larger than typical *tephrocotis*, and otherwise different in the *pictura* of the head, we do not find ourselves enabled to separate it specifically, since numerous intermediate specimens attest its intergradation with the former. Nor do we find it necessary to distinguish the slight variety, *littoralis*, by name; we refer it to var. *griseinucha*, considering both forms as the single arctic representative of *tephrocotis* proper.

"This agreeable little bird, always cheerful and self-pos-

sessed, is a regular and permanent settler on the islands, which it never leaves. In the depth of dismal winter, as well as on a summer's day, the pahtoshkie greets you with the same pleasant chirrup, wearing the same neat dress, as if determined to make the best of everything. It is particularly abundant on Saint George's, where its habits may be studied to best advantage.

"The pahtoshkie nests in a chink or crevice of the cliffs, building a warm, snug home for its little ones of dried grasses and moss, very neatly put together, and lined with a few feathers. The eggs vary in number from three to six, being generally four. They are pure white, with a delicate rosy blush when fresh; and measure .97 by .67 inch. The young break the shell at the expiration of twenty or twenty-two days' incubation, the labor of which is not shared by the male, who, however, brings food to his mate, singing the while, as if highly elated by his prospects of paternity. The chicks, at first, are sparsely covered with a sprinkling of dark-gray down, and in two or three weeks gain their feathers, fitting them for flight, although they do not acquire the bright rosy hues and rich brown of the parents the first year. Between the old birds there is no outward dissimilarity according to sex, the male and female being exactly alike in size, shape, and coloration.

"They feed upon various seeds and insects, as well as the larvæ which swarm on the killing-grounds. They are fearless and confiding, fluttering in the most familiar manner around the village huts. In the summer of 1873, a pair built their nest and reared a brood under the eaves of the old Greek church at Saint George's.

"The nests, of which I collected fifteen or twenty, are very neatly made up of dry grass and moss, thick, and compactly interwoven, placed on the faces of the basaltic and breccia cliffs which rise from the shore-line of the islands. These disintegrating tufa and breccia bluffs afford a thousand and one little pockets and crannies in which the pahtoshkie builds, secure from molestation by prowling foxes. It has no song, but utters a low, mellow chirp, alike either when flying or sitting. It is most abundant on Saint George's, where hundreds may be seen at any time during a short walk along the north shore. It consorts in pairs throughout the year, never going in flocks, and seldom flying or feeding alone."

Mr. W. H. Dall remarks upon the abundance of the bird on the Aleutians as well as on the Prybilov Islands. In August,

he says, it has no song, "except a clear chirp, sounding like 'wéet-a-wéet-a-wée-weet.' It was on the wing a great part of the time, avoiding alighting on the ground, but darting rapidly in a series of ascending and descending curves, now swinging on the broad top of an umbelliferous plant, now alighting on some ledge of the perpendicular cliff, jumping from point to point, seemingly delighted in testing its own agility." He found it particularly numerous in Ounalashka, where it is resident. A nest, which he discovered May 24, contained five white eggs, fresh; it was placed in a crevice of a rocky bank, about twelve feet above the beach, and was neatly built of grasses, lined with a few feathers.

152. **Plectrophanes nivalis**, (L.) MEYER.—*Snow Bunting*. "Snaguiskie."

Among Mr. Elliott's many specimens in pure black and white attire are a few, in the earliest plumage of the young, probably never seen in the United States. The general color is gray, overlaid slightly with a light-brown cast, the interscapular feathers having a dusky center. The gray fades on the breast into dull whitish, which occupies the rest of the under parts. Most of the secondary quills are white, with a dusky touch on the outer webs; the three inner ones, however, are black, with broad, chestnut-brown edging. Three lateral tail-feathers are mostly white.

"The snow-bird is another permanent resident of these islands, but one which, unlike the *Leucosticte*, is rather shy and retiring, nesting high on the rocky, broken uplands, and only entering the village during unusually severe or protracted cold weather.

"The snaguiskie builds an elegant and elaborate nest of soft, dry grass, and lines it warmly with a thick bed of feathers. It is placed on the ground, beneath some lava-slate, or at the foot of a boulder. Five eggs are usually laid, about the 1st of June; they are an inch long by two-thirds broad, of a grayish or greenish white, spotted sometimes all over, sometimes at or around the larger end only, with various shades of rich, dark-brown, purplish-brown, and paler neutral tints. Sometimes the whole surface is quite closely clouded with diffuse reddish-brown markings.

"The female assumes the entire labor of the three weeks' incubation required for the maturing of the embryos. During

this period the male is assiduous in bringing food, and, at frequent intervals, sings his simple but sweet song, rising, as he begins it, high up in the air, as the skylark does when caroling, and, with the end of the stave, dropping suddenly to the ground again. The young are early provided with a gray downy coating, which is speedily replaced by a plumage resembling that of the adult female, and, in less than four weeks from the day of hatching, the little snaguiskie is as big as its parents, and weighs more.

"The food of this species consists of the various seeds and insects peculiar to the rough, higher grounds it frequents. It never flies about in flocks, and at this season cannot be called gregarious, like the Lapland longspur, with which it is associated on these islands."

153. **Plectrophanes lapponicus**, (L.) SELBY.—*Lapland Longspur*.
"Karesch-navie snaguiskie."

We give a description of the breeding-plumage of the female, probably not generally known: Upper parts of the body, wings, and tail almost precisely as in the male. Cervical collar evident, but not sharply defined, nor so rich in color. Black of the crown variegated with pale tips of the feathers; white of the supra-ocular and post-auricular lines tinged with buff; no continuous pure black on the sides of the head, chin, or throat; sides of the head blackish, interrupted with grayish auriculars; throat similarly varied, but chin left nearly pure white, the pattern of the black which occurs in the male being thus clearly indicated, but interrupted and obscured; sides of the breast and belly with disconnected, sparse, sharp, slender, dark-brown streaks, instead of the pure black, continuous, broad and heavy stripes of the male; other under parts as in the male. Bill obscure yellowish, dusky at tip; feet dark brown, but not black. Dimensions slightly inferior to those of the male.

The eggs of the Lapland longspur are extremely variable in coloration—few more so. They range from a nearly uniform dark chocolate-brown, (much like those of a marsh-wren,) through a lighter chocolate in innumerable dots on a grayish-brown ground, to a peculiar brownish-white ground, variously clouded and smirched with chocolate, and having, besides, irregular sharp spots, scratches, and straggling lines of blackish brown. The general aspect of these eggs is like that of an oriole's or blackbird's. They measure .80 to .90 in length by

.55 to .60 in breadth. The labels of various specimens before us from Arctic America record a nest of "hay," lined with deers' hair, or feathers.

"The longspur, a resident bird, is a delightful vocalist, singing all through the month of June in the most charming manner, rising high in the air, and hovering on fluttering wings over its setting mate. The song is only too short, lasting but a few moments, though continually repeated. The bird is much more shy and reserved than the common snaguiskie, rarely entering the village. It is most abundant on Saint Paul's, where, unlike the snowflake, it seeks the low, grassy grounds, both for food and nesting, being never found among the rough boulders chosen for a home by the other species of *Plectrophanes*.

"Two nests which I found were built in tussocks of grass, on a low 'hummocky' flat, between the village and the main ridge of Saint George's, sheltered and half concealed beneath a drapery of withered grass. In each case the mother-bird did not fly away till I almost stepped on the nest, when she quickly disappeared, in perfect silence. One nest contained four, and the other five eggs, rather smaller than a snowflake's, and of a rich, gray-brown color, with deep shades of brown running over them in spots and suffused lines.

"These nests were not discovered until the 7th of July, at which date the eggs in both were perfectly fresh. They were, probably, not laid until about the end of June. The young appear in the same manner as those of *P. nivalis*. The males do not assume the distinctive coloration of their sex until the next season. The natives say that very severe weather sometimes drives these birds away, although the other *Plectrophanes* is never forced to leave."

226. ***Corvus corax*, L.—Raven.** "Var-rone."

As noted in Mr. Elliott's general introduction, the experiment of introducing ravens was unsuccessfully tried by the Russians.

"The natives still claim that if a number of *young* birds were brought here and raised, they could be induced to remain upon the islands during the whole season; that the failure to keep those ravens brought up from Ounalashka, several years ago, was due to the fact of their being old birds.

"At Ounalashka there is a Greek Catholic church, with a small cupola, surmounted, as is usual, by a large crucifix. Upon

this these ill-omened, croaking birds perch at all hours of the day, defiling the cross and tinned dome-roof below them, without exciting the slightest sense of the ridiculous or impropriety among the people there, the stranger only being amused."

341. **Falco sacer**, FORST.—*Gyrffalcon*.

Falco sacer, FORST. Phil. Trans. lxxii, 423, (1772.)—BAIRD. Trans. Chicago Acad. i, 271, (1869.)—COUES. Key N. A. Birds, 213, (1872.)

Finding nothing definite in Mr. Elliott's manuscripts respecting this bird, we conclude that it does not reside on the islands, where, however, its casual presence is attested by a specimen in the collection labeled "Saint Paul's, March, '73." It is a young bird, apparently in its second year, which had doubtless wandered or been forced out of its usual way.

However we may interpret the relation subsisting between the various forms of *Hierofalco*, the name *Falco sacer* (FORST.) is specially pertinent to the present one, and has priority over the several designations more frequently employed.

"Hawks, like owls, are occasionally seen on the islands, the latter during the winter, especially. They do not remain long, and never breed, although the natives on Saint George's stoutly assert that a 'small brown owl' breeds there. I made unavailing search for it." Very probably the hawk-owl, (*Surnia ulula*.)

396. **Charadrius fulvus**, GM.—*Golden Plover*.

Charadrius fulvus, GM. Syst. Nat., i, 687, (1788.)

Charadrius plumialis, HORSF. Trans. Linn. Soc., xii, 187, (1822.)

Charadrius xanthocheilus, WAGLER. Syst. Av., *Charad.* sp. 36, (1827.)

Charadrius taitensis, LESS. Man. Orn. ii, 321, (1828.)

Charadrius virginianus, JARD. et SELB. Ill. ii, pl. 85, (circ. 1830.)

Charadrius glaucopus, FORST. Descr. An., ed. Licht., 176, (1844.)

Charadrius virginicus, BLYTH. Cat. B. Mus. As. Soc., 262, (1849.)

Charadrius longipes, TEMMINCK.

Charadrius auratus orientalis, TEMM. et SCHLEG. Fn. Japonica.

Charadrius auratus, SCHRENK. Amur Reise, 410, (1860.)

Pluvialis fulvus, SCHLEGEL. Mus. Pays-Bas, *Cursores*, p. 50, (1864.)

Pluvialis fulvus, taitensis, xanthocheilus, longipes, BP. Compt. Rend., 417, (1856.)

The single specimen of golden plover preserved by Mr. Elliott is of special interest and importance, since it is conclusively determined to be the true Asiatic *fulvus*, and not the North American var. *virginicus*. This discovery represents an addition to our *Fauna*, for *C. fulvus* has not hitherto been recognized

as North American. We have made the comparison with numerous examples before us from various Asiatic and Pacific localities, finding the present specimen indistinguishable. Length, about 9.50; wing, 6.40; tail, 2.60; tarsus, 1.60; middle toe and claw, 1.10; culmen, .95. There is a yellowish suffusion about the head, particularly along the superciliary line, which is hardly to be noticed in the ordinary North American bird. The specimen was taken on Saint Paul's, May 2, 1873. "A few stragglers land in April, or early in May, on their way north to breed, but never remain long. They return in greater number in the latter part of September, and grow fat upon the larvæ generated on the killing-grounds, leaving for the south by the end of October."

406. **Streptilas interpres**, L.—Turnstone. "Krass-nie Ko-lit-skie."

The numerous specimens all alike indicate an interesting approach to the peculiar features of var. *melanocephalus*, in the extent and intensity of the black areas on the head, neck, and back. The chestnut, in fact, is reduced mainly to a scapular patch, some edging of the feathers of the interscapular region, and a diffuse area on the wing-coverts. The upper parts of the body are otherwise black, relieved by the broad, pure white area of the lower back and rump, and varied with white on the crown and cervix. The front, sides of head and neck, throat, and entire breast are intense black, relieved by loreal, gular, auricular, and latero-cervical white areas.

"The turnstone arrives in flocks of thousands about the third week in July, and takes its departure about the 10th of September. It does not breed here. On its arrival it is quite poor in flesh, but, feeding upon the larvæ and maggots of the killing-grounds, it rapidly gains, and at length becomes extraordinarily fat—so fat that frequently it bursts open as it falls to the ground when shot on wing.

"It is a very handsome bird when in full plumage, with its bright-red legs, snowy, black-banded breast, and back tinged with brown and green reflections. Its well-known curious actions, in pursuit of its ordinary food, have given it its name. I met with it at sea, eight hundred miles from the nearest land, flying northwest toward the Aleutian Islands."

410. **Lobipes hyperboreus**, (L.) Cuv.—Northern Phalarope.

The egg of this species, not yet generally well known, presents the following characters, taken from the unparalleled

series in the Smithsonian Institution, collected at various points in the Yukon and Anderson River region: The ground varies from dark greenish olive, or brownish olive, through various lighter drab tints, nearly to a buffy brown, occasionally to a light gray. The markings are usually heavy and bold, consisting of large spots, and still larger blotches or splashes resulting from their confluence, mingled with dots and scratches in interminable confusion. In general pretty evenly distributed, they often tend to aggregate about the larger end, in rarer instances forming a perfect wreath. In a few instances all the markings are mere dots. As a rule, the size and heaviness of the markings bear some proportion to intensity of the ground color; the markings are dark bistre-brown, chocolate, and sometimes still lighter brown. The longest and narrowest egg of several dozen measures 1.30 by only .75; a short, thick egg gives only 1.10 by .82; the average is about 1.20 by .80. The eggs are three or four in number, oftenest the latter, and are generally laid in June, oftenest in the latter half of the month. They are deposited in a slight depression of the ground, variously lined with a little withered vegetation.

"A few stray couples breed upon the islands, nesting around the margins of the lakelets. The egg I was unable to find, but I secured several newly-hatched young ones which were very pretty and interesting. They are only two or three inches long, with a bill about a third of an inch in length, and no thicker than an ordinary dressing-pin. The down of the head, neck, and upper parts is rich brownish yellow, variegated with brownish black, the crown being of this color mixed with yellow, and a long stripe extends down the back, flanked with one over each hip, another across the rump, and a shoulder-spot on each side. The under parts are grayish silvery white. This bird, when startled, or solicitous for the safety of its young, utters a succession of sonorous 'tweeet' sounds, quickly repeated, with long intervals of silence."

411. **Phalaropus fulicarius**, (L.,) Bon.—*Red Phalarope*.

The nidification of this species is similar in all respects to that of *L. hyperboreus*, and the egg cannot be distinguished with certainty in any given instance. They average, however, somewhat larger—about 1.25 by .85. The largest specimen measured 1.30 by .90; the shortest, 1.15 by .90. Numerous specimens, in the Smithsonian collection, were taken early in July, at Franklin Bay, on the arctic coast, by Mr. R. Macfarlane.

"Though much more abundant than the preceding, at certain times, I am satisfied that the red phalarope does not breed here. It is found, like the other, by the marshy margins of the lakelets, solitary or paired, but never in flocks. The earliest arrivals occur in June, but the birds re-appear in greatest number about the 15th of August. They all leave by the 5th of October."

426 bis. ***Tringa crassirostris***, TEMM. et SCHLEGEL.—*Thick-billed Sandpiper*. "Ko-lits-kie."

Tringa crassirostris, TEMM. et SCHLEGEL. *Fauna Japonica*, 107, pl. 64, (1846.) (?)—DALL. *Amer. Naturalist*, vii, 635, (Oct., 1873.)—COUES. *Check-List*, 85, No. 426 bis, (1873.)

The most interesting result, in some respects, of Mr. Elliott's ornithological researches is the determination of the occurrence of this species in abundance on the Prybilov Islands, where it breeds. This discovery adds a species, previously unrecognized as North American, to our *Fauna*. The announcement was lately made by Mr. W. H. Dall, as above, upon the strength of one of Mr. Elliott's earlier specimens from Saint Paul's. This example was identified by Mr. J. E. Harting,* of London, well known for the extent and accuracy of his investigations of the Limicoline groups, to whom it was transmitted for the purpose by the Smithsonian Institution. Mr. Elliott's later collections contain numerous specimens, among them several newly-hatched young, hitherto probably unknown. No description of the species having been published in this country, we subjoin the following :

Adult, in breeding-plumage. (No. 64249, Mus. S. I.—676, Coll. H. W. E.—July 22, 1873. Saint George's.)—With somewhat the general appearance of a *Tringa alpina*, but the black area on the under parts pectoral, not abdominal. Bill about as long as the head, straight to the end,† compressed, stout, and high at

* Deferring to this excellent authority on Limicoline birds, and without a copy of the work in which *Tringa crassirostris* was originally described, at hand, we have presented it under the same name. But almost certainly it is *not* the bird described by Schlegel as *Tringa crassirostris* in the *Museum des Pays-Bas*. The characters there given are those of a different bird altogether. By no latitude of interpretation can they be rendered applicable to the present species. In case our bird, here described in detail, be found not the same as the true *Tringa crassirostris*, it may appropriately be named *T. ptilocnemis*, in allusion to the feathered tibiae. We consider it most nearly allied to *Tringa maritima*, next to which it may take its place in the system.

† In other specimens, and usually, the bill is considerably longer, exceeding the head, and decidedly decurved at the end.

the base, with very long nasal fossæ, reaching to within $\frac{1}{8}$ inch of the tip, and deep at the base; the groove of the under mandible co-extensive in length, but linear throughout. Feathers on side of under mandible extending beyond those on the upper; the interramal feathers projecting still a little ways farther. Legs very short, (much as in *Tringa maritima*;) tibial feathers reaching nearly or quite to the suffrago; tarsus shorter than the bill, or than the middle toe and claw. Wings and tail as usual throughout the genus.

A coronal area, the upper back, interscapular region and scapulars black, completely variegated with rich chestnut-brown, paler ochery brown and whitish, the body of each feather being black, with one or another or all of these various edgings; the coronal separated from the interscapular markings by a grayish-white, dusky-streaked cervical interval. Lower back and rump and upper tail-coverts blackish brown or grayish black, only varied with an occasional chestnut-edged feather. Wing-coverts grayish brown, with narrow white edging, the greater with broad, definite white tips. Secondaries nearly all pure white, a few of the outermost, and innermost also, with grayish-brown touches near the end. Primaries grayish brown with white shafts, except at tip, and fading to white on the inner webs toward the base; several of the innermost, also, largely white on the outer web, and with definite white tipping. Central tail-feathers brownish black; next pair abruptly paler, grayish; the rest white, or nearly so, with a faint gray tint. Front and sides of head, superciliary line, the tufts of flank-feathers, and entire under parts, white, interrupted on the breast with a large but not perfectly continuous nor well-defined blackish area, and marked on the upper breast and sides with a few narrow, sharp, blackish shaft-lines, a dusky auricular patch. Legs and bill dark. Length, apparently about 9.50 inches; wing, about 5; tail, 2.50; bill, 1.10 to 1.40; tarsus, .90 to 1.00; middle toe and claw, 1.05 to 1.20.

The sexes are not distinguishable by any outward mark. We have before us no specimen in complete fall-plumage; but one taken June 9, still retaining at that date the past season's plumage, for the most part, enables us to predicate the autumnal and winter vesture. The difference is entirely analogous to that seen in various other sandpipers. It consists in the great development and intensity of the chestnut edgings of the feathers of the upper part, to the restriction of their black fields, and to the exclusion, nearly complete, of the pale ochery

and whitish edgings which make up the characteristic variegation of the breeding-plumage, in the absence of any dividing cervical interval between the coloration of the crown and that of the back, and especially in the strong, complete suffusion of the sides of the head and the whole throat with tawny brown. The pectoral area is only indicated by scattered blackish feathers, being in the fall probably still more obscure, or rather replaced merely by a few dusky streaks or spots.

Newly-hatched young, (taken early in July.)—These interesting little creatures, two or three inches long, are very prettily marked. The down of the under parts is silvery white; that of the upper is rich reddish brown, varied with black, and with curiously sharp, whitish dots of definitely rounded contour, appearing like spots of mildew. Each such spot is about as large as a pin's head, and, examined with a lens, is seen to be the enlarged, circumscribed, brushy end of a downy plume, whence several tiny bristles project. Each such plume is white basally, then black for a distance, ending in the whitish tuft. The areas thus dotted correspond, consequently, to the areas of black variegation; but there is, also, a black, undotted loreal spot, frontal line, and a few other markings. The bill is mostly black, very short and slender; the legs are comparatively long and stout, and appear to have been light-colored.

Nearly-fledged, not quite grown, young, (taken late in July.)—Several specimens retaining down, or traces of it, about the head and neck, otherwise completely feathered. The upper parts are much as in the adults in the breeding-season, as to the colors of the variegation, but the markings are in simple curved lines rather than sharp V-shaped patterns, and the edgings are much narrower. The edgings of the wing-coverts have an ochery cast. The interior tail-feathers have rusty edgings. The throat and breast are more or less suffused with pale rusty; there is no black pectoral area, but the jugulum, breast, and sides have an indefinite number of suffused, dusky markings.*

* In Mr. Harting's letter upon the subject, handed us by Professor Baird, to whom it was addressed, the following occurs, in substance: *T. crassirostris*, T. & S., SCH., M. P. B., *Sclop.*, 1864, 28; BLAK., *Ibis*, 1862, 315-330.—HAB., China, Japan, Java, Borneo.—SYN., *Schœniclus magnus*, GOULD, P. Z. S., 1848, 39; B. Aust., vi, pl. 33; *Tringa magna*, BP., C. R., 1856; *Tringa tenuirostris*, GOULD, Hdbk. B. Aust., ii, 1835, 230, (*nec* HORSE., Linn. Trans., xiii, 1820, 192, quæ *Totanus stagnatilis*, L.) "Temmick & Schlegel say, (*l. c.*) 'This

The following measurements of a number of adult specimens will illustrate the size and shape, and, to a great extent, the normal variations in dimension of the species :

Measurements.

Locality.	Date.	S. I. No.	Coll. No.	Sex.	Wing.	Tail.	Culmen of bill.	Tarsus in front.	Middle toe and claw.
Saint George's Island	July 22	64249	676	♂	5.10	2.50	1.12	0.90	1.03
Do.	July 22	64250	677	♂	5.20	2.60	1.23	1.09	1.10
Do.	July 4	64251	590	♂	5.10	2.30	1.10	0.94	1.16
Do.	July 7	64252	597	♂	5.00	2.50	1.20	0.95	1.06
Do.	July 7	64253	600	♂	5.10	2.80	1.45	1.00	1.15
Do.	June 19	64254	462	♂	5.15	2.75	1.40	0.98	1.08
Do.	July 7	64255	602	♂	5.10	2.40	1.30	0.97	1.12
Do.	July 7	64256	601	♂	5.18	2.70	1.41	0.95	1.13
Do.	July 7	64257	596	♂	4.80	2.50	1.25	0.90	1.12
Do.	July 4	64258	585	♂	5.00	2.50	1.30	0.96	1.15
Do.	July 4	64259	587	♂	5.05	2.40	1.25	0.97	1.07
Do.	July 7	64260	675	♂	5.25	2.80	1.42	0.95	1.20
Do.	July 1	64265	574	♂	5.35	2.75	1.40	1.00	1.10
Do.	July 4	64266	588	♂	5.30	2.70	1.45	0.98	1.20
Do.	July 7	64267	598	♂	4.90	2.50	1.20	0.96	1.14
Do.	July 7	64268	599	♂	4.90	2.30	1.30	0.91	1.10

"This is the only wader that breeds upon the Prybilov Islands, with the marked exception of a stray couple now and then of *Phalaropus hyperboreus*. It makes its appearance early in May, and repairs to the dry uplands and mossy hummocks, where it breeds. The nest is formed by the bird's selection of a particular mossy bunch, and there setting. It lays four darkly-blotched pyriform eggs, and hatches within twenty days. The young come from the shell in a thick yellowish down, with dark-brown markings on the head and back, getting the plumage of their parents and taking to wing as early as the 10th of August; and at this season old and young flock together for the first time, and confine themselves to the sand-beaches and surf-margins about the islands for a few weeks, when they take

species belongs to the same type as the Knot, (*T. canutus*), but is much more robust in size, the bill is longer, the tarsi are longer, and the toes more robust, (this is a mistake); 'finally, it differs in the very different coloration of the plumage, notably in the breeding-season.'" * * * "It seems to me that the bird is in every respect a large dunlin, (*T. cinclus*), which it resembles much more nearly than it does *canutus*, not only in regard to the structure of the bill and feet, but in the character of the breeding-plumage," &c. Now, our *T. ptilcnemis* bears a wonderful superficial resemblance to an overgrown dunlin, but its affinities, as shown by the feathered tibiae, and tarsus shorter than the middle toe, are entirely with *T. maritimus*, as already said, and some plumages very closely resemble the extensively-whitened winter-dress of the latter.

flight by the 1st or 5th of September, and disappear until the opening of the new season.

"It is a most devoted and fearless parent, and will flutter in feigned distress around by the hour, uttering a low piping note should one approach its nest. It also makes a sound exactly like our tree-frogs, and until I had traced the matter to this source, I searched several weeks unavailingly for the presence of these reptiles, misled by the call of this bird."

A set of four eggs of this species, the full complement, taken by Mr. Elliott,* June 19, 1873, on Saint George's, are perhaps the first specimens which have reached naturalists; certainly the first we have had in this country. They appear to have been nearly or quite fresh at the date mentioned. The egg is rather a peculiar one; of all the sandpiper's eggs before us, it most resembles that of *Tringa maritima*. The shape is regularly pyriform, as usual in this family. Measurements of the four examples are: 1.55×1.08 ; 1.52×1.05 ; 1.50×1.08 ; 1.48×1.05 . The ground is nearly clay-color, but with an appreciable olivaceous shade; the markings are large, bold, and numerous, of rich, burnt-umber brown, of varying depth, according to the quantity of the pigment. These surface-markings occur all over the shell, except the extreme point, and are solidly massed by confluence on the larger half of the egg; all the markings are strong, as if laid on freely with a heavily-charged brush. With these surface-spots occur numerous shell-markings of the same character, but, of course, obscure, presenting a stone-gray or purplish gray shade; some of them look as if the color of the surface-spots had "run" and soaked into the olivaceous drab of the general surface.

* The eggs were first discovered by Mr. George R. Adams, agent of the Alaska Commercial Company, Saint George's Island. He, in order that they should be identified, notified Mr. Elliott of their position, who immediately shot the parent and secured the eggs. Mr. Elliott has had frequent occasion to acknowledge the courtesy and facilities for natural-history work furnished by the agents of the Alaska Commercial Company on both islands, Dr. H. H. McIntyre and Mr. Adams, above mentioned. To the last-named gentleman he is especially indebted for many desiderata. Mr. Samuel Falconer, assistant agent, and Drs. Otto Cramer and Meany, physicians on the two islands, are also among the few to whom Mr. Elliott's grateful obligations are due. From Dr. Cramer we have reason to anticipate a very valuable and interesting paper upon the stomach and intestinal parasites of the fur-seal, which he was engaged upon when Mr. Elliott took his departure from the islands, August 10, 1873.

433. ***Limosa uropygialis***, GOULD.—*White-rumped Godwit.*

Limosa uropygialis, GOULD.—BD. Trans. Chicago Acad., i, 320, pl. 32, (1869).—DALL and BANN. *Ibid.*, 293.—COUES. Key N. A., Birds 258, (1872.)

This well-known Old World species, lately added to our fauna, as above, is readily distinguished by the black and white barring of the upper tail-coverts. In winter the upper parts are pale gray, with dusky shaft-lines, and the under parts are nearly white—a condition never shown by our other species. In full plumage, the white of the rump and upper tail-coverts is more or less tinged with rusty, and the upper parts are brownish black, everywhere variegated with rusty. Bills of different specimens before us range in length from $3\frac{1}{2}$ to $4\frac{1}{2}$ inches; those of the adults are mostly dark, but in the young fully the basal half is light-colored—dull whitish in the dried state.

Mr. Elliott did not take the eggs of this species, but two examples were secured by Mr. Dall, June 18, 1868, at Kutlik, Alaska. These differ as much from each other as eggs of this species do from those of other species. The ground of one is quite greenish olive; of the other, pale olive-gray. In the former, the markings are all subdued neutral tints, apparently in the shell; in the latter, the markings are nearly all on the surface, and quite bright chocolate-brown. In both cases the markings are numerous and of indeterminate shape, mostly small, and generally distributed, though tending to aggregate at the butt, where alone they lose their distinctness in coalescing to form a splashed area. Size, 2.20×1.45 ; 2.25×1.50 .

“Migratory only, never breeding here. Comes in a straggling manner early in May, passing northward with little delay, and re-appears toward the end of August in flocks of a dozen to fifty.”

440. ***Heteroscelus incanus***, (GM.) COUES.—*Wandering Tattler.*

Scolopax incana, GMEL. Syst. Nat., i, 658, (1788).—LATH. Ind. Orn., ii, 724, (1790.)

Totanus incanus, VIEILL. Dict. Deterv., vi, 400, (1816.)

Heteroscelus incanus, COUES. Key N. A. Birds, 261, (1872.)

Tringa glareola, PALL. Zoog. Rosso-As., ii, 194, pl. 60, (1811.)

Totanus brevipes, VIEILL. Dict. Deterv., vi, 400, (1816).—CASS. Pr. A. N. S., viii, 40, (1856.)

Heteroscelus brevipes, BAIRD. B. N. A., 734, pl. 88, (1858).—DALL. Tr. Chic. Acad., i, 293, (1869.)

Totanus fuliginosus, GOULD. Voy. Beagle; Birds, 130, (1841).—GRAY. G. of B., iii, pl. 154.

Scolopax undulata, FORST. Descr. Anim., ed. Licht., 173, (1844.)

Totanus pulverulentus, MÜLL. Verhand., 153, (1844.)—SCHLEGEL, Fauna Japan, pl. 65.

Totanus oceanicus, LESS. Comp. Buff., 244, (1847.)

Totanus polynesia, PEALE. Voy. Vinc. and Peac.; Birds, 237, (1848.)

Totanus griseopygius, GOULD. B. Aust., vi, pl. 38.

Gambetta brevipes, *fuliginosa*, *pulverulenta*, *oceanica*, *griseopygia*, BONAPARTE.

Two specimens are contained in Mr. Elliott's collections.

Migratory regularly, but does not breed here. It comes every year early in June, and subsequently re-appears toward the end of July, when it may be obtained on the rocky beaches. It never visits the uplands, and is a very shy and quiet bird.

443. ***Numenius borealis***, (FORST.) LATH.—*Esquimaux Curlew*.

This curlew only visits the Prybilov Islands in the same manner as the *Limosa*. It breeds, apparently in great numbers, in the Anderson River region, to judge from the numerous sets of eggs in the Smithsonian forwarded by Mr. R. Macfarlane. The usual nest-complement is four, made up usually the third week in June. The nest is placed on a barren plain, and made of decayed leaves placed under the eggs in a depression of the ground. The eggs vary to the great extent usual among waders. The ground is olive-drab, either tending more to green, to gray, or to brown in different instances. The markings are always numerous and bold, of the dark chocolate, bistre, and sepia browns of different depths, together with the usual stone-gray shell-markings. These always tend to aggregation at the larger end, or, at least, are more numerous on the major half of the egg, though the distribution is sometimes nearly uniform, and in no instance is the small end entirely free from spots. In one set the large end is almost completely occupied by a dense confluence of very dark markings. The smallest, and at the same time shortest, egg measures only 1.90×1.40 ; the longest and narrowest, 2.12×1.33 ; an average egg is 2.00×1.45 .

We may refer, in this connection, to a species of curlew lately ascertained to inhabit Alaska, as one which may be expected to occur also on the Prybilov Islands. This interesting addition to our fauna is the *Numenius femoralis* of Peale—a species about as large as *N. hudsonicus*, and somewhat resembling it, but readily distinguished by the curious long bristly filaments which tip the abdominal feathers, and other characters. A

male specimen was taken by F. Bischoff at Fort Kenai, Alaska, May 18, 1869, and is now in the Smithsonian. (See Vigors, Zool. Journ., iv, 356; and Zool. Voy. Blossom, 28.)

A single specimen only of the Esquimaux curlew was taken by Mr. Elliott on Saint Paul's Island, June, 1872. None other than this one was seen by him.

482. **Philacte canagica**, (SEVAST.) BANN.—*Emperor Goose. Painted Goose.*

Anas canagica, SEVAST. Nov. Act. Acad. St. Peters., xiii, 346, pl. 10, (1800.)

Anser canagicus, BRANDT. Bull. Sc. St. Peters., i, 37, (1836.)
BRANDT. Descr. et Ic. An. Rosso-As., 7, pl. 1, (1836.)

Chloephaga canagica, BONAP. Comptes Rendus, (1856.)—BAIRD.
B. N. A., 763, (1858.)—DALL and BANN. Trans. Chic. Acad.,
i, 296, (1869.)—DALL. Proc. Cal. Acad., (Feb., 1873.)

Philacte canagica, BANN. Proc. Phila. Acad., 131, (1870.)—
COUES. Key, 283, (1872.)

A set of five eggs, taken by Mr. Dall in Kúselvak Slough, June 20, 1868 are much elongated and nearly equal at either end. The color is white, but with fine pale-brown dotting, giving a general light dirty-brown aspect. Specimens measure 3.33×3.10 ; 3.40×2.90 , &c.

“Visits the islands only as a straggler, sometimes landing so exhausted that the natives capture a whole flock in open chase over the grass, the birds being unable to use their wings for flight. I found the flesh of this bird, contrary to report, free from any unpleasant flavor, and, in fact, very good. The objectionable quality is only skin-deep, and may be got rid of by due care in the preparation of the bird for the table.”

Mr. Dall's interesting note may be appended, in further illustration of the history of this species:

“This magnificent bird abounds in profusion in the Kúselvak Slough, or mouth of the Yukon, to the exclusion of all other species. My endeavors to reach that point being unavailing, I was obliged to do my best to obtain specimens elsewhere. It is quite scarce around the Kwichpak Slough and on the sea-coast. By offering a large reward, I obtained four fine specimens from the marshes around Kutlik. It is the largest of the geese of the country, and the delicate colors of the body, with the head and nape snow-white, tipped with rich amber-yellow, are a beautiful sight. The eye is dark-brown; feet, flesh-color. The eggs are larger and longer than those of *A. gambeli*, and rather brown fulvous, the color being in minute dots. It lays

on the ground, like the other geese. The Eskimo name is *Nachowth'luk*. The raw flesh and skin have an intolerable odor of garlic, which renders it a very disagreeable task to skin them, but when cooked this entirely passes away, and the flesh is tender and good eating.

"This goose arrives about June 1, or earlier, according to the season. As soon as the eggs are hatched the birds begin to molt. I saw half-molted specimens at Pastolik, July 29, 1867. It remains longer than any other goose, lingering until the whole sea-coast is fringed with ice, feeding on *Mytilus edulis* and other shell-fish, and has been seen as late as November 1 by the Russians. It usually goes in pairs, or four or five together, rather than in large flocks. Its note is shriller and clearer than that of *A. gambeli* or *B. hutchinsi*, and it is shyer than the other geese, except the black brant."

According to Mr. Dall, the emperor-goose does not occur in the Aleutian Islands from Ounalashka eastward.

485a. ***Branta canadensis*, var. *leucopareia*, (BRDT.) COUES.—**

White-collared goose. "Chornie Goose."

Anser canadensis, PALLAS, *nee auct.* Zoog. Rosso-As., ii, 230, (1811.)

Anser leucopareius, BRANDT. Bull. Ac. Acad. St. Petersb., i, 37, (1836.) BRANDT. Descr. et Ic. Anim. Rosso-As., 13, pl. 2, (1836.)

Bernicla leucopareia, CASSIN. Ill. 272, pl. 45, (1855.)—BD. B. N. A., 764, (1858.)—DALL. Trans. Chic. Acad., i, 295, (1869.)

Branta leucopareia, GRAY. Hand-list, iii, 76, No. 10580, (1871.)

Branta canadensis var. *leucopareia*, COUES. Key 284, Fig. 185 b, (1872.)

There is no reasonable question that this is anything more than a race of the common *B. canadensis*. The supposed specific characters, not very tangible at best, are not entirely constant.

According to Mr. Dall, this goose is abundant on the coast about the mouth of the Yukon, where it breeds, but it is rare at Nulato or farther inland. The eggs were obtained at Pastolik.

"Occasionally straggles to the islands in small squads of ten to thirty, evidently driven by high winds from their customary line of migration along the mainland. Though not breeding here, it spends, occasionally, weeks at a time on the lakelets and uplands, before taking flight either north or south, as the season may be."

488. ***Anas boschas*, (L.)—Mallard.**

"A pair bred during the season of 1872, on Polavina Lakelet, Saint Paul's Island, and several were observed later in the

fall. The mallard was also noted on Saint George's Island, but it is certainly not a regular visitor of either island."

492. **Mareca penelope**, (L.) BP.—*Widgeon*.

It is an interesting fact that the widgeon which visits the Prybilov Islands is not *M. americana*, which would have been anticipated, but the true *M. penelope*, as Mr. Elliott's specimens attest.

"It is seldom seen, *never in pairs*, does not breed on the islands, and apparently the few individuals noted during two years' observation were wind-bound or astray.

508. **Harelda glacialis**, (L.) LEACH.—*Long-tailed Duck*. "Saafka."

"Common and resident. It breeds on the lakelets and sloughs of Saint Paul's, in limited numbers.

"This is a very noisy bird, particularly in the spring, when, with the breaking up of the ice, it comes into the open reaches of water with its peculiar, sonorous, and reiterated cry of *ah-naah-naah-yah*, which rings cheerfully upon the ear after the silence and desolation of an ice-bound arctic winter."

The eggs of this species, according to the sets before me, are six or seven in number, of the usual shape and smooth texture of shell; one set is more decidedly pale greenish than the other, which is lighter, and rather gray, slightly inclining to creaminess. They measure 2.20×1.50 , down to 1.90×1.40 . One set was taken June 22, the other July 5.

510. **Histrionicus torquatus** (L.) BP.—*Harlequin Duck*.

"Common on and around the island shores, idly floating amid the surf in flocks of fifty or sixty, or basking and preening on the beaches and outlying rocks. It may be seen all the year round, excepting only when forced away by the ice-floes. Its nest, however, eluded my search; and, although I am quite confident that it breeds on either the rocky beaches or the high ridges inland, the natives themselves were equally ignorant of its eggs.

"My experience of this bird, it will be observed, differs from Mr. Dall's, who states that it 'is an essentially solitary species, found, alone or in pairs, only in the most retired spots, on the small rivers flowing into the Yukon, where it breeds.' (*Trans. Chicago Acad.*, i, 298.) I did not find it particularly wild or shy, and numbers are killed by the natives every fall or spring. It is a remarkably silent bird; I heard from it no cry what-

ever during the whole year. It is a most gregarious duck; solitary pairs never stray away from the flock. The females seem to outnumber the males, two to one."

511. **Somateria stelleri**, (PALL.) NEWT.—*Steller's Eider*.

- Anas stelleri*, PALL. Spic. Zool., vi, 35, pl. 5, (1769.)
Clangula stelleri, BOIE. Isis, 564, (1822.)
Fuligula stelleri, BP. Syn. B. U. S. 394, (1828.)
Macropus stelleri, NUTT. Man., ii, 451, (1834.)
Polysticta stelleri, EYTON. Hist. Brit. B., 79, (1836.)—BD. B. N. A., 801, (1858.)
Eniconetta stelleri, GRAY. List Gen. of B., 95, (1840.)
Harelda stelleri, KEYS, et Blas. Wirb. Europ., 230, (1840.)
Heniconetta stelleri, AGASS. Ind. Univ., 178, (1846.)
Somateria stelleri, NEWT. P. Z. S., 400, (1861.)—COUES. Key, 291, (1872.)
Anas dispar, SPARRM. Mus. Carls., pl. vii, viii, (1786.)
Fuligula dispar, STEPH. Shaw's Gen. Zool., xii, 206, (1824.)
Stelleria dispar, BP. Comp. List B. Eur. and N. A., 57, (1838.)
Anas occidua, BONN. et VIEILL. Ency. Met., i, 130, (1823.)

"A few of these ducks were observed, but not secured, on Saint Paul's, in the spring of 1872. Two were shot at the East Point, Saint George's, the same year. It is only a straggler."

As several experienced ornithologists have stated, Steller's duck is a true eider in all essential respects. Various views of its systematic position which have been entertained are indicated by the foregoing synonymy.

An egg of Steller's duck, in the Smithsonian, from the Petersburg Museum, through H. E. Dresser, esq., collected in Kamtschatka, measures 2.20×1.60 , and is like that of the common eider in shape, color, and texture of shell.

534. **Graculus bicristatus**, (PALL.) GRAY. *Red-faced Cormorant*.
 "Oreel."

- ? *Red-faced Cormorant* or *Shag*, PENNANT & LATHAM. (Arct. Zool., 11, 584; Gen. Syn. vi, 601. Kamtschatka.)
 ? *Pelecanus urile*, GM. Syst. Nat., 1, 575, (1788.)—LATH. Ind. Orn. ii, 888, (1790.)
Phalacrocorax bicristatus, PALL. Zoog. Rosso-As., ii, 301, pl. 75, f. 2, (1811.)
Graculus bicristatus, GRAY. Gen. of Birds. Hand-list, iii, 128, No. 11129.—BD. Tr. Chic. Acad., 1, 321, pl. 33, (1869.)—DALL & BANN. *Ibid.*, 302.—COUES. Key, 304, (1872.)
Urile bicristatus, BP., *partim*. Comp. Av., 11, 175, (1851.)
 " *Phalacrocorax pelagicus*, PALL." Zoog. Rosso-As., ii, 303, pl. 76, (1811.)

The cormorant, which swarms on the Prybilov Islands, appears to be unquestionably the bird of Pallas, which is most

probably the red-faced cormorant, *P. urile*, of earlier authors. In adult plumage it is readily recognized by the naked red skin which entirely surrounds the base of the bill, somewhat carunculate, and the blue base of the under mandible, as well as by the other points noticed in the later treatises above quoted. In the great confusion subsisting among authors respecting the North Pacific cormorants, we do not venture to cite several names more or less probably synonymous.

Several eggs of this cormorant, brought in by Mr. Elliott, are covered with the white, chalky incrustation; in a maximum amount of depth and irregularity, the shell being very pale bluish beneath. They measure about $2\frac{1}{2}$ inches long by $1\frac{1}{2}$ wide, being thus narrowly elongate, though little more pointed at one end than at the other. They are all much soiled with the filth of the nest.

"This cormorant, the only one of its tribe visiting the Seal Islands, is a common bird, and is found the whole year round. The terrible storms in February and March are unable to drive the "shag" away from the sheltered cliffs of the island, while all other species, even the big northern gull, depart for the open water south.

"It comes on to the cliffs to make its nest and lay, the earliest of the birds in this sea. Two eggs were taken from a nest on the reef, Saint Paul's Island, June 1, 1872, which is over three weeks in advance of the other water-fowl, almost without exception. The nest is large, carefully rounded up, and built upon some jutting point or narrow shelf along the face of a cliff or bluff; in its construction sea-ferns, (*Sertulariæ*), grass, &c., are used, together with a cement made largely of their excrement.

"The eggs are usually three in number, sometimes four, and, compared with the size of the bird, are very small. They are oval, of a dirty, whitish gray, green, and blue color, but soon become soiled; for although the bird's plumage is sleek and bright, yet it is exceedingly slovenly and filthy about the nest. The young come from the shell at the expiration of three weeks' incubation, without feathers, and almost bare even of down. They grow rapidly, being fed by the old birds, who eject the contents of their stomachs, such as small fish, crabs, and shrimps all over and around the nest. In about six weeks the young cormorant can take to its wings, being then fully as large and heavy as the parents; but it is not until the beginning of its second year that it has the bright plumage and metallic

gloss of the adult, wearing, during the first year, a dull drab-brown coat, with the brilliant colors of the base of the bill and gular sac subdued.

"This shag is a bold and very inquisitive bird, and utters no sound whatever except when flying over and around a boat or ship, which apparently has a magnetic power of attraction for them. When they are hovering and circling around in this way, I have heard a low, droning croak come from them.

"The cormorant cannot be called a bird of graceful action at any place, either on the wing or on shore. Its flight is a quick beating of the wings, (which are usually more or less ragged,) with the neck and head stretched out horizontally to the full length. It is exceedingly inquisitive, flying around again and again to satisfy its curiosity, but never alighting on a boat or ship, though coming close enough sometimes to be almost touched by hand. It is very dirty on the rocks, and does not keep its nest in tidy trim like the gulls; but in regard to its plumage, it cannot be surpassed, or even equaled, by any bird of Bering Sea for brilliant gloss and glittering sheen. It fairly shimmers, when in the sunlight, with deep bronze and purple reflections, as though clothed in steel armor.

"In their stomachs I have found almost invariably the remains of small fish and a coil of worms, (*Nematoda*.)

"As this bird is found during the whole winter, in spite of severe weather, perched on the sheltered bluffs, the natives regard it with a species of affection, for it furnishes the only supply that they can draw upon for fresh meat, soups, and stews, always wanted by the sick; and were the shags sought after throughout the year, as they are during the short spell of intensely-bitter weather that occurs in severe winters, driving the other water-fowl away, they would certainly be speedily exterminated. They are seldom shot, however, when anything else can be obtained."

Diomedea brachyura, TEMM.—*Short-tailed Albatross*.

"Twenty or thirty years ago, when whaling-vessels were reaping their rich harvests in Bering and the Arctic Seas, the albatross was often seen about the islands, feeding upon the whale-carrion which might drift on shore. But with the decrease of the whale-fishery the birds have almost disappeared. Only a single individual was noted during my two years' residence. This was taken by Dr. Meany, on the north shore of Saint George's.

"It is common around Ounalashka Island, where I saw a large number, on my way to San Francisco, in August, 1873."

582a. *Fulmarus glacialis* var. *rodgersi*, (CASS.) COUES.—*Rodgers's Fulmar*. "Lupus."

Fulmarus rodgersii, CASS. Proc. Phila. Acad., 290, (1862.)—COUES. *op. cit.*, 29, (1866.)—BAIRD. Tr. Chicago Acad., i, 323, pl. 34, fig. 1, (1869.)—DALL et BANN. *Ibid.*, 303.

Fulmarus glacialis var. *rodgersi*, COUES.—Key N. A. Birds, 327, (1872.)

Distinguished from the ordinary fulmar by the restriction of the darker slate-gray mantle, most of the wing-coverts and some of the secondaries being white.

An egg of this fulmar, procured by Mr. Elliott, is much more elongate than the only specimen of *F. glacialis* before me, and the shell is even rougher than in the latter, with innumerable raised points and minute fossæ. It measures 2.90 in length by 1.90 in breadth, and is scarcely more pointed at one end than at the other. The color is white, much soiled, in this instance, with adventitious yellow discoloration. The description applies to the whole of a large series examined.

"This is the only representative of the *Procellariæ* I have seen on or about the Prybilov Islands. It repairs to the cliffs, especially on the south and east shores of Saint George's, comes very early in the season, and selecting some rocky shelf, secure from all enemies save man, where, making no nest whatever, it lays a single large, white, oblong-oval egg, and immediately commences the duty of incubating. It is one of the most devoted of all water-fowl to its charge, for it will not be scared from the egg by any demonstration that may be made in the way of throwing rocks or yelling, and will even die as it sets rather than take to flight, as I have frequently witnessed.

"The fulmar lays by 1st to 5th of June. The egg is very palatable, fully equal to that of our domestic duck—even better. The natives lower themselves over the cliffs, and gather a large number of eggs every season on Saint George's Island.*

* But it is hazardous work, and these people on St. George seldom gather more than they want at the time of taking. The sensation experienced by the writer, who has dangled over these precipices on a slight thong of raw-hide, with the surf boiling three or four hundred feet below, and loose rocks rattling down from above, any one of which was liable to destroy life, is one not to be expressed by language, and which, I think, quite sufficient excuse for the natives to be content with just as few eggs as possible.—H. W. E.

"The *Lupus* never flies in flocks; it pairs early, and is then exceedingly quiet. I have never heard it utter a sound save a low, droning croak, when disgorging food for its young.

"The chick comes out a perfect puff-ball of white down, gaining its first plumage in about six weeks. It is a dull gray, black at first, but by the end of the season it becomes like the parents in coloration, only much darker on the back and scapularies.

"They are the least edible of all the birds about the islands. Like others of the family, they vomit up the putrid contents of their stomachs upon the slightest provocation."

540. ***Stercorarius pomatorhinus*, VIEILL.**—*Pomarine Jäger*. "Raz-boi-nik."

Larus parasiticus, MEY. et WOLF. *Tasch. Deutsch.*, 11, 490, (1810.)

Larus crepidatus, GM. *L. N.*, i, 602, (1788.) (Qu. tes *Sterc. striatus* BRISS.)

Lestris striatus, EYTON. *Br. Birds*, 53.

Stercorarius pomarinus, VIEILL. *Nouv. Dict. d'Hist. Nat.*, xxxii, 158, (1819.)—COUES. *Proc. Phil. Acad.*, 129, (1863.)

Stercorarius pomatorhinus, COUES. *Key*, 309, (1872.)

Cataractes pomarinus, STEPH. *Gen. Zool.*, xiii, 216, pl. 24, (1825.)

Coprotheres pomarinus, REICH, *Syst. Av.*, 52, (1580.)

Cataractes parasita var. *camtschatica*, PALLAS. *Zoog. Rosso-As.*, ii, 312, (1811.)

"A rare visitor. The specimen secured was the only one seen on the islands. It was found on the high, mossy uplands, perched in a listless attitude on a tussock of grass."

541. ***Stercorarius parasiticus*, (BRÜNN.) GRAY.**—*Parasitic Jäger*.

Catharacta parasitica, BRÜNN. *Orn. Bor.*, 37, (1764.)

Larus parasiticus, LINN. *Syst. Nat.*, i, 226, (1765.)

Cataractes parasita, PALL. *Zoog. R. A.*, ii, 310, (1811.)

Lestris parasita, ILLIGER. *Prod.*, 273, (1811.)

Lestris parasitica, KEYS et BLAS. *Wirb. Eur.*, 1, 240, (1840.)

Stercorarius parasiticus, GRAY. *Gen. of B.*, 10, 652, (1849.)—LAWR.

B. N. A., 839, (1858.)—COUES. *Pr. Phila. Acad.*, 133, (1863.)—

DALL et BANN. *Tr. Chicago Acad.*, i, 303, (1869.)

Lestris richardsoni, SW. *F. B. A.*, 11, 433, pl. 73, (1831.)

Stercorarius richardsoni, COUES. *Proc. Phila. Acad.*, 135, (1863.)

Cataractes richardsoni, MACGILLIVRAY. *Man. Orn.*, ii, 257, (1842.)

Catharacta coprotheres, BRÜNN. *Orn. Bor.*, 38, (1764.)

Lestris coprotheres, DESMURS. *Traité Oöl.*, 551, (1860.)

Stercorarius crepidatus, VIEILL. *Nouv. Dict.*, xxxii, 155, (1819.)
(Not of Gmelin.)

Lestris crepidata, DEGLAND. *Mem. Soc. Roy. Lille*, 108, (1838.)

Stercorarius cepphus, SW. *F. B. A.*, ii, 432, (1831.)

Lestris hardyi et spinicauda, BP. *Consp. Av.*, ii, 210, (1856.)

"I have seen but four or five examples of this species, which may be rated as an infrequent visitor. It may be found upon the grassy uplands, where it will alight and stand dozing in an indolent attitude for hours. No one of the three species of *Stercorarius* was observed to breed here."

Numerous eggs of this species from the barren grounds of the Anderson River region, and the arctic coast to the eastward, offer the following characters: The ground color is as various, and of the same shades, as that already mentioned under head of *Numenius borealis*, and in fact the whole aspect of the egg, markings included, is quite similar. But although pointed, they have not the peculiar pyriform shape usual among *Limicola*. I find no specimens heavily marked at the butt, though the tendency is to a wreath by confluence around the larger end. In some specimens the markings are all small and scratchy, and distributed with "uniform irregularity" over the whole surface. A certain proportion of stone-gray shell-markings always appears to accompany the various chocolate and other browns of the surface. Specimens range from 2.40×1.70 to 2.00×1.50 , averaging nearer the former dimension.

The eggs of the next species cannot be distinguished from those of the present with certainty, since, though they average less in size, the larger specimens overlap the measurements of even average *parasiticus*. A fair specimen is 2.10×1.50 ; the smallest examined measured only 1.90×1.40 .

542. ***Stercorarius buffoni***, (BOIE.) COUES.—*Long-tailed Jäger*.

? *Catharacta cepphus*, BRÜNN. Orn. Bor., 36, (1764.)

Lestris cepphus, KEYS et BLAS. Wirb. Eur., i, 240, (1840.)

Stercorarius cepphus, GRAY. Gen. of B., iii, 652, (1849).—LAWR. B. N.

A., 840, (1858).—COUES. Proc. Phila. Acad., 243, (1861.)

? *Harus parasiticus*, LATH. Ind. Orn., ii, 819, (1790.)

Lestris parasiticus, TEMM. Man. Orn., iv, 501, (1840).—SW. & RICH. F. B. A., ii, 430, (1831.)

Stercorarius longicaudatus, BRISSON.—VIEILL. Nouv. Diet., xxxii, 157, (1819.)

Lestris longicaudatus, THOMP. Nat. Hist. Ireland, iii, 399, (1851.)

Cataractis longicaudatus, MACGILL. Man. Orn., ii, 258, (1842.)

Lestris buffoni, BOIE. Isis, 562-576, (1822.)

Stercorarius buffoni, COUES. Proc. Phila. Acad., 136, (1863).—DALL et BANN. Trans. Chic. Acad., i, 304, (1869).—COUES. Key N. A. Birds, 310, 1872.

Lestris lessoni, DEGLAND. Mem. Soc. Roy. Lille, (1838.)

Lestris crepidata, BREHM. Naturg. Eur. Vog., 747, (1823.)

"Seldom seen. The specimen in my collection is one of

the only two I ever observed on the islands. When I came upon them, July 29, 1872, they were apparently feeding upon insects, and upon a small black berry which ripens on the highlands," (the fruit of the *Empetrum nigrum*.)

543. **Larus glaucus**, BRÜNN.—*Glaucous Gull*. *Burgomaster*. "Chikie."

"This large, handsome bird is restricted by reason to Walrus Island alone, although it comes sailing over and around all the islands, in easy, graceful flight, every hour of the day, and frequently, late in the fall, will settle down by hundreds upon the carcasses on the killing-grounds. But upon Walrus Island this bird is at home, and there lays its eggs in neat nests, built of sea-ferns and dry grass, placed among the grassy tussocks on the center of the island :—there are no foxes here.

"It remains by the islands during the whole season. Though it is sometimes driven by the ice to the open water fifty to a hundred miles south, it returns immediately after the floe disappears.

"The 'chikie' lays as early as the 1st to 4th of June, depositing three eggs usually within a week or ten days. These eggs are large, spherically oval, having a dark grayish-brown ground, with irregular patches of darker brown-black. They vary somewhat in size, but the shape and pattern of coloring is quite constant.

"The young *burgomaster* comes from the shell at the expiration of three weeks' incubation, in a pure-white, thick coat of down, which is speedily supplanted by a brownish-black and gray plumage, with which the bird takes flight, having nearly the size of the parent. This dark coat changes within the next three months to one nearly white, with the lavender-gray back of the adult; the legs change from a pale-grayish tone to the rich yellow of the mature condition, and the bill also passes from a dull-brown color to a bright yellow with a red spot on the lower mandible.

"It has a loud, shrill cry, becoming soon very monotonous by its constant repetition, and also utters a low, chattering croak while coasting.

"It is a very neat bird about its nest, and keeps its plumage in a condition of snowy purity. It is not very numerous; I do not think that there were more than five or six hundred nests on Walrus Island at the time of my visit, in 1872."

552. *Larus tridactylus* var. *kotzebui*, (BP.) COUES.—*Pacific Kittiwake*. "Chornie-naushkie goverooskie."
Rissa kotzebui, BP. Consp. Av., 11, 226, (1856.)—COUES. Pr. Phila. Acad., 305, (1862.)—COUES. Pr. Phila. Acad., 207, (1869.)
Larus tridactylus, DALL & BANN. Tr. Chic. Acad., 1, 305, (1869.)
Larus tridactylus var. *kotzebui*, COUES, Key, 314, (1872.)

We have called attention, in our publications above quoted, to the fact that the North Pacific kittiwake has the hind toe better formed than that of the Atlantic bird; and this is the sole basis of the supposed species.

Although thus so similar to the true *Larus tridactylus* that it cannot be specifically distinguished, and also totally distinct from the next species, there has been a strange confusion regarding it. I do not venture now to add to the foregoing synonymy several names more or less doubtfully here applicable. Bonaparte quotes as synonymous, *Rissa nivea* of Bruch, J. f. O., 1855, 285; and also queries *R. brachyrhyncha* of Bruch, *ibid.*, 1853, 103. No one of the four species of *Rissa* described by Mr. Lawrence, in 1858, in Baird's work, pp. 854, 855, belongs here.

"This kittiwake breeds here by tens of thousands, in company with *R. brevirostris*, coming at the same time, but laying a week or ten days earlier; in all other respects it corresponds in habit, and is in just about the same number. It is a remarkably constant bird in coloration, when adult, for I have failed to observe the slightest variation in plumage among the great numbers here under my notice.

"In building its nest it uses more grass and less mud-cement than the *brevirostris* does. The eggs are more pointed at the small end and lighter in the ground-color, with numerous spots and blotches of dark brown. The chick is difficult to distinguish with certainty from the *brevirostris*, and it is not until two or three weeks have passed that any difference can be noted in the length of bill and color of feet.

"Like *Rissa brevirostris*, the male treads the female on the nest, and nowhere else, making a loud, shrill, screaming sound during the ceremony."

553. *Larus brevirostris*, (BRANDT.)—*Short-billed or Red-legged Kittiwake*. "Goverooskie."
Rissa brevirostris, BRANDT.—LAWR. B. N. A., 855, (1858.)—DALL & BANN. Tr. Chicago Acad., i, 305, (1869.)
Larus brevirostris, COUES. Key N. A. Birds, 315, (1872.)

- Larus brachyrhynchus*, GOULD. P. Z. S., (July 25, 1843.)—GOULD.
 Voy. Sulphur, 50, pl. 34, (—.) Not of RICHARDSON.
Rissa brachyrhyncha, BP. Consp. Av., ii, 223, (1856.)—COUES.
 Proc. Phila. Acad., 306, (1862.)
Rissa nivea, LAWR. B. N. A., 855, (1858.) (Excl. Syn. Not *Larus*
niveus; PALL.)

This excellent species will instantly be distinguished from the preceding by its short bill, and especially by its rich coral, vermillion, or lake-red legs, (drying straw-yellow.) There is no possibility of confounding the two, although their synonymy has become involved to such an extent that the task of disentangling it is almost hopeless. The names above quoted are of unquestionable pertinence here; several others that might be quoted are preferably left untouched.

"This beautiful gull, one of the most elegant of birds on the wing, seems to favor these islands with its presence to the exclusion of other land, coming here by tens of thousands to breed. It is especially abundant on Saint George's Island. It is certainly by far the most attractive of all the gulls; its short, symmetrical bill, large hazel eye, with crimson lids, and bright-red feet, contrasting richly with the snowy-white plumage of the head, neck, and under parts.

"Like *Larus glaucus*, this bird remains about the islands during the whole season, coming on the cliffs for the purpose of nest-building, breeding by the 9th of May, and deserting the bluffs when the young are fully fledged and ready for flight, early in October.

"It is much more cautious and prudent than the 'arrie,' for its nests are placed on almost inaccessible shelves and points, so that seldom can a nest be reached unless a person is lowered down to it by a rope passed over the cliff.

"Nest-building is commenced by this bird early in May, and completed, usually, not much before the first of July. It uses dry grass and moss, cemented with mud, which it gathers at the margin of the small fresh-water sloughs and ponds scattered over the islands. The nest is solidly and neatly put up, the parent birds working in the most diligent and amiable manner.

"Two eggs are the usual number, although occasionally three will be found in the nest. If these eggs are removed, the female will renew them, like the 'arrie,' in the course of another week or ten days. They are of the size and shape of the common hen's egg, but colored with a dark-gray ground, spotted and blotched with sepia-brown patches and dots. Once in a while

an egg will have on its smaller end a large number of suffused blood-red spots.

"Both parents assist in the labor of incubation, which lasts from twenty-four to twenty-six days. The chick comes out with a pure-white downy coat, and pale whitish-gray bill and feet, resting helplessly in the nest while its feathers grow. During this period it is a comical-looking object. The natives capture them now and pet them, having a number every year scattered through the village, where they become very tame, and it is not until fall, when cold weather sets in and makes them restless, that they leave their captors and fly away to sea.

"This bird is very constant in its specific characters. Among thousands of them I have never observed any variation in the coloration of the bills, feet, or plumage of the mature birds, with one exception. There is a variety, seldom seen, in which the feet are nearly yellow, or rather yellow than red, and the edge of the eyelid is black instead of scarlet; there is also a dark patch back of each eye. The color of the feet is probably an accidental individual peculiarity; the dark eye-patch and absence of bright color from the eyelids may depend upon season."

606. **Colymbus arcticus**, (L.)—*Black-throated Diver*.

It is interesting to observe that this bird is the true *C. arcticus*, and not var. *pacificus*, which might have been expected to occur. This is sufficiently attested by the measurements of a fine adult specimen, No. 498 of Mr. Elliott's collection. Length, about 31 inches; wing, 12; bill, along culmen, $2\frac{3}{4}$; along gape, 4; its depth at base, .80; tarsus, $3\frac{1}{8}$; middle toe and claw, 4. The bill is quite stout, with the culmen convex throughout, showing nothing of the slender, straight, or almost recurved shape characteristic of var. *pacificus*.

We find nothing respecting this species in Mr. Elliott's MSS. It was the only one seen by him. It was found dead, cast upon the sand-beach at Zapadnie, Saint George's Island, and brought to Mr. E. by the natives, who differed among themselves as to whether they had ever noticed it before about the islands. At all events, it is seldom seen there.

610. **Podiceps griseigena**, (Bodd.)—*Red-necked Grebe*.

As in the case of the last species, the present is of the typical form rather than of the North American variety. The difference, as stated in our synopsis, (Pr. Phila. Acad., 1862, 232,) lies in

the size and coloration of the bill. In true *griseigena* the bill is little, if any, over 1.50 inches along the culmen, or 2.00 along the gape, and the yellow is either entirely restricted to the base, or only extends thence a little on the edge of the under mandible. In var. *holböllli* the above-mentioned measurements of the bill are respectively 1.90 and 2.40, and much or most of the under mandible, with the cutting-edges of the upper, are yellow. In the present specimen, the culmen measures 1.60; the gape, 2.15, and there is little yellow, excepting at the base of the bill.

Eggs of the American red-necked grebe, from the Yukon and other interior arctic localities, are rough, white, either inclining to pale-greenish or with buffy discoloration, and of the usual narrowly-elongate shape common in the family. They measure from 2.10 to 2.35 in length by 1.25 to 1.45 in breadth, the longer eggs not always being proportionally wide.

"It is the only specimen seen during my residence upon the islands. It has been observed before by the natives, who, however, affirm that it is uncommon."

617. **Fratercula corniculata**, (NAUM.) BRANDT.—*Horned Puffin*.
"Epatka."

(?) *Alca arctica*, var. B., LATH. Ind. Orn., ii, 792, (1790.)

Lunda arctica, PALL. partim., Zoog. R. A., ii, 365, (1811.)

Mormon corniculatum, NAUM. Isis, 782, pl. 7, f. 3, 4, (1821.)—

KITTL. Kupf. Naturg. Vog. pl. i, fig. 1.—DALL & BANN.
Trans. Chic. Acad., i, 308, (1869.)

Mormon (Fratercula) corniculata, Bp. Comptes Rendus, 774,
(1856.)—CASS., in Bd. B. N. A., 902, (1858.)

Fratercula (Ceratoblepharum) corniculata, BRANDT. Bull. Sc.
Acad. St. Petersb., ii, 348, (1837.)

Fratercula corniculata, GRAY. Gen. B., iii, 637, pl. 174, (1849.)—
COUES. Pr. Phila. Acad., 1868.—COUES. Key, 340, (1872.)

Lunda corniculata, SCHLEGEL. M. P. B., ix, *Nerin.*, 28, (1867.)

Lunda (Ceratoblepharum) corniculata, BRANDT. Bull. Sc. Acad.,
St. Petersb., vii, 242, (1869.)

Mormon glacialis, GOULD, nec. LEACH. B. Eur., v, pl. 404,
(1837.)—AUD. Orn. Biog., iii, 542, pl. 293, (1835.)—ID. B.
Amer., vii, 236, pl. 463.

An egg before me is noticeably more elongate than that of *F. arctica* or of *F. cirrhata*, though not more pointed. The shell is rather rough, and dead-white. We may anticipate that in some instances a few obscure obsolete spots may appear, as they occasionally do in the eggs of *F. arctica*, and, doubtless, also show the usual discolorations in many cases. The present specimen measures 2.75 by 1.75.

"The eye never fails to be arrested by this odd-looking bird, with its great shovel-like, lemon-yellow and red bill, as it sits squatted in glum silence on the rocky cliff-perches, regarding approach with an air of stolid wonder. It seems to have been fashioned with especial regard to the fantastic and comical.

"This *mormon*, in common with one other species, *M. cirrhata*, comes up from the sea, from the south, to the cliffs of the islands about the 10th of May, always in pairs, never coming or going in flocks. It makes a nest of dried sea-ferns, grass, moss, &c., far back or down in some deep, rocky crevice, where the egg when laid is generally inaccessible—nothing but blasting-powder would reach it.

"It lays but a single egg, large, oblong-oval, pure white, and, contrary to the custom of the gulls, arrives, choochkies, &c., when the egg is removed the sea-parrot does not renew it, but deserts the nest, perhaps locating elsewhere. The young chick I have not been able to get—not until it comes out fledged and ready for flight in August, when it does not differ materially from its parent. The species leaves the islands about the 10th September.

"This bird is very quiet and unobtrusive; it does not come in large numbers to the islands, for it breeds everywhere else in Bering Sea. Its flight is performed with quick and rapid wing-beats, in a straight and steady course. There is no difference between the sexes as to size, shape, or plumage."

619. ***Fratercula cirrhata***, (PALL.) STEPH.—*Tufted Puffin*. "Tawpawkie."

Alca cirrhata, PALL. Spic. Zool., 7, pl. 1, ii, fig. 1, 2, 3, (1769.)

Lunda cirrhata, PALL. Zoog. R. A., ii. 363, p. 82, (1811.)—

SCHLEG. Mus. Pays-Bas, *Urin.* 27, (1867.)—COUES. Pr. Phila. Acad., (1868.)

Lunda (Gymnoblepharum) cirrhata, BRANDT. Bull. Sc. St. Petersburg, vii., 244, (1867.)

Fratercula cirrhata, STEPH. Shaw's Gen. Zool., xiii, 40, (1825.)

Fratercula (Gymnoblepharum) cirrhata, BRANDT. Bull. Sc. St. Petersburg, ii, 349, (1837.)

Mormon cirrhata, NAUM. Isis, 781, pl. 7, f. 1, (1821.)—CASS. B. N. A., 902, (1858.)—DALL & BANN. Trans. Chicago Acad., i, 303, (1869.)

Fratercula carinata, VIGORS. Zool. Journ., iv, 358.

Sagmatorhina lathamii, BP. P. Z. S., 202, pl. 44, (1851.)—COUES. Pr. Phila. Acad., (1868.)

Sagmatorhina labradoria, CASS. B. N. A., 904, (1858.)—DALL & BANN. Trans. Chic. Acad., i, 309, (1869.)

As Professor Brandt showed, shortly after the publication of our Monograph, the *Sagmatorhina lathamii* of Bonaparte (= *S. labradoria*, Cass.) is merely the young of this species, at an age before the bill has attained its final shape and coloring. Of this fact we became ourselves aware about the same time, from examination of various specimens in the Smithsonian.

The genus, of course, falls, as well as the species. In our Monograph we were so far wrong as to assign to it a second supposed species, the *Cerorhina suckleyi* of Cassin, which is the young of *Ceratorhina monocerata*.

"Comes to the islands at the same time as *F. corniculata*, and resembles the *Epatkie* in its habits generally. It lays a single large white egg, of a rounded-oval shape. I was never able to see a newly-hatched chick, owing to the retired and inaccessible nature of the breeding-places. Could Walrus Island be visited frequently during the season, interesting observations might be made there, for the nests are more easy of access. The young tawpawkie, six weeks old, resembles the parents exactly, only the bill is lighter colored, and the plumes on the head are incipient. This is the only place where the birds can be daily seen and watched with satisfactory results. I took eggs from over thirty nests in July. The natives say it is very quarrelsome when mating, its cries sounding like the growling of a bear as they issue from far down under the rocks that cover its nest."

The egg is much thicker and more capacious than that of *F. corniculata*, though no longer. The shell is rough, dead-white, and, besides the frequent discolorations, shows in several specimens very pale, obsolete shell-markings of purplish gray. Several specimens measure as follows: 2.85×1.95 ; 2.80×1.92 ; 2.75×2.00 ; 2.65×1.95 .

621. ***Phaleris psittacula***, (ESCH.) TEMM.—*Parroquet Auk*. "Baillie Brushkie."

Alca psittacula, PALL. Spic. Zool., fasc. v, 13, pl. 2, pl. 5, f. 4, 5, 6, (1760.)

Lunda psittacula, PALL. Zoog. Rosso-As., ii, 366, pl. 84, (1811.)

Phaleris psittacula, TEMM. Man. Orn., i, 112, (1820).—COUES. Key N. A. Birds, 342, fig. 222, (1872.)

Ombria psittacula, ESCHSCH. Zool. Atlas, iv, 3, pl. 17, (1831).—BRANDT. Bull. Sc. Acad. St. Petersburg, ii, 348, (1837).—ID. *Ibid.*, vii, 237, (1869).—CASS. B. N. A., 410, (1858).—ELLIOT. B. N. A., pt. i, pl. 70.

Simorhynchus psittaculus, SCHLEG. Mus. Pays-Bas, ix, 24, (1867).—COUES. Proc. Phila. Acad., (1868.)

Not only on account of the form of the bill, which, though singular among *Alcidae*, is not more different from that of some others than these are among themselves, but also in consequence of a different mode of life, to which the shape of the bill fits it, as attested by various observers, we now place the bird in a separate genus from *Simorhynchus*, under which we formerly included it. The species is said to live chiefly upon bivalve mollusks, such as *Mytilus*, &c., for opening which its bill is adapted; and Professor Brandt notes the curious analogy afforded, in this respect, with *Hæmatopus*, as compared with allied Charadrine genera.

Mr. Gray adduces a reference to the unexpected occurrence of this species in Sweden.

"This quaintly-beaked bird is quite common on the Prybilov Group, and can be obtained at Saint George's in considerable numbers. It comes here early in May, and locates in a deep chink or crevice of some inaccessible cliff, where it lays a single egg and rears its young. It is very quiet and undemonstrative during the pairing-season, its only note being a low, sonorous, vibrating whistle. Like *Simorhynchus cristatellus*, it will breed in company with the 'choochkie,' but will not follow that lively relative back upon the uplands, the 'baillie brushkie' being always found on the shore-line, and there only.

"The egg, which is laid upon the bare earth or rock, is pure white, oblong-ovate, measuring $2\frac{1}{2}$ by $1\frac{1}{2}$ inches. It is exceedingly difficult to obtain, owing to the birds' great caution in hiding, and care in selecting some deep and winding crevice in the face of the cliff. At the entrance to this nesting-cavern the parents will sometimes squat down and sit silently for hours at a time, if undisturbed.

"It does not fly about the islands in flocks, and seems to lead a quiet, independent life by itself, caring nothing for the society of its kind. The young, when first hatched, I have not seen, but by the 10th to the 15th of August they may be observed coming out for the first time from their secure retreats, and taking to wing as fully fledged and as large as their parents.

"They take their departure from the 20th of August to the 1st of September, and go out upon the North Pacific for the winter, where they find their food, which consists of *amphipoda* and fish-fry. I have never seen one among the thousands that were around me when on the islands 'opening' the bivalve-shells, such as mussels, &c., as stated by Professor Brandt. It

feeds at sea, flying out every morning, returning in the afternoon to its nest and mate."

The egg of *Phaleris psittacula* is about as large as a small hen's egg, which it resembles, although averaging more elongate. The shape, however, is extremely variable; thus, one measures 2.25 by 1.50, and another 2.35 by only 1.45, the latter being remarkably narrow, elongate, and pointed. The shell is minutely granular, and rough to the touch. It is white, unmarked, but often found variously soiled and discolored, sometimes by mechanical effect, and sometimes by fluids of the oviduct or cloaca. Mr. Elliott says, "So effectually do these birds secrete their eggs in the deep recesses of cliff crevices and chinks that I was unable to obtain more than four perfect specimens, although several hundred 'baillie brushkies' were breeding on the cliffs, each pair marked by myself, (in daily observation,) close by the village, at Saint George's Island, during the summer of 1873. Nothing, save blasting-powder, or similar agency, can open the basaltic crevices in which the bird hides, and, of course, resort to this action would also destroy the egg."

622. **Simorhynchus cristatellus**, (PALL.) MERR.—*Crested Auk*.

"Canooskie."

Alca cristatella, PALL. Spic. Zool. fasc., v, 20, pl. 3, pl. 5, figs. 7, 8, 9, (1769.)

Uria cristatella, PALL. Zoog. Rosso.-As., ii, 370, (1811.) (Excl. syn. *Alca camtschatica*, LEPECH.)

Simorhynchus cristatellus, MERREM.—SCHL. M. P. B., ix, 25, (1867).—COUES. Proc. Phila. Acad., (1868).—COUES. Key N. A. Birds, 342, figs. 223, 224, (1872.)

Simorhynchus (Tylorhamphus) cristatellus, BRANDT. Bull. Sc. Acad. St. Petersburg., vii, 223, (1869.)

Tylorhamphus cristatellus, BRANDT. Op. cit., ii, 348, (1837.)

Phaleris cristatellus, STEPH. Shaw's Gen. Zool., xiii, 47, pl. 5, (1825.) (Nec TEMM.)—SCHRENCK. Reise Amur-Land, i, vt. ii, 500, pl. 16, figs. 4, 5.

Phaleris (Simorhynchus) cristatellus, CASS. B. N. A., 906, (1858.)

Uria dubia, PALL. Zoog. R. A., ii, 371, (1811.).—(*Avis ptil. hyem. vestita*, sec. BRANDT.)

Phaleris dubia, BRANDT. Bull. Sc. Acad. St. Petersburg., ii, 347, (1837.)

Tylorhamphus dubius, BONAP. Comptes Rendus, xlii, 774, (1856.)

Simorhynchus dubius, COUES. Proc. Phila. Acad., (1868.)

Alca tetracula, PALL. Spic. Zool. fasc., v, 23, pl. 4, (1769.) (*Junior*.)

Uria tetracula, PALL. Zoog. R. A., ii, 371, (1811.)

Phaleris tetracula, STEP. Genh. Zool., xiii, 46, (1825.).—BRANDT. Bull. Sc. Acad. St. Petersburg., ii, 347, (1837.)

Tylorhamphus tetraculus, BONAP. Comptes Rendus, xlii, 774, (1856.)

Phaleris (Tylorhamphus) tetracula, CASS. B. N. A., 907, (1858.)

Simorhynchus tetraculus, COUES. Proc. Phila. Acad., (1868.)—
COUES. Key N. A. B., 342, (1872.)

Phaleris psittacula, TEMM. Man. d'Ornith., i, p. cxii, (1820.)

Phaleris superciliata, AUD. Orn. Biog., iv, pl. 402, (1839.) (Nee-
LICHT.; nec BP.)

"This fantastic-looking bird, conspicuous by reason of its curling crest and bright crimson bill, breeds in company with the *S. microceros*, but in no number whatever compared with the 'choochkie'—a few thousand pairs only at Saint Paul's, and relatively more on Saint George's, of course.

"It makes its appearance in early May, and repairs to chinks and holes in the rocky cliffs, or deep down under large boulders and rough basaltic shingle, to lay, making no nest whatever, depositing the egg upon the bare earth or rock. But so well do these birds succeed in secreting it that, although I was constantly upon the ground where several thousand pairs were laying, I was unable to successfully overturn the rocks (under which they hide) and get more than four eggs, the result of over a hundred attempts.

"The note of the 'canooskie' while mating is a loud, clanging, *honk*-like sound; at all other seasons they are silent.

"The *Simorhynchus cristatellus* lays but one egg, and the parents take turns, I am inclined to believe, in the labor of incubation and in feeding their young. The egg is rough, pure white, but with frequent discolorations, and, compared with size and weight of the parent, very large. It is an elongated oblong-oval, the smaller end being quite pointed. Length, 2.10; width, 1.40.

"I have not seen a chick, nor could I get any notes upon its appearance from the natives, but I have shot the young as they came out for the first time from their dark, secure hiding-places, fully fledged, with exception of crest, being by this time, the 10th to 15th August, as large as the old birds, and of the same color and feathering.

"The 'canooskie,' like its cousin, the 'choochkie,' has no sexual variation in size or plumage. Males and females are, to all external view, precisely alike.

"The bright crimson bill, however, varies considerably, not in color, but in its relative strength and curve, the slenderer bill not being confined, as far as I could see, to the young

birds, some old ones having the light and more pointed beak."

We do not hesitate now to follow Professors Schlegel and Brandt in uniting the *dubia* and *tetracula* with the *crisatella* of Pallas. We were never satisfied of the distinction of the former, and in our Monograph expressed the strongest doubts of its validity as a species. The other, however, we fully believed, until recently, to be a good species.

624. **Simorhynchus pusillus**, (PALL.) COUES.—*Least, or Knob-billed, Auk*. "Chooch-kie."
 ? ? *Alca pygmæa*, GMELIN. Syst. Nat., i, 555, (1788.)—(*Nonne potius* = *Alca camtschatica*, LEPECH., juv.; h. e. = *S. cassini*, NOB.?)
Phaleris pygmæa, BRANDT. Bull. Sc. Acad. St. Petersburg, ii, 347, (1837.) (Excl. syn. *A. pygmæa*, GM.)
Tylorhamphus pygmæa, BP. Comtes Rendus, xlii, 774, (1806.) (= *Uria pusilla*, PALL.)
Symorhynchus pygmæus, SCHL. Mus. Pays-Bas, ix, 23, (1867.)
Uria pusilla, PALL. Zoog. R. A., ii, 373, pl. 70, (1811.) (Excl. syn.)
Phaleris pusilla, CASS. Proc. Phila. Acad., 324, (1862.)
Phaleris (Ciceronia) pusilla, CASS. B. N. A., 909, (1858.)
Simorhynchus pusillus, COUES. Pr. Phila. Acad., (1868.)—BRANDT. Bull. Sc. Acad. St. Petersburg, vii, 230, (1869.)—COUES. Key N. A. B., 343, figs. 227, 228, (1872.)
Phaleris corniculata, ESCHSCH. Zool. Atl., 4, pl. 16, (—.)
Phaleris microceros, BRANDT. Bull. Sc. Acad. St. Petersburg, ii, 346, (1837.)
Phaleris (Ciceronia) microceros, CASS. B. N. A., 908, (1858.)
Ciceronia microceros, REICHENBACH.
Simorhynchus microceros, COUES. Proc. Phila. Acad., (1868.)
Phaleris nodirostra, BP. Comp. & Geog. List, 66, (1838.)
Ciceronia nodirostris, BP. Comptes Rendus, xlii, 774, (1856.)

There is now no reasonable doubt of the identity of the names above quoted, excepting *Alca pygmæa*, which remains unidentified. It may have been this species, but most probably it was the young of *S. camtschaticus*, in the same state as the young bird we recently called *S. cassini*. The strong doubt we expressed in our Monograph respecting the distinction between the *microceros* or *nodirostris* of authors and the *pusilla* of Pallas, has been confirmed.

"This little bird is the most characteristic of the water-fowl frequenting the Prybilov Islands, to which it repairs every summer by millions to breed, with its allies, *S. cristatella*, (canoskie,) and the *Phaleris psittacula*.

"It is comically indifferent to the proximity of man, and can

be approached almost within an arm's length before taking flight, sitting upright and eyeing one with an air of great wisdom, combined with profound astonishment.

"Usually about the 1st or 4th of May, every year, the choochkie makes its first appearance around the islands for the season, in small flocks of a few hundreds or thousands, hovering over and now and then alighting upon the water, sporting one with another, in apparent high glee, and making an incessant low chattering sound. By the 1st to the 6th June they have arrived in greatest number, and they then commence to lay. They frequent the loose stony reefs and boulder-bars on Saint Paul's, together with the cliffs on both islands, and an area of over five square miles of basaltic shingle on Saint George's. To the last island they come in greatest number. There are millions of them. They make no nests, but lay a single egg each, far down below among loose rocks, or they deposit it deep within the crevices or chinks in the faces of the bluffs.

"Although, owing to their immense numbers, they seem to be in a state of great confusion, yet they pair off and conduct all of their billing and cooing down under the rocks, upon the spot chosen for incubation, making during this interesting period a singular grunting or croaking sound, more like a 'devil's fiddle' than anything I have ever heard outside of city limits.

"A walk over their breeding-grounds at this season is exceedingly interesting and amusing, as the noise of hundreds of these little birds directly under foot gives rise to an endless variation of sound, as it comes up from the stony holes and caverns below, while the birds come and go, in and out, with bewildering rapidity, comically blinking and fluttering.

"The male birds, and many of the females, regularly leave the breeding-grounds in the morning and go off to sea, where they feed on small water-shrimps and sea-fleas, (*Amphipoda*), returning to their nests and sitting partners in the evening.

"The choochkie lays a single pure-white egg, exceedingly variable in size and shape, usually oblong-oval, with the smaller end somewhat pointed. I have several specimens almost spherical, and others drawn out into an elongated ellipse; but the oblong-oval, with the pointed smaller end, is the prevailing type. The egg is very large, compared with the size and weight of the little parent. Average length, 1.55; width, 1.12. The

general aspect is much like that of a pigeon's egg, excepting the roughness of the shell.

"The chick is covered with a thick, uniform, dark-grayish-black down, which is speedily succeeded by feathers, all darker than those of the parent, when it takes flight from the islands for the year six weeks after. The parents feed their young by disgorging, and when the young birds leave, they are as large and heavy as the old ones. I am strongly inclined to think that the male bird feeds the female while incubating, but have not been able to verify this supposition by observation, as the birds are always hidden from sight at the time."

634. ***Lomvia troile* var. *californica***, (BRY.) COUES.—*Murre Guillemot*.

Cephus lomvia, PALL. Zoog. R. A., ii, 345, (1811.)

Uria troile, NEWB. Pac. R. R. Rep., vi, pt. iv, 110, (1857.)

Cataractes californicus, BRYANT. Proc. Bost. Soc. 11, fig. 3, 5, (1861.)

Lomvia californica, COUES. Proc. Phila. Acad., fig. 16, (1868.)

Lomvia troile var. *californica*, COUES. Key N. A. Birds, 346, (1872.)

All the Murres of the *troile* type we have seen from the North Pacific agree in possessing a particular shape of the bill, readily distinguishable from that presented by the Atlantic birds. While we would by no means insist upon, or even admit, that this is a specific character, especially since we have no doubt that some of the circumpolar colonies of these birds will show an intermediate style, we think it as well to recognize the character by a varietal name. The shape is difficult to describe in words: the gonydeal angle is stronger, pointed, and more protuberant, the gonys straighter and more decidedly ascending, the culmen less deflected at the tip, and the commissure consequently straighter than are these several points in true *troile*. It is, in short, some approach to the configuration of the bill in *L. svarbag*, (*brünnichii* of authors.)

"Limited numbers of the Californian guillemot are found occasionally perched on the cliffs with the '*arrie*;' they can only be distinguished at a slight distance by a practiced eye, for they resemble their allies so closely and conform so strictly to their habits, that it will be but repeating the description of the *L. arra*, given here, should I attempt it. The largest gathering of these birds I have ever seen at any one place on the islands was a squad of about fifty, at the high bluffs on Saint George's, last summer; but they are generally scattered by ones, twos, and threes, among thousands and tens of thousands of the *arra*."

635. **Lomvia arra**, (PALL.) COUES.—*Thick-billed Guillemot*. "Arrie."
Cepphus arra, PALL. Zoog. R.-A., ii, 347, (1811.)
Uria arra, CASS. Proc. Phila. Acad., 324, (1862.)
 (Also, *Uria brünnichii*, &c., of authors referring to the North Pacific
 thick-billed bird.)

It is an interesting fact that these specimens, unquestionably of the "thick-billed" guillemot, do not exhibit the extreme shortness and stoutness of bill shown by those of the North Atlantic, the bill being almost exactly intermediate. With the chord of culmen about $1\frac{2}{3}$ inches long, the depth of the bill opposite the nostrils is hardly, or not, $\frac{2}{3}$ of an inch, and thus much less than half as long, instead of about half as long. The gape is about 3 inches. While the bill shows the dilated and denuded basal portion of the maxillary tomium, characteristic of the species, this raised, naked border is not yellowish, but of a peculiar glaucous bluish-gray color. The tip of the bill is less hooked than in true "*brünnichii*," though more so than in *troile*. The modification of the bill appears somewhat singularly analogous to that which takes place in var. *californica* as compared with true *troile*.

This bird is, of course, the true *arra* of Pallas, (a name apparently derived from the Russian vernacular,) whatever be its relationship to the Atlantic bird. We should not be surprised if some of the circumpolar forms were to connect the extremes of *brünnichii* and *troile* by insensible gradations.

"The great egg-bird of the North Pacific, frequenting these islands by millions. This *Uria* and one other, the var. *californica*, are the only birds of the genus found here, but the latter is in comparatively no number whatever, not one being seen where a thousand of the former are visible at once.

"They appear very early in the season, but do not begin to lay until the 18th or 25th of June, and the natives tell me that in open, mild winters these birds are seen in straggling flocks all around the islands. I feel quite well assured that all the individuals do not migrate from this sea and the vicinity of the Aleutian Islands.

"They lay their eggs upon the points and narrow shelves on the faces of the cliff-fronts to the islands, standing over the eggs, side by side, as thickly as they can crowd, making no nests. They quarrel desperately, and so earnestly, that all along under the high bluffs on the north shore of Saint George's hundreds of dead birds are lying, having fallen and dashed them-

selves to death upon the rocks while clinched in combat with rivals in mid-air.

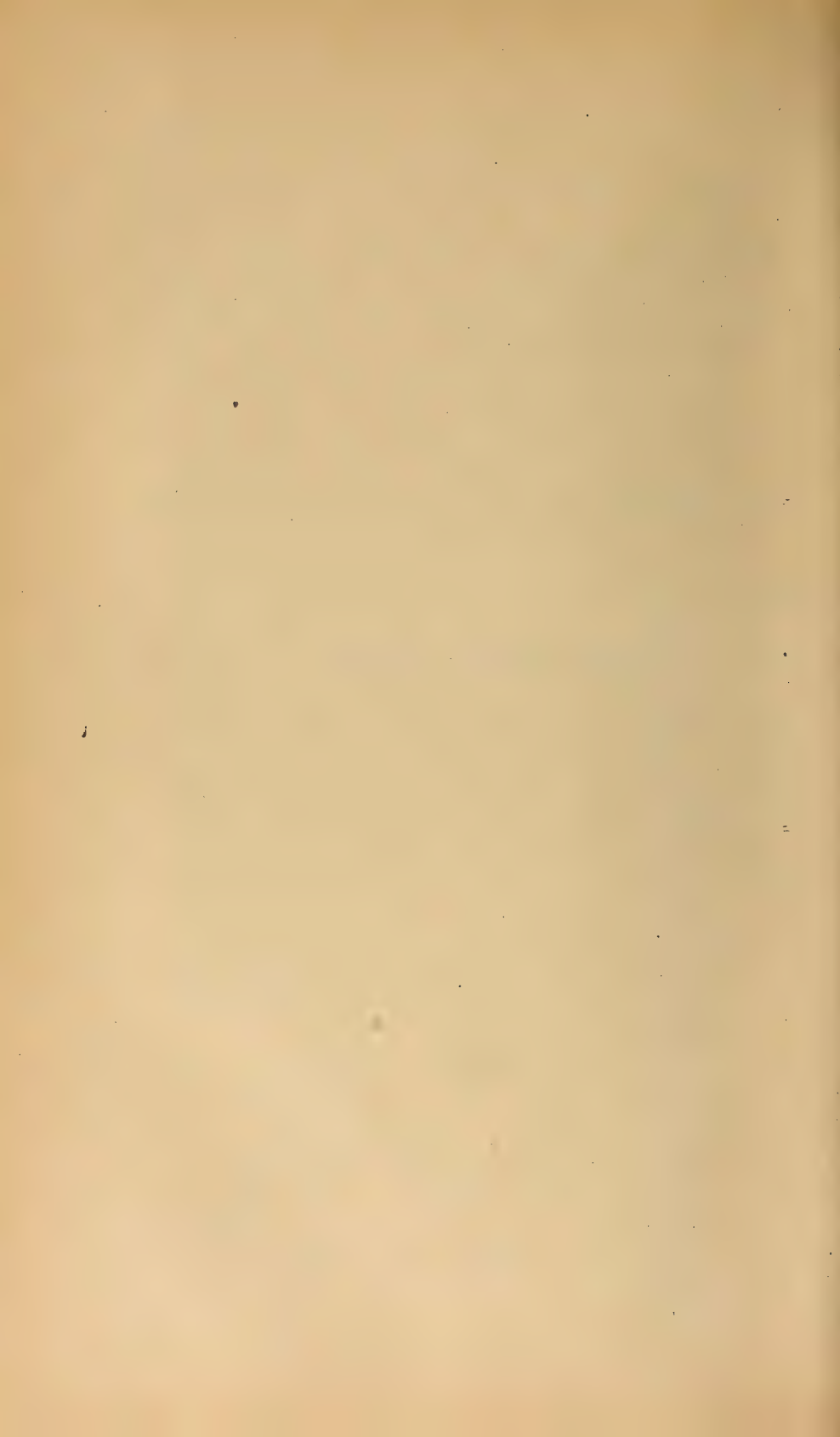
"They lay but a single egg, upon the bare rock. The egg is large and very fancifully colored, a bluish-green ground with dark-brown mottlings and patches, but exceedingly variable in size and coloring. The outline of the egg is pyriform, sometimes more acute. It is the most palatable of all the varieties found on the islands, having no disagreeable flavor, and, when perfectly fresh, being fully as good as a hen's egg.

"Incubation lasts nearly twenty-eight days, and the young come out with a dark thick coat of down, which is speedily supplanted by the plumage and color of the old birds within six weeks of hatching. They are fed by the disgorging parents, apparently without intermission, uttering all the while a harsh rough croak, lugubrious enough.

"The males and females have no sexual distinction as to size, shape, or plumage. On Saint George's Island, while the females begin to set, along toward the end of June and first of July, the males go flying around the island in great files and platoons, always circling against, or quartering on, the wind, at regular hours in the morning and the evening, *making a dark girdle of birds more than a quarter of a mile broad and thirty miles long, whirling round and round the island*, and forcing upon the most casual observer a lasting impression. The flight of the 'arrie' is straight, steady, and rapid, the wings beating quickly and powerfully; it makes no noise nor utters any cry, save a low, hoarse, grunting croak, and then only when quarreling or mating.

"This 'arrie' is a valuable bird to the inhabitants of the Seal Islands, and, indeed, for that matter, is the only one that has much economic worth to man in Bering Sea."

APPENDIX.



A P P E N D I X .

SAINT MATTHEW'S ISLAND, BERING'S SEA.

This island lies about 200 miles north-northwest from Saint Paul's, and is not large, being some 22 miles in length and excessively narrow in proportion. Hall's, a small island, lies west from it, separated by a strait less than 3 miles in width, and a sharp jagged rock stands out some 1,200 feet abruptly from the sea, 5 miles south of Sugarloaf Cone.

Our first landing, early in the morning of August 5, was at the slope of Cub Hill, near Cape Upright, the easternmost point of the island; the air coming in from the northwest was cold and chilly, and snow and ice were on the hill-sides and in the gullies. The hill-sides and summits were of a grayish-russet tinge, with rich green swale-slopes running down into the lowlands, which are more intensely green and warm in tone there.

The island everywhere presents the appearance of a long straggling reach of bluffs and headlands connected with bars and lowland spits, at a small distance resembling half a dozen distinct islands, when seen from the ship.

The pebble-bar formed by the sea between Cape Upright and Waterfall Heads is covered with a deep stratum of glacial drift carried down from the slopes of Polar and Cub Hills, and extending over two miles of this water-front to the westward, where it is met by a similar washing from that quarter. Back and in the center of this neck are several small fresh lakes and lagoons without fish, but emptying into them are a number of clear, lively brooks in which are brook-trout of large size and fine quality. A luxuriant growth of deep moss and grass interspersed exists on the lowest ground, and occasionally strange dome-like piles of peat lifted four or five feet above the marshy swale appear like abandoned huts, with a great variety of pretty flowers, growing thickly everywhere on these places.

As these lowlands rise on to the flanks of the hills the vegetation changes rapidly to a simple coat of cryptogamic gray and light russet, with a slippery slide for the foot wherever ascent

of a steep place is made, water oozing and trickling almost everywhere underneath. The swales frequently rise high, and cross the hill-summits and ridges without any interruption in their wet swampy character from valley to valley.

Here, on the highest summits, where no moss ever grows and nothing but a fine porphyritic shingle slides and rattles under tread, are bear-roads leading from nest to nest, or lairs, which they have scooped out on the hill-sides and where the she-bears undoubtedly bring forth their young, but it is not plain where these bears, which are all around us by hundreds, spend their winters. I am inclined to believe that they do not stay on the island; but as soon as the flocs come down from the north, driving off the seal and walrus, they leave the island and take to this ice, keeping by the water's edge, where their prey will be found, and returning as soon as the season opens. Now as we see them they are all eating grass and roots, digging or browsing, or else heavily sleeping on the hill-sides. Their manner of browsing is very similar to the action of a hog engaged in grazing.

The action of ice in rounding down and grinding hills, carrying the soil and *débris* off into depressions and valleys, is most beautifully exhibited here. The hills at the northern foot of Sugarloaf Cone are bare and literally polished by ice-sheets and slides of melting snow; the rocks and soil from the summits and slopes are carried down and dumped, as it were, in numberless little heaps at the base. Nowhere can the work of ice be seen to better advantage than here, especially so with regard to the chiseling power of frost on the faces of the porphyry cliffs. The flora here is more extensive than on the Seal Islands, 200 miles to the southward, but the species of grass are not near so varied; indeed, there is very little grass-land here. Wherever there is soil it seems to be converted by the abundant moisture into a swale or swamp, over which we traveled as on a quaking water-bed; but on the rounded hill-tops and ridge-summits the smooth shingle makes good walking. The high land everywhere here is paved with this fine shingle, that has been created by the disintegrating power of frost, which evidently has an annual iron grip on the island.

The west end of the island differs materially from the east; the fantastic weathering of the rocks at Cathedral Point, Hall's Island, strikes the eye of the most casual observer as the ship enters the straits going south. This eastern wall of the point

looms up from the water like a row of vast cedar-trunks; the scaling off of the basaltic porphyry and growth of yellowish-green and red mossy lichens made the effect most real, while a dense bank of fog lying just overhead seemed to shut out from our vision the foliage and branches that belonged above. The north cape of Hall's Island changes like a chameleon when approached, presenting with every mile's distance a new and characteristic feature.

At our anchorage in the straits (20 fathoms) we caught a good supply of cod and halibut of fair quality. Great flocks of murre (*L. arra*) came off from the cliffs, where they were breeding, and settled in the water around the ship, as we had anchored on a feeding-ground. Many walrus appeared around the "Reliance," amusing us greatly by the stupid alertness displayed when they rose head and shoulders out of the water and discovered us; a short look and a snort, then, stern foremost, they dropped into the sea out of sight, as though a trap-door had been suddenly sprung beneath them.

The grass on Hall's Island, like Saint Matthew's, is confined mostly to the swale, which runs from the valleys up to the very highest ridges; patches of deep, rich green contrasting quite pleasantly with the dull russet and ocher which covers everything else.

Our visit at the west end of this island of Saint Matthew's was most interesting; the rich, elegant coloring of the rocks and fantastic arrangement of the basalt and porphyry at Statue Point caused an old sailor in our boat to cry out, "That reminds me of Constantinople, a regular Turk's house!" and it certainly did resemble Ottoman architecture.

We found the ruins of the huts built by a party of five Russians and seven Aleuts who passed the winter of 1810-'11 on the island, but were stricken down with scurvy, so that all the Russians died save one; the rest recovered and left the following year.

The result of a careful examination of this island shows conclusively that the character of the gravel spits and necks is such as not to be fit for the reception of breeding-seals, as it would be speedily converted by a rookery into a sheet of mud and slime, and there is no other landing afforded save at the base of cliffs rising abruptly from the sea. Seals also, if landing here, would, independent of bear warfare, find a climatic disadvantage, for snow and ice do not leave the landings until late

in June; this was evident, although we had an exceptionally mild winter, for on August 12, patches of ice and snow were on the beaches, and a considerable quantity on the hill-slopes, without any regard to the sun's position.

Vegetation on the island is varied and abundant where it is able to grow, but the greater part of the country is either a fine porphyry shingle or cold wet swale, so that grasses do not thrive as they do on the Seal Islands; the small annuals and perennials, however, are scattered in great variety, and where the sand has been cast up at the barrabkie beach, west end, it has mixed in with the drift-soil, and warmed it so that the wild wheat (*Elymus*) was growing thick, with ears which gave promise of ripening. Mosses and lichens are especially abundant, the "*tripe de roche*" covering the high rounded summits with its dark-brown tinge. The only berries, *Empetrum nigrum* and *Rubus chamæmorus*, were very common. The high summit slopes of Glacial Head, 1,670 feet, were fairly spangled with beautiful flowers, blue, red, white, and yellow. Three varieties of the creeping willow (*Salix*) grow here in great profusion, large masses of the leaves being collected in hollows, upon which bears have made very comfortable beds; several of the higher hills, contrary to the general rule, are well covered with grass and flowering plants, such as the south slope of Upright Ridge, 1,560 feet, all of Camp Hill, north slope of Pyramid Ridge, &c.

Nowhere on the island can a well-defined crater-summit or crater be found, unless the smoking cleft in the ridge of Pinnacled Rock will answer to that description; but this island is inaccessible, rising sheer and abrupt from the sea to a height of at least 1,200 feet. Its greatest width is not over 500 feet, and it appears to be made of reddish lava. Its sharply-serrated ridge looms up from the southeast like a great brick cathedral in the hazy glow of the morning sun; upon its steep sides myriads of water-fowl breed, principally murre, (*L. arra.*) From the summit of Sugarloaf Cone, 1,520 feet, we can look upon its greatest latitude, and view what appears to be a blackened crater or smoky fissure between the two walls; one or two small rocks convoy it, but the water is bold all around, as well as at Saint Matthew's, which can be approached with great safety from all sides; there is, however, no harbor, but the roadsteads are good.

Polar bears breed here, and live chiefly during the summer

upon roots, grasses, &c., eggs, birds, and an occasional walrus or hair-seal. On Hall's Island a small walrus was discovered where the bears had eaten out the entire animal, leaving the skin intact, tough and thick, untouched from the head down to the posteriors, where it was broken in to get at the flesh; it lay just like a bag, bones and all taken out, even to the head, and polished.

No less than sixteen of these big beasts were seen at once (ten upon the beach together) as the ship's boat approached the water-fall on Hall's Island. Of course, it is impossible to say how many "medvaidie" there are on Saint Matthew's, but it is safe to assert that there cannot be less than a hundred and fifty to two hundred; but they must go off on the ice during winter and early spring.

I do not think a full-grown polar bear, powerful as it is, can successfully capture a mature walrus; the thick skull and hide, immensely tough, of the latter would resist any sudden attack from the former, and, the alarm once given to the walrus, the bear could not prevent the clumsy but strong animal from floundering into the water and safety. The bears, however, can and do swim in between a young walrus and the water and secure it.

We shot some fifteen or twenty bears, all that we could use or care for, relishing the meat very much, it being fully as good and tender as the generality of beef. The bears were easily killed, never showing fight in any instance. They were in most excellent condition, fat and sleek. If caught napping or asleep, they were easily approached, as the hunter could get within a few yards before alarming them; but if they got wind of us, they would turn and shamle off with considerable speed, taking to the hills at once.

When surprised, the bear would arise and face us for a few moments, and sniff and snort, making no other sound; but in its death-agonies after shooting it was silent.

I searched everywhere for its bones, skulls, &c., which should be found, it seemed to me, bleaching on the hill-sides and in the valleys, but, with the exception of one very old, battered head, and a small one, nothing was seen on the island of this character. At this season (August 9) the she-bears and their cubs were by themselves, (they usually have two cubs,) and the young he-bears going about in squads of twos, threes, and fours, the old males sleeping and feeding apart.

They sleep soundly, but fitfully, rolling their heavy arms and legs about; for naps they prefer little grassy depressions on the hill-sides and along the numerous small water-courses; and the paths they made were broad and well-beaten all over the island.

These bears, when full grown, are exceedingly muscular and very strong. One shot by Lieutenant Maynard measured eight feet from tip of nose to tail, and could not have weighed less than a thousand or twelve hundred pounds; it had a girth of 24 inches around the muscles of the fore-arm, when the skin was removed, just back of the carpal joint, corresponding to our wrist; it was fat, and had scars upon its head, which were evidently received in fighting with its kind. No worms were found in the intestines or stomach; the liver was speckled with light grayish-green dots and patches.

NOTE.—Lieutenant Maynard and myself surveyed this island, and made a careful chart of it; Captain Baker gave us soundings, which accompany the map. The only existing chart is a Russian one, and very inaccurate.—H. W. E.

SAINT LAWRENCE ISLAND.

This is the largest island in Bering Sea, and lies directly south from Bering's Straits about 180 miles; it is about 80 to 85 miles in length, with an average width of 15 to 20. The sea has built on to it most extensively, in the same manner as on the island of Saint Paul, but it is quite dissimilar in form and climate.

We made our first landing on this island early in the morning of August 18, near Kagallegak, or opposite Poonook Islets, and a baidar with a number of the natives, Mahlemute Eskimo, came off to us as soon as we dropped our anchor.

We found the island, at this landing, to be made up of coarse feldspathic red granite flats and hills, with extensive lagoons and lakes. The skeleton of the island seems to be of these low granitic hill-ranges, and between them stretch long, low, even reaches of sand-beach for miles and miles. At Kagallegak the eye sweeps over extensive, level plains to the northward, upon which the green *Eriophorum angustifolium* principally grows, the ground, or "tundra," being wet and boggy; while, on the sand-beach reaches, the "wild wheat" (*Elymus mollis*) grows abundantly, short and stunted.

These great level, low areas, so peculiar to this island, are made up of fine granitic drift, lined at the sea-margin with sand; the hills and hill-ranges are rich in color, with deep blue-black patches caused by protrusions of trap; but no shrubbery whatever grows on those at the east end and north end of the island, save the creeping salix, dwarfed and stunted—cryptogamic plants chiefly. The main body of the range is composed of reddish, coarse and fine grained feldspathic granite, with abundant trap protrusions, which weather out and fall down upon the flanks of the ridges in dark patches and streaks, contrasting, at a distance of eight or ten miles, very sharply with the main ground of pinkish rock, moss-grown, and colored here and there with the greenish-russet tinge peculiar to such vegetation; this dark marking of the trap, at a little distance, appears like low-growing shrubbery. Snow and ice lay in the gullies and on the hill-sides.

The low plains have the russet yellowish green peculiar to the tundra of the north; the sand is a bright light brown. Small streams flow down from the hills and empty into the sea and lakes, in which we found a few *parr* or young salmon; the lakes and lagoons are fairly stocked with a white-fish—nothing else of this kind.

The entire expanse of the lowlands over which we traveled was like a great sponge filled and overrunning with water, the chief vegetation upon it being the beautiful tufted or plumed grass, (*Eriophorum*,) bearing exquisite tassels of white, silken floss; this grass, in conjunction with several cryptogams, a few scattered *Rubus chamaemorus* and *Empetrum*, make up the rich russet-green, flecked with gray-green spots, which mark these great marshy tracts in the Alaskan country. There are many places where this vegetation, during ages past, has decayed and formed bog-holes or pools, into which the pedestrian will mire down to his waist at a single step.

A small *succinea*, or land-snail, was very abundant on these flats, near our landing at Northeast Point, and all along the shore-line we saw an abundance of drift-wood, logs, and pieces, most of it pine or spruce, a few poplar sticks, and a number of unrecognizable twisted knots.

Very little *algæ*, or sea-weed, or any marine life whatever, was evident from the surf-castings; only a few mussels and small conch-shells, (*Fusus*.) The beach is made up, in some places

for long distances, of granite pebbles and bowlders, scattered with some trap.

At Northeast Point the natives have quite a wood-cutting camp, hewing and carving, and the chips are scattered all along the beach-levels for miles; there are places here where the ice, in some unusual season, has carried large logs and pieces of drift-wood back full half a mile from the sea; and there they lie to-day deeply imbedded in the swale, settling and decaying. The ice-jams which have taken place to effect this must have been very severe.

The southwest point of Saint Lawrence is largely made up of trap and porphyry, slate, &c.; the water very bold and deep.

The natives on the island cannot be much over three or four hundred in number, and are living in five settlements, about equidistant, around the coast. They are well formed and hearty, genial and good-natured. They are of Mongolian cast and build, strongly resembling Chinamen, only that nearly all the men shave the occipital portion of the head instead of the frontal, as practiced by the Celestials; the women, however, do not shave their heads, and do their hair up in two braids hanging down behind, tied up with beads, &c.

They met us in an unaffected, free manner, showing no fear or hesitation, and, coming upon deck, commenced a vociferous cry for tobacco, and that alone; yet they were civil and curious; three or four women usually came in each baidar with them, paddling like the men; the boats, about 14 feet long with 4 feet of beam, consisted of a frame, very neatly lashed together, of pine, with whalebone fastenings, over which walrus-hide was stretched; they propelled it with paddles and oars, which were also well made.

They live in summer-houses made of walrus-hides, weighted down by logs and stones so as not to be blown away; and close by are the winter-houses, which are under ground, with a tunnel entrance.

The food of these people is whales' blubber, cut in large chunks, of the strongest, rancid odor; mullets from the fresh-water lakes, and caught in nets of walrus-thongs; murre, small waders, walrus and hair-seal meat, varied by geese and ducks. They had no iron cooking-utensils; all wood, and made by themselves, using hot stones for boiling water. Seal and whale oil they had *cached* both above and under ground; they preserve all fish and bird offal and devour it raw, saving the skins of the

latter, which they make up into "parkies" or sacks for clothing; this is, however, a poor garment when made of bird-skins; it is always giving way at the seams, feathers flying, &c.; the skin is usually turned outside and the feathers worn next to the body. Furs are nearly all worn in this way; and the garments worn were principally made of reindeer-skins, procured from the Asiatics in exchange for wood and ivory and tanned hair-seal.

They were poor, and had nothing for trade but clothing made from the intestines of the walrus, walrus-teeth, and some whalebone; but they had an ample supply of food, such as it was, and their desire that we should taste of it was almost equal to our determination not to do so.

They were exceedingly anxious to trade, and I noticed that the women seemed to have equal rank with the men, doing more than half the talking, and barter solicitation; they seemed to be warmly attached to one another. The females all had their faces curiously tattooed in pale-blue lines on the cheeks and chin, and the arms.

They had a few dogs, very large, with long, shaggy hair, pointed ears, and short, bear-like tails; they were of a mild and inoffensive disposition, and were highly valued by their owners.

They took us to a place where they had six polar-bear skulls placed on the sand, side by side, with a post at the head, which they gave us to understand we could not touch; for I wanted to carry off one of the bear-skulls, which was 17 inches long and measured 10 across the zygomatic arch; it was undoubtedly a grave where some one of their number had perished by the agency indicated by the skulls. Bears, however, rarely visit this island, and foxes are the only land-animals.

The natives were supplied with coarse, smooth-bore muskets, which, I thought, they seldom used. All the birds, such as murrens and geese or ducks, are caught in large nets stretched over the brows of cliffs, or across the lagoons. These nets are very neatly made of walrus-hide.

No animals were seen by us in the water about the island save an occasional hair-seal thrusting its head out from the sea. A few cod-fish were caught, and when the natives came aboard, on the 18th, the cods' heads and intestines lying in the ship's scuppers, where the cook had been cleaning the

fish, were eagerly picked up and carried off by the Eskimo in great glee, as if regarded as a prize.

Bird-life was not so extensive as at Saint Matthew's, the murres (*Lomvia arra*) predominating on the sea-front, while in the lagoons were several large flocks of the emperor-goose (*C. canagica*.) *Tringa crassirostis*, so common on the Seal Islands and on Saint Matthew's, was not seen here. A stone-chat (*S. ænanthe*) was observed, as also *Budytes flava*. The small Asiatic tern, in large numbers, hovered over the lagoons. The turnstones here (*S. interpres*) have a much blacker, duller tone than the variety on the Seal Islands.

Our observations here would make Saint Lawrence of the same formation as the mainland on either side of the straits, and just as old, but the islands of Saint Matthew's and the Prybilov group, as much more recent, and belonging to a different epoch. Saint Lawrence is ice-bound and snow-covered too large a portion of the year ever to become a fit place for the fur-seal to breed; and it may be safely said that no land of ours in the north is adapted to the wants of that animal except that of Saint Paul and Saint George.

STATISTICS AS TO THE NATIVES.

List of natives living on the Aleutian Islands in 1833-'34, taken from Bishop Veniaminov's "Zapiska, etc."

Island.	Name of settlement.	Number of natives.		Total.	No. of houses.	No. of boats.	Distance from the head settlement, versts.
		Males.	Females.				
Ounalashka	Gavanskoi	90	106	196	27	15	.....
	φ Nateekenskoi	6	9	15	2	2	12
	φ Paystravskoi	16	21	37	5	4	20
	φ Vatsaylovskoi	7	8	15	3	3	40
	Maktooshenskoi	15	20	35	6	5	90
	Koshegenskoi	18	23	41	8	9	140
	Chernovskoi	20	24	44	4	10	170
	φ Kahlechtsenskoi	6	8	14	2	2	20
	φ Bobrovskoi	21	20	41	4	6	12-40
	Total 9 settlements	214	256	470	65	58	.....
Oomnak	Rychesnoi	38	45	83	13	12	300
	φ Tooleekskoi	11	15	26	3	6	200
	Total 2 settlements	49	60	109	16	18	.....
Ahkoon	Artaylnovskoi	16	16	32	7	9	120
	φ Raychevskoi	19	18	37	5	8	160
	φ Sayraidneuskoi	7	9	16	2	4	150
	Total 3 settlements	37	43	80	14	21	.....
Borka	Saydankooskoi	17	27	44	6	7	40
Oonalga	φ Oonalgenskoi	10	13	23	3	4	25
Avatanok	Avatanakskoi	24	25	49	5	9	150
Akootan	φ Akootan'skoi	6	7	13	2	1	90
Teegalda	Teegaldenskoi	38	59	91	2	4	375
Onemak	φ Sheeshaldenskoi	38	53	91	2	4	375
	Total 6 settlements .....						.....
Peninsula Alaska ..	φ Morzaivskoi	16	29	45	7	6	460
	Bellkovskoi	49	53	102	10	16	525
	φ Parlooskoi	28	31	59	8	9	585
	Total 3 settlements	93	113	206	25	31	.....
Oonga	Oongenskoi	52	64	116	13	15	650
Prybilov Islands ...	Saint Paul and Saint George ..	88	94	182	.....	.....	.....
	Miscellaneous	10	18	38	.....	.....	.....
	Total 3 settlements .....						.....
	Making a grand total of 26 settlements	678	806	1,484	157	182	.....

NOTE.—The mark φ is prefixed to all stations not existing at the present writing, September, 1874.

List of people living on the Aleutian Islands, 1874, taken from Father Innocent Shiesnekov's record, September 2, 1874.

Place.	Creoles.		Aleuts.		Total.
	Men.	Women.	Men.	Women.	
Ounalashka.....					*23
Do.....	71	73	130	105	402
Makooshin.....	11	13	9	16	49
Koshcega.....			31	43	74
Chernovskie.....		3	32	35	70
Oomnak.....	4	3	52	60	119
Borka.....			52	58	110
Akootan.....		1	51	42	94
Avatanok.....			19	22	41
Teegalda.....			21	23	44
Protahsavskoi.....	14	12	62	52	140
Bellkovskie.....	17	33	92	106	248
Vozneeshenskoi.....	4	5	5	6	22
Unga.....	24	33	51	54	162
Kovorinskoi.....	16	9			25
Atka, 1872:					
Neekolicfskoi.....			48	48	96
Nazan.....	22	31	39	39	131
Attou.....	15	10	71	59	†155

* Church-workers, &c.

† Thirty-five souls independent of this number went to Copper Island in 1872; twenty-three came to Ounalashka also.

"In 1848 there were some 1,400 souls on the Aleutian Islands west of the Peninsula; the small-pox then broke out, and over 500 died that season, leaving some 900, about which number still remain. In those days these people were very poor compared with their present condition; they had but little money, very little tea, bread, and sugar, and very few clothes."—*Father Shiesnekov, Ounalashka, September 2, 1874.**

The following table shows the population of Russian America in 1834, as given by Bishop Veniaminov: †

* This priest, who is a very intelligent and unassuming man, gave Lieutenant Maynard and myself a long and exceedingly interesting account of the manner in which the Aleuts were living under Russian rule, in order that we might have a basis for comparison of the present, as we saw it, with that of the past. The testimony of this gentleman I regard as of the greatest value, for he knows more of the subject than any other man living who can be found, as his whole life has been passed in this country, and his character as a prelate and a gentleman is highly respected by all who know him.

† Veniaminov appears to have been the only Russian who, during the whole occupation of Alaska by that people, has given to the world anything like a history of the country or a sketch of its inhabitants, that has ability or the merit of truth. He is at present living, and ranks second to the Emperor in the Russian Empire, being the primate of the national church. He must have been a man of fine personal bearing, judging from the description given of him by Sir George Simpson, who met him at Sitka in 1842: "His appearance, to which I have already alluded, impresses a stranger with something of awe, while, on further intercourse, the gentleness which characterizes his every word and deed insensibly molds reverence into love; and

<i>Koloshians</i>	5,000
<i>Copper River</i>	300
<i>Choogachie</i>	471
<i>Peninsula</i>	1,600
<i>Kodiaks</i>	1,508
<i>Koskoquim</i>	7,000
<i>Yukon River</i>	not known
<i>Russians</i>	706
<i>Oogahlensie</i> , (Mount Saint Elias, near).....	150
<i>Kolchans</i> , (interior).....	not known
<i>Kenai</i>	1,628
<i>Aglahmutes</i>	402
<i>Ounalashka Aleuts</i>	1,497
<i>Atka Aleuts</i>	750
<i>Mahlemutes</i> , &c.....	not known
<i>Creoles</i>	1,295
Total actually known.....	22,800
Estimate of the rest.....	17,000

Making a total, for the Territory, of some..... 40,000

The following is a list of the different tribes of Indians living between Prince of Wales Island and Yahkutat, or Bering's Bay, Alaska, in 1837-'38, (from Veniaminov, part III:)

"The numbers of these people (Indians) living in Russian America between Prince of Wales and Bering's Bay in 1835 was 10,000, but now (1838) not much over 6,000. The settlements, and people in them, number as follows:

	Souls.
Yahkutatskie, (Bering's Bay).....	150
Abkvaystkie, (Lituya Bay).....	200
Laydanoprodevskie.....	250
Chelkatskie (Chilcats).....	200
Ahkootskie.....	100
Seethenskie, (Sitka).....	750
Kootsnovskie, (Hootsino).....	300
Kaykovskie, (Cakes).....	200
Koonjeskie.....	150
Gaynoovskie.....	300

at the same time his talents and attainments are such as to be worthy of his exalted station. With all this, the bishop is sufficiently a man of the world to disdain anything like cant. His conversation, on the contrary, teems with amusement and instruction, and his company is much prized by all who have the honor of his acquaintance."

	Souls.
Stohenskie, (Stickeen)	1,500
Tangasskie, (Tongass)	150
Kaheganskie, (Prince of Wales Island)	1,200
Chasenskies	150
Soanahnskies	100
Total	5,850

"A count equal to this may be made on the Nasse, Skeena, &c., a country now under the control of the English, including Queen Charlotte's Island at 8,000, makes the number of all the Koloshes (Indians) living in this country at this time (1838) 25,000, and not less than 20,000."

Table showing the entire number of Christians in the Territory of Alaska in 1863, (Techmainov, p. 264.)*

Name of people.	Males.	Females.	Total.
Russians	576	208	784
Creoles	853	823	1,676
Aleuts, (Ounalashka, Kodiak, and Atka)	2,206	2,185	4,392
Kenai	430	507	937
Choogach	226	230	456
Ooglamutes	73	75	148
Copper River	17	1	18
Magmutes	18	1	19
Aglemutes	19	20	39
Aziagmutes	105	101	206
Koskoquims	755	640	1,395
Kvichpaks	226	153	379
Agloomutes	19	20	39
Ingaleeks	263	213	476
Kolchans	97	93	190
Koloshes	221	226	447
Koorilsov	63	48	111
Tongass	1	1	2
Total	6,314	5,714	12,018

* The term "Christian" here simply indicates the *baptism* of the Indians, with the marked exception of the Aleuts. For instance, the 1,395 Koskoquims who permitted the priests to baptize them, had then no more idea of the principles or practice of Christianity than they have now; they received some trifling reward at the time, of tobacco, cloth, &c., for submitting to the ceremony.

LETTER FROM MR. DALL.

While in the Territory last season, I had the satisfaction of meeting this gentleman, an employé of the United States Coast Survey, and we had occasion to exchange views in regard to the condition of the people. The opinions of Mr. Dall were, in some instances, so different from mine that I asked him to embody his conclusions in the form of a letter in order that I might publish them, to show the contrast. This he has done, and I take pleasure in making known the views of Mr. Dall, and in appending a criticism based upon my knowledge and judgment. I may say at the outset that, while I concede for the sake of argument that Mr. Dall "has seen more of the country than any other individual," I am not willing to grant the plain inference that he has studied that which he has seen more intelligently or patiently than others, who may have seen less, but still enough to form a correct opinion.*

OUNALASHKA, ALASKA TERRITORY,
U. S. COAST SURVEY SCHOONER YUKON,

August 31, 1874.

GENTLEMEN: At the instance of Mr. Elliott, I have addressed to you the present letter, intended to embody the conclusions to which I have been led during a long residence in this Territory, bearing on the subject of your inquiry.

For nearly ten years I have been constantly engaged either in the study of the subject or in active investigation in this region. Three winters and more than seven years of this period I have been actually resident in the Territory, and the duties assigned to me have carried me to nearly every point in it which is of any importance. I have consequently seen more of the country than any other individual, and never having been connected in any way with any trading company, it may be

* In making my comments upon this letter, I do not wish to appear in the light of 'laying down the law' in every case, for it is a question well open to argument as to the effect of any attempt to educate these people. A long interview with General Eaton, Commissioner of Education, upon this subject pleased me very much, for I found that he had a quite different idea from the plan now followed of schools on our Indian reservations; indeed, it was almost identical with the views of the Russian bishop in San Francisco, who has charge of the Greek Catholic church in this Territory. The system of General Eaton will undoubtedly be found in his report for this year.

H. W. E.

reasonably assumed that I have been in the position of an impartial observer, and that my views on the subject are not without a certain weight.

I will endeavor to state as succinctly as practicable the present condition of the Aleutian people and its relation to their past condition, the position which they hold in regard to the traders, and what action seems to me desirable on the part of the Government to protect its honor and their rights from invasion.

Briefly, the past may be summed up in the statement that the Aleuts were found by the early Russian explorers a race possessed of much intelligence, not without spirit, yet far less warlike and aggressive than the Eskimo of Kodiak and elsewhere, (who are usually confounded with the Aleuts,) and an entirely different people in character and disposition from the Indians of the coast or the interior. They were reduced by the most barbarous and inhuman treatment to less than 10 per cent. of their original numbers, and were regarded as the slaves of the traders.

The first reaction against this system took place in 1794, and then and afterward in 1799, 1805, and especially 1818, the Russian government, recognizing its duty, interposed between the Aleuts and the trading companies regulations intended to curb the exactions of the latter and improve the condition of the former.

In 1824, Father Innocentius Veniaminoff, a noble and devoted missionary, now primate of the Greek Church, began his labors among the Aleuts, and to him is due directly most of their improvement, mental and moral, since the time mentioned. In 1861 and 1862 the report of Imperial Commissioner Golovin was prepared and submitted, and the result showing that the regulations of the government had been more or less unsuccessful in checking the rapacity of the traders, their charter was not renewed.(1)

In the Russian plan, the Aleuts were in a condition of serfdom to the company which controlled the colonies. Yet the company had its own obligations to fulfill toward them, and when these were enforced, no Russian, except the commander of a trading-post, could strike a native; the Aleuts were insured a subsistence; the making of quass, a fermented liquor, of which the basis is meal and sugar or molasses, was forbidden under heavy penalties, and intoxicating spirits were only

furnished to the natives when actually engaged in heavy manual labor for the company, and then in very limited quantities. Schools were obliged to be maintained by the company, in which the priests were usually the teachers, and though these were of rather a poor character, yet the children who manifested more than usual ability were able to enter a higher seminary at Sitka, and to obtain in this manner a tolerable education, for which in return they were bound to the company's service at stated wages for a term of years. A number of individuals thus educated⁽²⁾ participated with credit to themselves in the exploration of the Territory, and commanded vessels belonging to the company, or otherwise held positions of responsibility. The entire race became christianized, their religion being of a low type it is true, but unmistakably earnest and devoted.

So much for the past. Under this system of tutelage the Aleuts lost almost entirely the feeling of independence or the capacity for independent action and self-guidance.

In describing their present condition, I must premise that no one who has studied them at all has ever placed them in a light which would class them with our wild and unruly Indian tribes, and that the care and endeavors wasted on some of these should not be taken as factors in forming a judgment of what is desirable or practicable to be done for the Aleuts. The latter are a mild, intelligent, and docile people, always ready to submit to authority, even if groundless or self-constituted.

I have visited personally all the principal settlements in the Pribiloff and Aleutian Islands, and with Unalashka am especially familiar, having wintered here and been brought into tolerably close relations with the people during the last three years.

The settlements can be assigned to four principal groups, excluding that of Attu, which I am informed is about to be abandoned. These are Atka, Unalashka, Belkoffsky, and the Shumagin Islands. There are a number of very small outlying settlements, but all of them are closely contiguous to one or the other of these principal places.

The people of Atka are more enterprising and intelligent in hunting, and have been less demoralized by contact with traders; the converse is true of Belkoffsky and the Shumagins; otherwise the uniformity of character and condition throughout the Aleutian chain is remarkable. The people of the Pribi-

loff group have been under exceptional conditions for several years. They have had schools, (after a fashion,) steady and remunerative employment, a resident physician, and are able to purchase provisions and other necessities at a reasonable price; hence they cannot be compared with the others who have had none of these advantages. That the former show the good effects of their situation, it is hardly necessary to state.

The relations between these people and the traders, or, more strictly, with the one trading company which has at present an overwhelming predominance throughout the Aleutian region, are peculiar, and require a word of explanation.

The Aleuts, except on the Pribiloff Islands, gain a livelihood by hunting the sea-otter and by fishing. None of the islands afford any subsistence except that drawn from the sea.

To hunt or fish, in fact to live, the Aleut is totally dependent on his skin-canoe. To make this canoe he must have hair-seal or sea-lion skins. From various causes the sea-lions are not now to be found, as formerly, within reach of the large settlements, except on the Pribiloff Islands. This made no difference under the Russian rule, as the sea-lion skins were taken under the company's direction at the Pribiloff Islands, and were then distributed to the various points where they were needed, and were given to the Aleuts gratis. Now, on the contrary, they are obliged to buy them, and to buy them of the company, who hold the lease of the Pribiloff Islands, except in very rare cases. As the company's agents, in the natural course of business, will sell these materials only to those natives who are known to bring all their furs to the company's store for sale, it follows that the lease of the fur-seal islands carries with it a practical monopoly of all the fur-trade of the Aleutian nation, that is to say, the sea-otter as well as the seal trade.(3)

Though questions may arise in the minds of those less familiar with the subject than myself as to the necessity of this monopoly, it is sufficient to say that it is a fact, and, joined with the very great profits of the seal-trade, gives such a weight to a company possessing these advantages as to enable them to kill out all opposition traders, or to reduce their business and influence to a nullity. In point of fact, then, except in Belkoffsky and the Shumagius, where sea-lion are yet obtainable by the natives without the intervention of the company, the latter is in the possession of absolute and unchecked power over the whole Aleut nation.

Before proceeding to discuss how this power has been exercised, it is necessary to call attention to certain characteristics of the natives which your own observation will doubtless confirm. Like all races of a low degree of civilization, the attraction which intoxicating liquors, fermented or distilled, exercises over them is not equaled by any other influence to which they are subjected. The manufacture of quass, which they derived from the Russians, although prohibited by the regulations of the Russian company, has become a universal practice, and, joined to the absence of any elevating influences, such as schools, or the supervision of agents deriving their authority from the Government, is rapidly and surely degrading the character and increasing the mortality of the Aleuts. Wherever opposition traders meet, they both connive at this infamy, and in such places the deterioration of the people is more marked and rapid. There are no grounds for stating, nor is it my opinion, that the present company has abused its position more than any other would do in the same case; this, however, is not the question at issue, but whether it is consistent with the honor of the Government and with its duty toward a people who occupy the position of wards of the United States to leave them in a condition where the grossest tyranny is possible, and where gradual degradation and relapse into barbarism is certain. Let us examine for a moment the condition of the Territory. There is absolutely no law, no means of protection, no redress for injury for any citizen of the United States even, to say nothing of natives.⁽⁴⁾ A number of murders among the whites have occurred during the past few years. Only one man was ever apprehended, and I am informed that he was discharged by the courts of Washington Territory for want of jurisdiction. That acts of injustice and oppression have occurred between the traders and the company I have abundant evidence, though such things are not likely to occur in the presence of a United States officer. Suppose some act of gross injustice should occur, in what way would the unfortunate Aleut make his troubles known, if his long experience under the Russians, and disappointed hopes under the various visits of United States officials, had not taught him that the best way was to bear it in silence?

If he desired to communicate with civilization, the only mails are by the company's vessels, and I have positive evidence that they do not always respect even the sanctity of offi-

cial communications intrusted to their agent for transmission.(5)

Does he desire to communicate with the cutter during her annual visit, (if he is fortunate enough to live in Ounualashka when she does come,) he knows that a year must elapse before any result can be attained, and meanwhile he will be subjected to ill-treatment from the agent of whom he has complained, intensified by the knowledge that complaint has been made.(6)

In old times each village had a *tyone* or chief elected by suffrage, whose duty it was to be present at all trade, and arbitrate between the traders and the natives, and prevent any cheating of the latter by the former. Now, the *tyone* is the creature of the company, paid by them; if there are opposition traders there are two *tyones*, and it is evident how impartial must be their arbitration, and what is the character of the protection they afford.

The Russians left these people with their self-reliance enfeebled, but their intelligence and morals elevated to some extent above their original condition. We have done nothing to sustain them in this position, nor to cultivate their self-reliance.

I think I may say that inquiries on your part in relation to specific acts of oppression would be quite fruitless. Those natives who may have suffered have long since learned by experience that complaints result in nothing unless in an aggravation of the original difficulty, and the *tyone* paid by the company can always bring forward evidence such as his employers may desire. I must again repeat, that it is not a question of punishing actual offenses, but of providing against the perpetration of them; and to await outrages so gross as to force their way to our ears, before extending protection, is to wait till the stable is empty before locking the door.

I do not blame the traders for doing little or nothing to elevate or improve the natives.(7) It is not their business; and, even if they were willing to work against their own pecuniary interest in this way, it still should not be left to them.

The description of men who gain their livelihood as fur-traders are, with rare exceptions, unfit to be trusted with absolute power over unresisting natives, notwithstanding the possible high character of the distant heads of the company who employ them.

What then should be done to regulate the action of the two parties?

It is with some hesitation that I offer my opinion on so grave a question. One thing I feel certain of: the manufacture of quass should be put down, and no intoxicating liquor should be allowed to enter the country on any pretext whatever.

I think it the duty of the Government to provide schools for the younger people, who are growing up in ignorance, while many of their parents can read and write in the Russian language. These schools should teach the rudiments of English education, and should be free from any religious bias, as otherwise they would fail. Attendance should be made compulsory.

But it may be said that this would require many officials and great expense to get at the separated communities. I think I can show that this need not necessarily be the case. Suppose that the laws governing the Indian reservations were extended over the Aleutian region. A beginning could be made at the four principal places I have named, or at one or more of them; and extended, or the plan modified, as experience would show desirable. The few outlying smaller settlements could be reached from these, if not at once, at least eventually. Let the settlement be declared a reservation, and the resident official invested with the powers of an Indian agent, and supplemented by a schoolmaster. Then the first would be in a position to arbitrate between the natives and traders in disputed cases, and to enforce justice on both sides.(8)

I have not arrived at that point where I should believe that the Government habitually employs dishonest agents, though long experience in Alaska might shake any man's optimism.

At all events, it seems to me to be the duty of the Government to act in the matter, if only to save its own honor. I think there is a duty involved aside from economical considerations. The citizens, if not the wards of the United States, are entitled to the protection of the law, and it should be extended to them. Whether the method which I have suggested is the best or not is a question to be decided by others, but I cannot see how there can be two opinions about the duty of extending the protection of the laws and an opportunity for education to these and other civilized inhabitants of this Territory.

That these are now wanting no honest or sane man can deny.

It would be very desirable, also, that the headquarters of authority in the Territory be transferred to Ounalashka. It is

the most important and central point; but even Kodiak would be better than Sitka, which has now no importance and hardly any business.(9)

Apologizing for having trespassed on your attention with so lengthy a communication, I will now close this letter with one remark, which has no special connection with the foregoing, but which I believe of some importance. This is, that it would be very desirable that the officers of the United States employed on the Pribiloff Islands should be prohibited from receiving pay from, or rendering services for pay to, the company whom practically they are placed there to watch. That this has occurred in several instances I am aware, and probably in some cases without any improper intent on either side; but it is evident at once that it opens a wide door for scandal, if not for fraud.(10)

I remain, with great respect, yours, very truly,

WM. H. DALL,

Acting Assistant United States Coast-Survey,

In charge Hydrographic Reconnaissance of Alaska.

Messrs. H. W. ELLIOTT and

WASHBURN MAYNARD, U. S. N.,

United States Commissioners.

COMMENTS UPON THE FOREGOING LETTER.

(1) The fact the Russian American Company, at the close of its third term of twenty years, in 1862, was over two millions of silver rubles in debt may have had a great deal to do with the failure in getting a renewal of its charter. A losing business is not often persisted in a great while by either corporations or individuals. The extravagance and shiftlessness in the management of affairs in Alaska by the officers of the Russian American Company, during the last twenty or thirty years of its existence, may alone have tended to the result.

(2) Here Mr. Dall, not directly perhaps, but plainly, gives us to understand that a number of natives, Aleuts, were educated in Russian schools, and "participated with great credit to themselves in the exploration of the Territory, and commanded vessels belonging to the company, or otherwise held positions of responsibility." This is a mistake; for these people, serving with such credit, educated by the company in question, *were not Aleuts, but creoles, or half-breeds, and octoroons*. There is no record of any service rendered the Russian company by the *Aleuts*, other

than that of good, honest manual labor, with the exception of a certain Aleut named Oostigov, who at Sitka "was considered a fair navigator." These people made good ordinary carpenters, blacksmiths, coopers, locksmiths, and sailors—good enough for the Russian service—but such a grade of labor will not satisfy our traders or captains; and there is, therefore, no demand for such upon these people, and there never will be, as long as the country is under American control. We have in San Francisco to-day too many idle workmen of all grades better than the Aleuts could be made, and when such labor is wanted in Alaska, these men will be employed there. Removing the Russian Company from the country leaves no future employment whatever for the Aleuts, in the capacity above mentioned, no matter what may be their educational advantages.

(3) That Mr. Dall can advance such an argument in regard to the monopoly of the fur-trade of the Aleutian Islands by the control of the sea-lion skins of the Prybilov Islands is very strange, for the fact is, that any trader to-day who may deem the fur-trade of that section worth the outlay necessary to fit up a small schooner or sloop, and send it out every other season equipped for sea lion hunting among the Aleutian Islands, on the north side of the Peninsula and those islands south of it, can secure skins enough for the entire use of the whole Aleutian population! An annual outlay of only \$2,500 is all that is necessary for an opposition trader at Ounalashka to place himself on the same footing, in this respect, with his present rival there. Whether the fur-trade of that district is worth enough to warrant this small expenditure or not is a matter for the traders themselves to settle, not us, but the fact speaks for itself. Even if there were no sea-lions except on the Prybilov Islands, (which is not true,) the traders who take any interest in this section are perfectly independent of the Alaska Commercial Company, for there are thousands upon thousands of walrus not four hundred miles from Ounalashka, the skins of which can be made, with a little more labor, quite as valuable for covering the bidarkies or canoes of the sea-otter hunters; if anything, they are more durable, and these walrus can be obtained as easily as so many hogs or sheep.

(4) In this paragraph I concur; it is true.

(5) This is a case in which I think, or rather know, that Mr. Dall casts an unworthy reflection upon the Alaska Commercial Company without just ground. The facts are as follows: In

the spring of 1872 the Alaska Commercial Company sent a man from San Francisco, on trial, to serve as assistant agent at Ounalashka; he was found wanting, and in less than six months from the time of his engagement he was dismissed from its service as unfit and incompetent. Mr. Dall had given a letter to the person in question, while that person was acting for the company as assistant trader at Ounalashka, for transmission to the postmaster at San Francisco. This letter contained a small sum of money, (a twenty-dollar greenback, I believe,) and never reached its destination. I am, of course, not prepared to say whether the man robbed the letter or not; but I should acquit the company of collusion in so contemptible a matter, even if this man did do so. Then, again, Mr. Dall writes this letter with the ship of an opposition trader laying over ten days at anchor in the same harbor with us—no other vessels than those of the company to carry the mails!

(6) This is one of the reasons why I ask for a steam revenue-vessel in this Territory: *it is impossible for a sailing-cutter to go about from place to place, as she ought to do.*

(7) In this case I think I have shown, in a foregoing chapter, that, contrary to Mr. Dall's statement, *it is to the direct interest of traders to do all in their power to improve and elevate the natives*, and that the natives are to-day living, at Ounalashka and elsewhere in the Aleutian district, in better condition than they have ever lived before.

The traders, however, differ in their appreciation of this truth; but two very successful traders in the Territory, Capt. E. Hennig and M. Mercier, have given me good reason for making this statement—so emphatic: a trader who does the best by the natives will be the better served by them. Father Shiesnekov makes a deliberate statement which I print in this appendix (page 226) that conflicts with Mr. Dall's decidedly, and as this priest has spent over twenty-five mature years of active intelligent labor among these people, his judgment is worth something, inasmuch as *he* "has seen more of the country than any other individual," and no one can controvert the fact.

(8) This policy of Mr. Dall's, of declaring four or five Indian reservations in the Aleutian district, with an Indian agent and schoolmaster in each, would, in my best judgment, amount to nothing but discord and mischief. What security can the Government have for the disinterestedness and honesty of its Indian agents? Are such agents to tell the traders in the country

how much they shall pay the natives, or to advise the natives how to meet the traders? Interference thus by the Government with the relationship of the traders to the natives will surely be bad; *i. e.*, if the natives are fleeced now, they will, with an Indian agent arbitrating, be doubly fleeced. The poor Aleuts are the gainers by having only one power, the traders, to deal with, as at present, or they could not live as they do. There is no middle ground here. If Alaska is an Indian reservation, then there can be no white people there; if not, then Government cannot interfere with legitimate trade.

With regard to the schoolmasters, were the Government able to select and send the most zealous and excellent of their class, they would find in this Territory a barren field. Let the Greek Catholic Church continue its work; it is the only power that can accomplish any good in the mental future of the Aleut.

(9) I think myself that Ounalashka is the best place, but Kodiak is more central.

(10) I happened to be talking about this matter, in the spring of 1872, with one of the persons, perhaps, of whom Mr. Dall complains. It is, however, a very clear case, and the only one that has occurred since the granting of the lease, and in no way improper; but "as it opens a wide door for scandal, if not for fraud," I was assured by the company that the thing should never again occur. The facts are these: During the sojourn of one of the Government agents, stationed on the islands, this gentleman took a deep interest in the language of the Aleuts, being himself a linguist of fine accomplishment; the agent of the company conceived the idea of getting him to teach the school, on account of his knowledge of the Russian, which the schoolmaster employed did not possess, in the hope that the school would be more attractive to the native children. During the winter, therefore, the Government officer voluntarily taught school, although the attendance was small, for reasons which I have given in the body of my report. The only other instance where anything of this kind had occurred was in the case of this same gentleman, who had with great labor and pains compiled an English and Aleutian vocabulary, which was deemed by the Alaska Commercial Company to be of value for the use of their traders, and they purchased it for some \$100, I believe, soon after the connection of this gentleman with the Seal Islands was dissolved. But long before the date of Mr. Dall's letter the company's agent informed me of this action on their

part, and, at the same time, announced their determination to do so no more, in consequence of its liability to misrepresentation. This Government agent left the Seal Islands in 1872, at his own request, on account of the isolation and distance from his family, and has been in Washington, employed in the Treasury Department, ever since. Most likely, in this matter Mr. Dall refers to transactions that took place on the islands before the granting of the lease, and of which I have no knowledge other than that of hearsay; but as to what has transpired on these islands since the inauguration of the present state of affairs, I am fully cognizant; that which took place previous to this is now of no importance. It was a disorderly medley of civil and military authority, and, as near as I can learn, reflects no special credit upon any of the officers concerned on the part of the Government.

THE PRIBYLOV ISLANDS.*

"Under the name of the *Prybilov Islands* are known two small islands lying in Bering Sea, between 56° and 57° north latitude and 168° and 170° west longitude.

"These islands were not known before the year 1786; mate *G. Prybilov*, then in the service of a swan-hunting company, first, in the Russian name, found them, but at the same time he was not the first discoverer, because, as before said, (Part I, chap. 1,) on one of them (southwest side of Saint Paul) signs, such as a pipe, brass knife-handle, and traces of fire were found, indicating that people had been there before, but not long, as places were observed where the grass had been burned and scorched. But if we can believe the Aleuts in what they relate, the islands were known to them long before they were visited by the Russians. They knew and called them '*Ateek*' after having heard about them.

"Eegad-dah geek, a son of an Oonimak chief by the name of Ah-kak-nee-kak, was taken out to sea in a bidarkie by a storm, the wind blowing strong from the south. He could not get back to the beach, nor could he make any other landing, and was obliged to run before the wind three or four days, when he brought up on Saint Paul's Island, north from the land which he had been compelled to leave. Here he remained until autumn, and became acquainted with the hunting of different animals. Elegant weather one day setting in, he saw the peaks of Oonimak. He then resolved to put to sea, and return to receive the thanks of his people there; and, after three or four days of traveling, he arrived at Oonimak, with many otter tails and snouts.†

"The islands were both at first without vegetation, with exception of Saint Paul's, where there was a small *tal-neek* creeping along on the ground; and on Saint George, if we believe

* Translated by the writer from Bishop Innocent Veniaminov's work "*Zapieska ob Octrovah Oonahlashkenskaho Otdayla*. St. Petersburg, 1840. (The only Russian treatise upon the subject found. The selections most pertinent to the subject are introduced alone in this translation.) H. W. E. p. 268-2

† Here Veniaminov says that he does feel inclined to believe this story, as the peaks of Oonimak can be seen occasionally from Saint Paul's! I have no hesitation in saying that they were never observed by any mortal eye from the Prybilov Group. The wide expanse of water between these points, and the thick, foggy air of Bering Sea, especially so at the season mentioned in this story above, will always make the mountains of Oonimak invisible to the eye from Saint Paul's Island. A *mirage* is almost an impossibility; it may have been much more probable if the date was a winter one.—H. W. E.

the accounts of the first ones there to see, nothing grew, even grass, except on the places where the carcasses of dead animals rotted. In the course of time both islands were covered with grass, a great part of it being of the sedge kind. On them are two varieties of berries, &c., &c.

"The Aleuts serving the company here sustained the following relations between themselves and it, to wit: Each of them worked without solicitation and at whatever was found, and to which they were directed, or that which they understood. Payment for their toil was not established by the day or by the year, but in general for each thing taken by them or standing or put to their credit by the company; for instance, especially, the skins of animals, the teeth of walrus, barrels of oil, &c. These sums, whatever they might be, were placed by the company to their credit, for all general hunting and working was established or fixed for the whole year fairly. The Aleuts in general received no specific wages, though they were not all alike or equal, there being usually three or four classes.

"In these classes, to the last or least, the sick and old workmen were counted in, although they were only burdens, and therefore they received the smaller shares, about 150 rubles, and the other and better classes received from 220 to 250 rubles a year. Those who were zealous were rewarded by the company with 50 to 100 rubles. The wives of the Aleuts, who worked only at the seal-hunting, received from 25 to 35 rubles.*

"*Animals on the Prybilov Islands.*—Foxes and mice. Sometimes the ice brings bears and red foxes. The bears were never allowed to live since they could not be made useful; and also the red foxes, as they would only spoil the breed already existing, with regard to color of the fur.

"Fur-seals, sea-lions, hair-seals, and a few walrus are the only animals that may be said to belong to the Prybilov Islands.

"*Birds.*—The guillemonts, (or arries;) gulls; puffins; crested, horned, and white-breasted auks; snow-finches; geese, (two kinds;) a few kinds of *Tringa*; sea-ducks, black and gray. Most of these birds come here to lay, and with them *jagers*, hawks, owls, and '*chikees*,' (big *Laurus glaucus*,) and the albatross is frequently to be seen around the beaches."

"*Sea-otters* became scarce generally in 1811, and in the next thirty years extinct.

* Compare this annual payment made by the Russians with the cash settlement made every year by the Alaska Commercial Company, the present lessee of these islands, as presented in the chapter on the condition of affairs on the seal islands.—H. W. E.

"*The fur-seals* ('sea-cats') astonish us by their great numbers, as they gradually come up on to their breeding-places, notwithstanding harsh and foolish treatment of them, continued almost half a century (until 1824) without mercy.

"In the first years, on Saint Paul's Island, from 50,000 to 60,000 were taken annually, and on Saint George from 40,000 to 50,000 every year. Such horrible killing was neither necessary nor demanded. The skins were frequently taken without any list or count. In 1803, 800,000 seal-skins had accumulated, and it was impossible to make advantageous sale of so many skins; for in this great number so many were spoiled that it became necessary to cut or throw into the sea 700,000 pelts! If G. Rezanov (our minister to Japan) had not given this his attention, and put himself between the animals and this foolish management of them, it appears plainly to me that these creatures would have long ago changed for the worse.

"Of the number of skins taken up to 1817, I have no knowledge to rely upon, but from that time, and up to the present writing, I have true and reliable accounts, which I put in the appendix to this volume. From these lists it will be seen that still in 1820, on both islands, there were killed more than 50,000 seals, viz, on Saint Paul's, 39,700; and on Saint George, 10,250. There were eye-witnesses to the reason for this diminution of the seals, and it is only wonderful besides that they are still existing, as they have been treated almost without mercy so many years. The cows produce only one pup each every year. They have known deadly enemies, and also are still exposed to many foes unknown. From this killing of the seals they steadily grew less, except on one occasion, which was on Saint George's Island, where an opportunity was given suddenly to kill a large number; but the circumstances do not seem to be important. On one occasion a drive was made of 15,000 male and female seals, but the night was dark, and it was not practicable to separate the cows from the males; and they were, therefore, allowed to stand over until daylight should come. The men put in charge of the herding of the drove were careless, and the seals took advantage of this negligence, and made an attempt to escape by throwing themselves from the bluffs over the beach near by into the sea; but, as this bluff was steep, high, rough, and slippery, they fell over and were all injured. Now, for the first time, great numbers of seals were missed, and why, it was not significant or apparent; but on the following year, instead of the appearance and catch of 40,000 or

50,000, less than 30,000 were killed and taken, and then, too, the numbers of seals were known to diminish, and in the same way, only greater, on the other island. For instance, in the first years, on the island of Saint George, the seals were only five or six times less than on Saint Paul, but in 1817 they were only less than one-fourth; but in 1826 they were almost one-sixth again.

"The diminution of seals there (Saint Paul's) and on the other island, from 1817 to 1835, was very gradual and visible every year, but not always equal.

"The killing of seals in 1834, instead of being 80,000 or 60,000, was only 15,751 from both islands, (Saint Paul, 12,700; Saint George's, 3,051)."

In the first thirty years, according to Veniaminov's best understanding, there were taken "*more than two and a half millions of seal-skins*;" then, in the next twenty-one years, up to 1838, they took 578,924. During this last taking, from 1817 to 1838, the skins were worth on an average "*no more than 30 rubles each*," (\$6 apiece.)

"A great many sea-otters (*Enhydra marina*) were found on Saint Paul's Island at first, and as many as 50,000 were taken from the island, but years have passed since one has been seen in the vicinity, even, of the islands."

Table I, Part II, Bishop Veniaminov's Zapieska, &c., showing the seal-catch during the period of gradual diminution of life on the islands from 1817 down to 1836, the year of scarcity, and from which date they have as gradually increased up to the present number, their maximum limit in a state of nature, at which the seal-life has stood during the past twenty years; the killing has also been gradually increased up to the present figure, 100,000 annually.

Taken from—	1817.	1818.	1819.	1820.	1821.	1822.	1823.
Saint Paul's Island	47,860	45,932	40,300	39,700	35,750	28,150	24,100
Saint George's Island	12,328	13,924	11,924	10,520	9,245	8,319	5,773
Total	60,188	59,856	52,225	50,220	44,995	36,469	29,873
Taken from—	1824.	1825.	1826.	1827.	1828.	1829.	1830.
Saint Paul's Island	19,850	24,600	23,250	17,750	18,450	17,150	15,500
Saint George's Island	5,550	5,500	(^a)	^a 1,950	4,778	3,661	2,834
Total	25,400	30,100	23,250	19,700	23,228	20,811	18,034
Taken from—	1831.	1832.	1833.	1834.	1835.	1836.	1837.
Saint Paul's Island	12,950	13,150	13,200	12,700	4,052	4,040	4,220
Saint George's Island	3,084	3,296	3,212	3,051	2,528	2,550	2,582
Total	16,034	16,446	16,412	15,751	6,580	6,590 [*]	6,802

^a Left to breed.

Grand total for Saint Paul's Island 464,259
Grand total for Saint George's Island 114,665

Total catch during nineteen years of diminution 578,924

Meteorological abstract for the months from September, 1872, to April 1873, inclusive, made by Chas. P. Fish, United States Signal-Service, at the office of the Chief Signal-Officer, United States Army, division of reports and telegrams for the island of Saint Paul, Bering's Sea, for the benefit of commerce and agriculture.

Month of record.	September.	October.	November.	December.
Mean of barometer, corrected	29.773	29.512	29.458	29.488
Maximum of barometer, corrected	30.46	30.04	30.23	30.04
Minimum of barometer, corrected	28.87	28.51	28.62	28.05
Monthly range of barometer, corrected ..	1.59	1.53	1.61	1.99
Greatest daily range of barometer, corrected ..	.97	.97	.87	.80
Least daily range of barometer, corrected ..	.03	.04	.06	.03
Mean daily range of barometer, corrected ..	.259	.293	.339	.249
Mean of exposed thermometer	44° 2	36° 0	34° 3	26° 6
Maximum of exposed thermometer	52°	45°	41°	37°
Minimum of exposed thermometer	33°	22°	23°	4°
Monthly range of exposed thermometer	19°	23°	18°	33°
Greatest daily range of exposed thermometer ..	11°	11°	12°	11°
Least daily range of exposed thermometer ..	1°	1°	1°	1°
Mean of maxima of exposed thermometer ..	46° 8	38° 7	36° 2	29° 1
Mean of minima of exposed thermometer ..	41° 8	33° 3	31° 5	24°
Mean daily range of exposed thermometer ..	5° 0	5° 4	4° 7	5° 1
Mean relative humidity	85.6	83.9	86.6	87.8
Maximum relative humidity	100	100	100	100
Minimum relative humidity	56	65	60	70
Prevailing wind	N.	N.	S.	N.
Number of miles traveled by wind	9,138	11,872	14,539	16,644
Mean daily velocity of wind	304.6	383	484.6	530.5
Mean hourly velocity of wind	12.7	16	20.2	22.1
Maximum hourly velocity of wind	33	42	74	53
Proportion of cloudiness	92	84	78.9	84
Amount of rain-fall, in inches	2.89	3.08	2.38	2.99
Greatest daily amount of rain-fall .....	.85	.58	.31	.42
Amount of melted hail and snow, (included in rain-fall) .....	.20	.91	.82	2.38
Number of days on which precipitation occurred ..	30	29	27	27
Number of days on which hail or snow fell	4	15	17	24

Month of record.	January.	February.	March.	April.
Mean of barometer, corrected	29.953	29.507	29.768	29.769
Maximum of barometer, corrected	30.50	30.51	30.31	30.35
Minimum of barometer, corrected	29.32	28.26	29.05	29.00
Monthly range of barometer, corrected ..	1.18	2.25	1.26	1.35
Greatest daily range of barometer, corrected ..	.58	.95	.66	.73
Least daily range of barometer, corrected ..	.03	.06	.05	.03
Mean daily range of barometer, corrected ..	.194	.421	.219	.242
Mean of exposed thermometer	15° 7	18° 6	12° 6	23° 9
Maximum of exposed thermometer	34°	34°	35°	35°
Minimum of exposed thermometer	11°	12°	7°	3°
Monthly range of exposed thermometer	45°	46°	42°	32°
Greatest daily range of exposed thermometer ..	22°	28°	20°	24°
Least daily range of exposed thermometer ..	0°	3°	3°	3°
Mean of maxima of exposed thermometer ..	18° 9	22° 6	17° 1	27° 9
Mean of minima of exposed thermometer ..	11° 9	15° 1	7° 4	19° 4
Mean daily range of exposed thermometer ..	7° 0	7° 5	9° 7	8° 5
Mean relative humidity	85.7	86.2	81.8	84.29

Meteorological abstract, &c.—Continued.

Mouth of record.	January.	February.	March.	April.
Maximum relative humidity	100	100	100	100
Minimum relative humidity	53	49	46	63
Prevailing wind	E. N. E.	N.	N.	N.
Number of miles traveled by wind	17,903	16,646	14,512	18,607
Mean daily velocity of wind	577.5	594.3	468.1	620.2
Mean hourly velocity of wind	24.1	24.8	19.5	25.84
Maximum hourly velocity of wind	43	82	88	53
Proportion of cloudiness	62.8	74.9	68	73.6
Amount of rain-fall, in inches	0.96	5.78	1.21	1.77
Greatest daily amount of rain-fall .....	.39	1.07	.38	.50
Amount of melted hail and snow, (in- cluded in rain-fall) .....	.83	4.87	1.21	1.77
Number of days on which precipitation occurred	21	27	27	26
Number of days on which hail or snow fell	20	25	27	26

NOTE.—It will be noticed that I have not spelled the name *Behring* in accordance with the usual custom observed by English writers, who have thus given the phonetic value of the Slavonic characters used by the Russians in writing the name of this celebrated navigator; but by reference to the following statement made by Professor Gill, of the Congressional Library, it will be seen that the name in question may properly be spelled "*Bering*." Professor Gill says: "The name of the navigator which has been conferred on the strait separating America and Asia, is unquestionably spelled *BERING* and not *BEHRING*. I submit, in explanation, my reasons: 1st. The navigator himself was born in Jutland, and a scion of a Danish family, whose members bore the name of *Bering*, and two representatives of which had the same Christian name, viz, (1) Vitus *Bering*, born 1617, died 1675, some time professor of poetry at Copenhagen, and (2) Vitus *Bering*, born 1682, died 1753, a priest of Ollerup and Kirkeby. The form *Behring*, so far as I can ascertain, is unknown in Denmark, (see Nyerup's *Dansk-Norsk Litteratur-lexicon*, v. i, pp. 56, 57, 1818.) 2d. The form *Bering* is almost (but not quite) universally adopted in all non-English works; for example, *Biographie Universelle*, (Michaud,) v. 4, p. 261, 1811, also, *nouv. ed.*, v. 4, p. 28, 1854; *Nouvelle Biographie Générale*, (Hofer,) v. 5, p. 527, 1855; *Allgemeine Encyclopädie der Wissenschaften und Künste*, (Ersch und Gruber,) v. 9, p. 136, 1822; *Neues Konversations-Lexicon*, (Meyers,) v. 3, p. 238, 1862; *Deutsch-Amerikanisches Conversations-Lexicon*, (Schem,) v. 2, p. 296, 1869, and numerous others. The exceptional cases, *e. g.* *Pierer's Universal Lexicon*, *Grande Dictionnaire Universelle du xix. siècle*, &c. In English dictionaries, the true form *Bering* is adopted in the *Brief Biographical Dictionary*, by Holes, 1865, and the *Dictionary of Biographical Reference*, by Phillips, 1871, and is gradually superseding the more familiar English form. An explanation of the reason of the origin of the name *Behring* is found in the fact that it was originally derived from the Russian, without a knowledge of its primitive source, and was the nearest English phonetic expression of the Russian characters. Inasmuch, however, (1) as the original form of a name, without regard to its pronunciation, is universally adopted in our biographies and bibliographies, and (2) as the original form of the navigator's name was *Bering*, such is the correct one, and that which must ultimately supersede the other. It need only be added that *Bering* himself, and the Russians universally, (1) adopt that form when writing in English characters, and that the Russian letter ('e') in his name, represented by '*eh*,' is especially ordained by the Russians to be rendered by the Latin character 'e,' in accordance with the pronunciation of the Latin and continental races generally."

SKETCHES OF THE ALEUTIAN ISLANDS.

[Taken from Veniaminov, Zapieska, part 1, p. 134.]

ISLANDS OF THE FOUR MOUNTAINS—"CHEETIERY SOPOCHNIE."

KAYGAMILYAK is the longest; has a number of smoking hills, sometimes burning. On the southeast side of the island are the remains of what once must have been large settlements. On these islands are arries (*Lomvia arra*) and a tundra goose, which latter comes here to shed feathers and rear its young, and on the rocks around the coast are sea-lions and hair-seals.*

TAHNAK is the largest of the group. On this island are red foxes, with very coarse fur, and a few sea-fowl. In 1764, 100 Aleuts lived here or hereabouts. At this time (1834) the men have nearly all been destroyed by the hand of Stepan Glottov, and the women nearly all perished of hunger. What remains of the Aleuts is on the island of Oomnak. This is the highest one of the group under discussion. Hot springs are to be found on the east side, and on the southeast side are the ruins of old dwellings. Sea-otters are found about this place. A small island lies to the west; it is round and full of bold hills, steep. On the southeast side, in 1834, was a small settlement, which the Aleuts say was occupied by a most savage and war-like people. They were destroyed by Glottov. A few sea-lions are found here. Near this is another small island, round and full of high hills. There are remains of two settlements on it; signs of sea-otter; no one there, now; (1834;) sea-fowls, sea-lions, and hair-seal.

UNASKA is quite large; high hills, cliffs, &c. On the east side is a volcano, which began in 1825 to burn; no hot springs there; no people there, though the relics of two old settlements are seen. Birds breed on the cliffs; on the beach sea-lions, and, at times, sea-otters.

AMOOTOYON is another small island, round, bluffly, and moun-

* Last September, (1874,) Captain Hennig, while cruising with a party of sea-otter hunters, discovered a warm cave on the northeast side of this island, in which he found eleven mummies well embalmed. A full and interesting history of the matter was given to him by the natives, but it is too long for insertion here. Those mummies are now in the Smithsonian Institution, presented by the Alaska Commercial Company. These bodies were put into this cave, according to the people, in 1724 or 1725.—H. W. E.

tainous—the least important of this group; no bays, no streams, nothing but arries, sea-lions, and, at times, sea-otters. Between this island and Unaska is a rock where a great many sea-fowl breed, and sea-lions.

OOMNAK is the largest of the Aleutians. It has three high mountains; is very hilly, with a number of large lakes and streams. In 1805 the people were able to take 2,000 salmon every year, but now (1834) they cannot get more than 200 to 400; in the winter from 50 to 100. On the northeast side of the island, in the mountains, is a lake, on the bluffy beaches of which amber is found. Everything grows on the island that is peculiar to Ounalashka, save the willow. In the year some 50 black foxes are killed, 80 cross, and about 40 red. On the north shore and under Tuleeskoi Sopka is a large number of sea-lions, hair-seal, and sea-otters, from 10 to 40 annually killed. In older times the Aleuts used to get porphyry from the north-northwest side of Tuleeskoi for their weapons. There is less snow here than on Ounalashka. A great many hot springs here; one on the north side is so hot that meat can be cooked in it. Under most of these springs is a subterranean noise.

Before the coming of the Russians on Oomnak there were twenty settlements, some of them quite large, like the one at Tuleeskoi, where there were so many people that they were able to take at one time all the meat and blubber of a large whale. At the present time (1834) there are only two villages, *Raychesnoi* and *Tuleeskoi*, altogether 109 souls. The former lies on the southwest side of the island, and a wooden church was built here in 1826; 13 huts and 3 bath-houses, under the supervision of Krukov, a creole, were built in 1834; 33 males and 45 females; they had plenty of hens and raised at times potatoes; fish quite scarce; crabs and sea-urchins abundant. They have plenty of roots, but at times are without oil, and cannot then cook or use the roots, and they frequently go a year without getting a whale. In the winter they go to *Samalga* and kill from 3 to 10 sea-otters. *Tuleeskoi*, on the east side, in 1834, had 11 men and 15 women. In 1830 there were 3 settlements on this island, on the south side, and on the island *Yeagorskie*. At *Samalga* in olden times (1794) there was a large settlement, 400 souls, but all are scattered and gone now. On the south side is a beach out upon which sea-otters used to come during the prevalence of furious gales of wind from that quarter.

BOGA SLOV ISLAND made its appearance first in 1796, (May,)

and was finished in 1825; is oval-shaped; no fresh water; sea-lions breed there.

OUNALASHKA.—*Makooshin* is the highest mountain on the island; 5,475 feet; volcano. No one remembers of its having disturbed the settlement near it. In 1818 it made the earth tremble and a loud noise, but nothing more ensued. It can be ascended in August and September, when there is least snow and the winds do not blow so hard. A great many creeks and streams on the island, running down from the high hills to the sea; many pretty water-falls. There are twenty streams in which fish run up from the sea, independent of the trout found in all of them; salmon, salmon-trout, "keezoog," hump-backed salmon, and "hie-eks." Lakes on the island are nearly as numerous as the streams, and are frequently found high up in the mountains; many of them are very deep; one of them more than ten versts in circumference, and in this one no bottom was found.

Gulfs and bays on all sides of this island, especially on the north side, and more good ones than on any other island of the whole Aleutian chain; three are on the eastern side, *Beaver*, *Captain's*, and *Makooshin*. The first ship entered Captain's Harbor in 1769, Captain Layvashava. At *Oobiennah Bay* a squad of Aleuts destroyed a Russian ship. *Matreskenskayah Bay*, a great place for hump-backed salmon, and *Paystrokovskie*, two small bays distinguished by the coming of a great many whales; and from these bays to the west, about eight versts, are some small lakes, but very deep; all these bays are good places for ships to stand at anchor.

In *Starry Gavan* the first Russian ship entered in 1761. *Anglieskie Bay* is where Captain Cook anchored. *Chernovskie* is the finest harbor on the island, in the straits between *Oomnak*, and a dozen others, but of less importance. *Kahlecta Point* received its name because in a little bay under it a great many whales used to resort; this point is the land-mark for the harbor of Ounalashka. *Cheerful* or *Jolly Point*, so called by the sailors who usually make it in a fog. It is made up of some thirty differently colored strata or layers, horizontal, distinguishing it from all other capes or points; from its very summit down to the water's edge, on one side, is a vivid green slope.

At *Morkrovskie Point*, to the southward in the hills, are the remains of a fossil elephant, and a little farther, trending from the southeast to the northwest, behold an elephant of the true kind, lying quite horizontally, over 14 feet wide, and about 10

above the water. At *Aspeetskie Point* the Russians found a stone slate which belonged to one of the first chiefs. The Russians also called the people living near this place "*Aspeet*."

The points on the southern side of Ounalashka are not well known; they are not safe to approach, on account of reefs and submerged rocks, which extend out to sea a long way, and the water breaks very heavily on them and on the cliffs.

Vegetation on Ounalashka is found everywhere, except on the summits of the highest mountains and the faces of steep cliffs. On the east side of the island, in Captain's Bay and part of Beaver Bay, the small willow grows best, berries, mushrooms, &c.

Animals.—Foxes, mice, (brought by the Russians,) cows, and rats; the latter came only in 1828, brought in the ship "*Finland*," and in less than two years they increased so that they got over to *Makooshin* settlement, a distance of over fifty versts, in spite of high, snowy ridges and high streams between, and attacks by foxes. The foxes on this island yield to the hunters about 500 annually; of these 100 are black, 250 cross, and 150 red. Of the water-animals, in early times there were great numbers of hair-seal, fur-seal, sea otter, and sea-lions, but nowadays they come in such small numbers that from them all hardly more than a hundred skins are taken per annum. Sea-otters are found only on the southern side near the beach, and in very small numbers, as they come from the sea; sea-lions in less number and only in one place, on the southern side, not far from *Osofskie Bay*, on a rock separated from the beach by a narrow canal. Fur-seals used to come into the bays here until the discovery of the *Prybilov Islands*, and since then hardly a single one.

The island was not known earlier than 1760. In 1762 the Russians, who first discovered this place, were unhappily nearly exterminated, and in revenge for this the natives were nearly all destroyed in 1763 by *Solovayiat*, and the rest in the following year.

There are only two hot springs on the island; one on the point near *Makooshin* settlement has a little run of water and is not very hot; the other near a small lake back from Indian Bay, five versts from *Illoullook*, has a temperature of about 57° to 60°.

From a lake known to and spoken of by the Aleuts, near *Makrovskoi Gulf*, high up in the mountains, under the cliffs on

the eastern beach, is found the finest *amber* ; hair-seals go up into the lake.

Near Makooshin Gulf, between a long tufa or breccia place or edge and *Tarahsovs koyan Bay*, in the mountains, is a lake on the beach of which is found native copper ; and above this, in the mountains of the third range, also, is a lake, on the beach of which is found hollow stones which rattle when shaken, and in the cleft of a cliff or cave is seen the gleam of light, like water. On the south side of the island, near *Oin-nomaden Bay*, are two lakes also in the mountains, in one of which hair-seals go, and on the beach under the cliffs are found shining stones. In the mountains near Captain's Harbor is a lake on the beach of which white pearls were reported found, but in 1812 men were sent, in August, to look for them and found only ice.

In Beaver Bay, on the left side, near *Agamgeek Bay*, is a waterfall tumbling down from high cliffs, the water of which the Aleuts dare not drink for fear of death, and near this place stands a stone which is honored as a petrified devil.

There is a stream under Makooshin Mountain, on the north side, by the banks of which are iron bogs, and above them it is said native copper is found ; back from Makooshin Gulf, in the mountains of the third range, mica ("sluda") is found.

Before the Russians came, in 1762, there were on this island twenty-four settlements, and altogether a great many people. Even as late as 1805, there were fifteen counted settlements, and in them 800 souls ; but at present (1834) there are only ten, and in them only 470 ; and all of them placed, with one exception, on the west and northwest shores.

Illou-look is the head settlement. Solovayiah is said to have lived here. Built here (1834) is a wooden church, with bells ; five houses, three magazines or warehouses ; five "barabkies," or huts, and one barn—all the property of the company. The head office for the whole Aleutian district is here, under a chief trader and three store-keepers. Twenty-seven yourts, or huts, belong to the creoles and Aleuts, 275 souls in number. (Male Aleuts, 90 ; females, 106 ; over them Russians and creoles, 75.) Here, with the exception of the Russian American Company's office at Sitka, was the first school. It was opened the 12th March, 1835 ; started in 1834 by 22 males, creoles and Aleuts. In this school no more than twelve boys could be brought together in 1835. There was a hospital with eight sick men attended by a surgeon, and a home for orphan

girls, with twelve of them in it. Some of the company's servants raised pigs, chickens, and ducks, and nearly all the housekeepers had a garden, where they raised turnips and potatoes. (In 1838, one hundred and twenty kegs were raised by the whole settlement.) The ground for the first church was prepared in 1825; church built in 1826; provided with bells, and pictures in gilt frames; built by the Aleuts.

The profits of this country, or settlement, in especial: from ten to forty fur-seals are taken every year as they come down from the north; the yield from the fish is not important; the river which comes down from the mountains in *Natikenskoi Bay* is the best place, and sometimes the dog-salmon are there in such numbers that it is difficult to get through the water. It is said that the river which is by this settlement used to be the best for fish; it is now spoiled.

Cod-fish are caught a long way out, as far as twenty to eighty "sajens,"* and in late years in small numbers. A willow grows near the settlement, quite large, and, though the company have annually repaired and built with it some sixty baidars and over one hundred and twenty boxes, it is still abundant. For cattle this place is not very profitable, because, around this settlement, though grass grows earlier than elsewhere in the district, snow falls and lies from five to seven months, and the mowing has to be done in bad or hard places, and, on account of the rare occurrence of sunlight and the frequency of rains, hay-making is exceedingly difficult. Potatoes and turnips do not thrive in a noteworthy manner.

Natielcouskoi settlement lies on the west side of Captain's Harbor. It has two yourts and 15 souls, (6 males, 9 females.)

Paistrakhorskies is on the left side of Captain's Harbor; five yourts; 37 souls, (16 males, 21 females.) The mountain above it has a bowl-shaped crater, and in it is a lake.

Vaysaylovskies lies on the left side of the point of the same name; 15 souls, (7 males, 8 women.)

Makooshenskoi lies on the north side of Makooshin Gulf; built here, a yurt, barrabkie, store-house, and bath-house belonging to the company, and a trader stationed here. The Aleuts possess six yourts and six barrabkies; 35 souls, (15 males, 20 females.) Not far from the settlement, back from the mountains near the sea, pumice-stone is found. There were five settlements near this place in ancient times, excepting

* "Sajen," equivalent to seven feet.

Starrie-chorskaho, which existed up to 1805. They get from 80 to 150 foxes here, with varying grades of fur.

Koshegenskoï lies inside of Koshegenskaho Gulf, on the left side, on a very even place, near the debouchure of a stream. The company has erected here a yourt, store-house, bath-house, and a barn belonging to it, which has a trader here, who attends to the business of all the southern part of the island. The Aleuts have eight yourts, and are 41 souls in number, (18 men, 23 women.) There are not many fish here; in the best days of salmon-running not over 300. Sometimes sea-lions lie on the south side. A small number of hair-seals are killed on the rocks. Roots in abundance. In 1833 the company introduced cattle here.

Chernovskie, on the northwest side of the island, has four yourts and 44 souls, (20 males, 24 females.) The harbor is elegant, but not always without danger to sailing-vessels; for, if caught outside in the straits, without wind, they may be carried against the cliffs of Oomnak Straits.

On the south side of Chernovskie stands a citadel, and to the north, a distance of 20 versts, near an old settlement, was found a copper chain, four links. This settlement is the poorest on the island. The principal subsistence is mussels. There is only one fish-stream, and that falls near the settlement.

Emagenskoï is in Captain's Harbor, 8 versts northeast from Illoulook, on a little bay of the same name; 32 souls (15 males, 17 females) live here in four yourts.

Kahlechtsenskoï.—Three yourts; 14 souls. A small stream here, where a great many fish are taken. Sometimes more than 2,000 salmon are secured. The natives frequently get whales here.

Bobrovskie.—Forty-one souls, (21 males, 20 females,) four yourts, and a few gardens; they get a small number of salmon-trout and dog-salmon in three small streams.

Borka or *Spirkin* lies on the south side of the island, divided from the mainland by a wide strait. This island stands out bold and abrupt, high from the sea. On the north shore are a few small bays; above one of them is the settlement, of six yourts, 44 souls, (17 males, 27 females.) They have a few gardens. Principal subsistence, sea-fish and mussels. On this island is found a green stone, irony, or blackish, shiny red, which the Aleuts require in painting their "*kamlaykas*."*

* Skin shirts.

On AMAKNAK ISLAND were three settlements before the coming of the Russians in 1762, but now there are none; hogs run from April to October; on the little island to the west, *Ooknadak*, was a small settlement.

The KRAMBEETSA ISLANDS are seven in number, lying between Unalashka and Oonemak, viz: *Oonalga*, *Akootan*, *Akoon*, *Goloi*, *Avatanak*, *Teegalda*, and *Oogomak*. Akootan is the largest and most mountainous; the smallest and lowest is Oonalga, and all of them have inhabitants save Goloi and Oogomak; all have foxes save Goloi; the catch is from 180 to 250 yearly.

ONALGA has a small lake and three small streams, into which only salmon-trout run. The berries are "sheksa," (*Empetrum nigrum*), salmon-berry, and "moroshkie," (*Rubus chamæmorus*.) Snow does not lie long here. The settlement is on the south side, on the cliffs; 3 yourts, 23 souls, (10 males, 13 females.) The little, bold rocky islands to the northeast of Oonalga are frequented by hair-seals; on only one of them is a spring of water. Ships can go all around these islands without danger; they are free from rocks or shoals.

AKOOTAN, a rough, rocky island, with a high volcano near the middle; the beaches are few and far between, and but little land fit for vegetation. Two lakes on it, with five streams; one bay on the south side; a few fish come into the streams. Berries of all kinds grow here, peculiar to this country; (from 40 to 60 foxes are killed here every year, the greater number red.) On the northeast side, in a small bay, are hot springs, coming from the mountains, with so high a temperature, that meat and fish can be cooked in them. On the very summit of the volcano are found small, but deep, lakes, and the place where the volcano breaks out strongly resembles the spout-hole of a huge whale, the ridge of the mountain resembling the back and head of this animal.

In old times there were 7 settlements, with 600 people; in 1810 there was but one, and in the present time (1834) but one, and this is on the north side, where a small stream runs down, surrounded by high and rugged mountains. This is the smallest settlement in this district, 13 souls, living on fish, which come into the streams and along the beach.

AKOON lies near Akootan; it is smaller, and the mountains not so high; one mountain, on the south side, always smokes, but the smoke is never noteworthy. The beach is mostly bluffs, rugged. The berries "moroshkie" and "zemlianeeka" are

found. Plenty of lakes, four large ones and five streams, into two of which fish run in small numbers. From 80 to 120 foxes are annually killed. In 1830 the people here captured two wolves; they must have been of only one sex, or they would have increased; these animals are very disagreeable, for they kill the foxes and spoil the traps. There were, long ago, eight settlements on this island, with more than 500 people, but now (1834) there are only three, with 85 souls, viz: *Artelnorakie*, southwest side of the island, on a high bluff, with two yourts, two barrabkies, and a bath-house, and a trader belonging to the company; the Aleuts have seven yourts, 32 souls, (16 males, 16 females.) The trader and a few Aleuts have a small garden. They sometimes capture a whale. *Raychesnoi* is on the north side, near a stream; five yourts built here and a few barrabkies, 37 souls, (19 males, 18 females.) *Seeraidenskoï* is inside of a bay of that name, looking out on Avatanak; two yourts and 16 souls. The people in both of these settlements live by the beach, depending upon it and a few hair-seals that may come around.

AVATANAK ISLAND has on its southeast side a hot spring, only open to view at low water. This is the only island where the Aleuts find red chalk. Above this island, near Akootan, are two remarkable rocks, "Ooshenadskie." On them in early times sea-lions were found, and one of them from all sides resembles a bell. This island lies between Goloi and Teegalda. From two lakes rises quite a stream on the north side, and which in old times was a great fish-place, and since the extermination of the Aleuts there by Salovayiah's comrade, Natorbin, not a fish has come since. On the south side of the island sea-otters come, and on the island foxes of different colors, of which twenty to thirty are taken per annum. In early times three, not large settlements, were here; now there is but one, on the north side, and consists of five excellent yourts, and distinguished by their being all clean and free from blackness; 49 souls, (24 males and 25 females.) Vegetation here is not good. When during my last visit to this place, in 1833, I saw the signs or ruins of the yurt where Salovayiah and Natorbin lived, and a woman was living then who had been a witness to their cruelty. A small island lies near Avatanak which a few hair-seal repair to, and on the east side of it is found red chalk.

TEEGALDA lies east of Avatanak. It is next in size to Akootan. There are 3 lakes here from 300. to 1,000 sajens around,

and a small stream flows, from which about 1,000 fish are taken. All berries are found here except the huckleberry. From 50 to 70 foxes are killed here every year. The greatest number of them are black and black-haired. In the autumn and winter are plenty of "beach-geese," and in the spring "toondra geese." On the southwest side of this island is found stone-coal, and in the lake near the settlement is a red or golden ocher. In ancient times there were five settlements, in them over 500 people, but now there is only one, which lies on the north side, with a population of 92 souls, (39 males, 53 females.) They have a fine "kozarmie," (barrack,) well built and always kept clean; five yourts, a bath-house, and a few barrabkies. The number given above of these people includes those who were brought over from Oogamak in 1826. In this place are the ruins of an old yourt, 30 sajens (210 feet) long. Opposite the town, on the north side of the island, near Oogamak, is a number of steep, high rocks (28) or islets. On them the big burgomaster-gull breeds, and over 500 eggs are taken every year. On them are three green places only, and on many of these islands lie hair-seals, and on one of the northern ones are sea-lions. This is the chief supplying place for all these people here for winter-food. On them are no lakes or streams. On the north side is a greenish red used by the Aleuts for painting their hats.

OOGAMAK.—No water save a small spring; a small number of foxes (7) killed annually. On the island comes a larger number of hair-seals than are found on all the others. On the cliffs, sea-parrots breed, and over 500 are annually shot; on the low rocks sea-lions previously came in considerable numbers, one of which traveled over and back from the south to the north side of the island; a good many stay all winter. In early times on the island there were many people, but they have been growing less and less, so that now there are only 18.

OONEMAK.—This island was in old times the most densely populated of all these islands; there were 12 settlements. In 1831 the ruins of a "kozarmie" or barracks exhibited a length of over 600 sajens, (4,200 feet,) and yourts were from 12 to 30, and even 50 sajens. At the present time (1834) only one settlement, *Sheshal-dinskie*, with 71 souls, (30 males, 41 females,) who are poorest of all the Aleuts. They have but 2 yourts and 4 bidarkies, and the company has a trader here and two workmen; they have a yourt, a barrabkie, and "banio," (or bath-house.)

Animals.—Mice or lemmings, minks, Parry's marmot, rabbits,

wolves, bears, deer, land-otter, and red foxes, hair-seals on all sides; sea-lions in small numbers; on the south and northwest sides, where there are some lagoons, walrus are sometimes found; on the beaches of this island sea-otters came twice, first on the north beach, and second on the west. About the north shore is a considerable number of whales. From 80 to 150 foxes were killed per annum, 1 to 3 wolves, and a few minks and land-otters constitute the real hunting. Bears are plenty, but they are coarse and mostly red, (cinnamon.) The most valuable thing is the whalebone; but little, however, of this is found.

NOTES UPON THE ANIMALS OF THE ALEUTIAN ISLANDS.

[Translated from Veniaminov's *Zapieska*, 1840.]

(Part 1, chap. xii, p. 68.) "The numbers of several kinds of animals are growing very much less in the present as compared with past time. For instance, the company here (Ounalashka) regularly killed more than a thousand sea-otters, (annually;) now (1840) from 70 to 150, (in 1832-1833 there were 175 to 200, and a long time previous to this such a number was not obtained;) and there was a time (1826) when the whole returns from the hunters of this Ounalashkan district were only 15 skins." "The company on the island of Saint Paul killed from 60,000 to 80,000 fur-seals per annum, and in the last season, (1836,) with all possible care in getting, they obtained only about 1,200. On the island of Saint George, instead of 40,000 or 35,000, only 33,000 (1,300?) were killed."

(Part 2, p. 529.) "The kind of deer here I have had a glimpse at, and I know that the large males do not weigh more than three poods,* (108 pounds.) They go to several islands of the Shumagin group, Oonemak, and all over the peninsula, (Alaska.)

"*Bear*.—Here all have patched and harsh fur, and are found on Oonemak and the peninsula; they are also very quiet and seldom go for man. The hunters are only afraid of those which have *torn ears*. They eat meat, fish, and roots. At the time of salmon running in the rivers, bears generally go there and capture fish. The bears go into the water above their knees, stand up opposite the stream, and watch a fit opportunity when they can

*This is an error obviously; they will weigh from 216 to 324 pounds.—H. W. E.

grab or snatch the fish, which, when they see it near, they instantly strike at it with their paws and most always hit; then they either throw or carry their prey to the beach and return to continue their work until they have as many as they want. With the last fish they go to the bank and begin to eat. After killing the fishes the bears eat only the heads, because this is the fattest part.

"Bears in the winter sleep in dens, anywhere under cliffs, in holes, or caves; but I have heard that they have been sometimes seen walking about in the winter.

"Foxes may be divided into *black*, *cross*, and *red*, the greater part red. They are caught in two ways, *i. e.*, guns and traps; the latter is the best method, and by it the most are secured. Hunting-season is in the fall and winter, when they are in new and full fur. Trapping-season begins about 5th October and continues as long as the snow lasts.

"*Blue foxes* are confined to the Prybilov Islands, on Saint George especially, where they annually kill about 1,500. It is said that when these islands were first discovered there was naught but blue foxes there, of most excellent quality; but a few winters afterward came white foxes, which breed very rapidly, and in a great measure spoiled the fur; that now the fur which once was called *blue* is called *smoky*.

"*Sea-otters* are distinguished above everything on account of their great value and small numbers. There was a time when they were killed in thousands, now only by hundreds. There are plenty of places where before there were great numbers of sea-otters; now not one is to be seen or found. The reason for this is most evident: every year hunted without rest, they have fled to places unknown and without danger.

"*Land-otters* are found only on the Shumagins, Oonemak, and the peninsula in this Aleutian district. They do not live in the sea, but are found in the lakes and go close to the sea; they have longer feet or limbs, and can run on land better than any of the other animals (amphibious) of their class. Of the number taken in this district there is no true record, but in the best years they do not get over 100. They are hunted, like foxes, with guns and traps, but they are very strong and full of life."

INDIAN TARIFF.

The following table shows the prices paid by the Russian-American Company in the Alaskan Territory, where it had no competition. (The quotations are in paper rubles = to 20 cents each, (100 kopecks make a ruble;) a silver ruble is equal to about 75 cents.)

	1804.	1827.	1836.	1850.	Now (1874) the natives receive—
	<i>R. kop.</i>	<i>R. kop.</i>	<i>R. kop.</i>	<i>R. kop.</i>	
Sea-otter, prime	10 00	20 00	30 00	50 00	\$40 each.
one year old	4 00	10 00	15 00	25 00	\$10 each.
six months old	0 60	2 00	3 00	3 00	\$2.50 each.
Fur-seals, five to three years..	0 20	0 50	0 75	0 75	40 cents to \$3 each.
two to one year.....	0 20	0 40	0 50	0 50	Do.
Martens, very best	0 20	0 50	0 50	1 00	From \$1.50 to \$3 each.
Beavers, best	1 20	2 50	4 00	4 00	From 50 cents to — each.
Land-otter, best	1 60	3 20	4 60	6 00	From \$2 to \$2.50 each.
Bears, big black	2 00	4 00	4 00	5 00	From \$3 to \$5 each.
Lynx	0 80	3 00	3 00	5 00	From \$1 to \$2.50 each.
Mink, best	0 20	0 30	0 25	0 50	From 50 cents to \$1.50 each.
Foxes, extra black	-----	-----	9 00	10 00	From \$40 to \$100 each.
blue	0 20	1 00	1 00	0 50	40 cents each.
silver, extra	1 00	3 00	3 00	3 00	From \$3 to \$10 each.
red, extra	0 75	1 50	2 00	3 00	From \$1 to \$1.50 each.
Wolves, extra	1 00	1 00	2 00	4 00	From \$2 to \$5 each.
Wolverines, extra.....	0 80	2 00	2 00	4 00	Do.

Where this company had competition, however, the prices ranged quite high, to wit: At Sitka, for sea-otter, 140 to 150 *silver* rubles; beaver, from 2 to 18 rubles; land-otters, 2 to 18; mainland-foxes, black, 2 to 36 rubles; silver foxes, 3 to 18; red, 2 rubles to 50 kopecks; martens, 50 kopecks to 3 rubles; lynx, from 3 to 9 rubles; bears, 1 to 18 rubles; wolverines, 2½ to 18 rubles; (these quotations are all in silver rubles.)

The value of staple furs of Alaska in the Chinese market during 1799 was—

Sea-otter, prime, \$75 to \$100 each.

Fur-seal, prime, \$3.50 to \$3.75 each.

This is interesting, as the value of a dollar has not changed since that time in that country, and sea otter sells to-day at about the same rate as given.

Few fur-seals are sold in this market now, but the great bulk of the sea-otter catch of the Kuriles goes into China. They do not possess the art of dressing the former well, and were in the habit of wearing them simply tanned. The Chinese for all un-

dressed furs, like marten, beaver, &c., offer one of the best cash markets in the world; indeed, all the early trade of Alaska went into China, both from Russian, French, and English traders.

The following table shows the number of sea-otters and fur-seals secured off the coasts of California and Oregon by the Russians during the period of their occupation of Ross, or Bodega, in California, from 1824 to 1834 inclusive:

	1824.	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.
Sea-otters	475	500	287	9	1	18	12	112	1	187	220.
Sea-otters, young ..	.....	.....	13	3	.....	5	4	.....	.....	34	35
Fur-seals	1,050	455	290	.....	210	287	.....	205	118	54	.....

During the last forty years there have been no sea-otters to speak of taken on the Californian coast; and in 1835 the last fur-seals, fifty-four in number, were taken on the Farallones, two small rocky islets off the mouth of San Francisco Harbor. Hunters along the coast of Oregon still continue, however, to shoot a few annually, but at restricted localities, as on the small reach of coast at Gray's Harbor, where nearly all that are now obtained from the whole district are found.

THE FUR-SEAL ROOKERIES OF THE SOUTH ATLANTIC.

While the *Callorhinus* is found in such great numbers in the North Pacific, there is nothing of its genus found in the waters of the North Atlantic, and none to speak of in the South Pacific, and to-day the whole number found elsewhere than Alaska is quite small, though in early days, some hundred years ago, when the fur-seal was first discovered on the South Shetland Islands, they were so abundant and so numerous that hundreds of thousands were annually taken—taken without the slightest regard to sex or condition, although the skins were not of great value then. So numerous were these animals that for over fifty years an immense number, several hundred thousand skins, were yearly secured in this reckless, ruinous fashion, and it was not until the beginning of the last decade that the supply grew so small that scarcely a vessel of the former fleets remained on the ground; and last season, the winter of 1873-'74, less than 15,000 were gathered from the ground upon which many millions of fur-seals were found forty years ago resting and breeding.

The government of Buenos Ayres has from the first protected and cared for a small rookery of fur-seals under the bluffs at Cabo Corrientes, on its coast, where some 5,000 to 8,000 are annually taken, but the seals here have no hauling-grounds like those on Saint Paul; they are taken with much labor under the high cliffs of this portion of the coast. This is the only government aid and care that the seals have ever received outside of Bering Sea. The following extract shows the way in which the fur-seals of the south came into notice:

“Soon after Captain Cook's voyage in the *Resolution*, performed in 1771, he presented an official report concerning New Georgia, in which he gave an account of the great number of elephant-seals and fur-seals which he had found on the shores of that island. This induced several enterprising merchants to fit out vessels to take them; the former for their oil, the latter for their skins. Captain Weddell states that he had been credibly informed that during a period of about fifty years not less than 20,000 tons of oil were procured annually from this spot alone for the London market, which, at a moderate price, would yield about £1,000,000 a year.

“Seal-skins are very much used in their raw state as articles of apparel by the natives of the polar zones; when tanned, they are used extensively in making shoes; and the Eskimo have a process by which they make them water-proof, (?) so that, according to Scoresby, the jackets and trousers made of them by these people are in great request among the whale-fishers for preserving them from oil and wet. But the skins are not only used in this raw and tanned state as leather; on account of their silky and downy covering, they constitute still more important articles connected with the fur-trade. Thus considered, seal-skins are of two kinds, which may be distinguished as *hair-skins* and *fur-skins*; the former are used as clothing and ornament by the Russians, Chinese, and other nations, and the latter yield a fur which we believe exceeds in value all others which have been brought into the market. Many seals supply nothing but hair, while others in different proportions produce both the hair, and underneath it soft and downy fur. The majority, we believe, are to be considered merely as hair-skins, similar to the bear or sable, and of these some are excellent of their kind and much prized.”—*Hamilton's Amphibious Mammalia*, Edinburgh, 1839.

With regard to the manner in which the business was carried on down here we find in the *Encyclopædia Britannica* the following facts: “From about the year 1806 till 1823 an extensive trade was carried on in the South Seas in procuring seal-skins; these were obtained in vast abundance by the first traders and yielded a very large profit. The time was when cargoes of those skins yielded five or six dollars apiece in China, and the present price in the English market averages from 30 to 50 shillings per skin. The number of skins brought off from Georgia cannot be estimated at fewer than 1,200,000; the island of Desolation has been equally productive, and, in addition to the vast sums of money which these creatures have yielded, it is calculated that several thousand tons of shipping have annually been employed in the traffic.”

An English writer in 1839 calls attention to the deplorable and ruinous management of affairs on the great rookeries of the South Pacific in the following strong terms:

“It may be considered superfluous to read a lecture to the trader upon a matter so nearly touching his own interest; and yet there is one point, at the same time, which forms so essential a part of my subject, that we cannot withhold a word or

two. These valuable creatures (fur-seals) have often been found frequenting some sterile islands in innumerable multitudes. By way of illustration, I shall refer only to the fur-seal as occurring in South Shetland. On this barren spot their numbers were such that it has been estimated that it could have continued permanently to furnish a return of 100,000 furs a year; which, to say nothing of the public benefit, would have yielded annually a very handsome sum to the adventurers. But what do these men do? In two short years, 1821 and 1822, so great is the rush that they destroy 320,000. They killed all, and spared none. The moment an animal landed, though big with young, it was destroyed. Those on shore were likewise immediately dispatched, though the cubs were but a day old. These, of course, all died, their number, at the lowest calculation, exceeding 100,000. No wonder, then, at the end of the second year the animals in this locality were nearly extinct. So is it in other localities, and so with other seals, and so with the oil-seals, and so with the whale itself, every addition only making bad worse. All this might easily be prevented by a little less barbarous and revolting cruelty, and by a little more *enlightened* selfishness.

“With regard to this seal-fishery of the south, the English and Americans have exclusively divided it between them, and with very great profits. It has lately been stated (1839) that they together employ not fewer than sixty vessels in the trade, of from 250 to 300 tons burden. These vessels are strongly built, and have each six boats, like those of the whalers, together with a small vessel of 40 tons, which is put in requisition when they reach the scene of their operations. The crew consists of about twenty-four hands; their object being to select a fixed locality from which to make their various *batteaus*. Thus it is very common for the ship to be moored in some secure bay and be partially unrigged, while at the same time the furnaces, try-pots, &c., required for making the oil are placed on shore. The little cutter is then rigged and manned with about half the crew, who sail about the neighboring islands and send a few men here and there on shore where they may see seals or wish to watch for them. The campaign frequently lasts for three years, and in the midst of unheard-of privations and dangers. Some of the crew are sometimes left on distant barren spots, the others being driven off by storms. They are left to

perish or drag out for years a most precarious and wretched existence."*

This gives a very fair idea of the manner in which the business was conducted in the South Pacific. How long would our sealing interests in Bering Sea withstand the attacks of such a fleet of sixty vessels, carrying from twenty to thirty men each? Not over two years. The fact that these great southern rookeries withstood and paid for attacks of this extensive character during a period of over twenty years speaks eloquently of the millions upon millions that must have existed in the waters now almost deserted by them.

* Robert Hamilton, *Amphibious Mammalia*, Edinburgh, 1839.

THOUGHTS UPON POSSIBLE MOVEMENTS OF THE
FUR SEALS IN THE FUTURE.

As these animals live and breed upon the Prybilov Islands, certain natural conditions of landing-ground and climate appear from my study of them to be necessary to their existence and perpetuation. From my surveys made upon the islands to the north, Saint Matthew's and Saint Lawrence, and the authentic corroborating testimony of those who have visited all of the mainland-coast on our side as well as the islands adjacent, including the Peninsula and the Aleutian Archipelago, I have no hesitation in stating that the fur-seal cannot breed on any other land than that now resorted to within our boundary-lines; the natural obstacles are insuperable. Therefore, so far as our possessions extend, we have in the Prybilov group the only eligible land on which the fur-seal can repair for breeding, and on Saint Paul alone there is still room enough vacant for the accommodation of ten times as many as we find there now.

But we know that to the westward, and within the jurisdiction of Russia, are two islands—one very large—on which the fur-seal regularly breeds also, and though, from the meager testimony in our possession, we are told that it is in small numbers only, still, if the land be as suitable for the reception of the rookeries as is that of Saint Paul, then what guarantee have we that at some future time the seal-life on Copper and Bering Islands may not be greatly augmented by a corresponding diminution of our own with no other than natural causes operating? Certainly, if the ground on either Copper or Bering Island is as well suited for the wants of the breeding fur-seal as is that on Saint Paul, then I say that we may at any time note a diminution here and find a corresponding augmentation there, for I have clearly shown, in my chapter on the habits of these animals, that they are not particularly attached to the respective places of their birth, but that they land with an instinctive appreciation of its fitness as a whole. The want of definite knowledge in regard to the character of the Russian islands is a serious drawback to any correct generalization as to the limit of migration, and they ought to be examined intelligently with this view, for if these Russian islands do not present any considerable area of eligible breeding-ground as on Saint Paul, then we know that they will never be resorted to

by any great numbers of the fur-seal, not at least while so much good rookery-ground on the American side is vacant as is the case now.

If we, however, possess virtually all the best-situated ground, then we can count upon retaining the seal-life as we now have it, and in no other way; for it is not unlikely that some season may occur when an immense number of the fur-seals which have lived during the last four or five years on the Prybilov Islands should be deflected from their usual feeding-range by the shifting of schools of fish, &c., so as to bring them around quite close to the Asiatic seal-grounds in the spring, and the scent from those rookeries would act as a powerful stimulant for them to land there, where conditions for their breeding may be as favorable as desired by them. Such being the case, this diminution which we would notice on the Prybilov group would be the great increase observed here, and not due to any mismanagement on the part of the men in charge of these interests. Thus it appears to me necessary that definite knowledge concerning the Commander Islands and the Kuriles should be possessed; without it, I should not hesitate to say that any report made by an agent of the Department as to a visible diminution of the seal-life on the Prybilovs, due, in his opinion, to the effect of killing, as it is conducted, was without good foundation; that this diminution would have been noticed just the same in all likelihood had there been no taking of seals at all on the islands, and that the missing seals are more than probably on the Russian grounds.

If we find, however, that the character of this Russian seal-land is restricted to narrow beach-margins under bluffs, as at Saint George, then we know that a great body of seals will never attempt to land there when they could not do so without suffering, and therefore, with this correct understanding to start on, we can then feel alarmed with good reason should we observe a diminution to any noteworthy degree on Saint Paul.

I do not think, however, that we will be called upon to look into this question for an indefinite time to come, though it may come soon; but the seals undoubtedly feed in systematic routine of travel from the time they leave the Prybilov Islands until their return, and therefore, in all probability, unless the fish upon which they feed suddenly become scarce in our waters on soundings, they (the seals) will not change their base as mat-

ters now progress, but it cannot be considered superfluous to call up this question for discussion and future thought.

In the mean time the movements of the seals upon the several breeding-grounds of Saint Paul and Saint George should be faithfully noted and recorded every year, and the question of their increase or diminution will be soon settled beyond all theory or cavil. This action on the part of the Government agent up there is of the first importance. The counting of the skins is done alike twice over, by the company in the presence of the natives, and then again in San Francisco by the custom-house officials there, and heavy bonds and self-interest would prevent any attempt at transgression of law, even if an apparent chance was offered; but the company is not bound to submit a report every year to the Treasury Department upon the condition of the seal-life there, and although it does take intelligent cognizance of this matter, still no weight could be attached to any statement that it might make, for the simple reason of the cry that would be raised of interested machination if so done,

AN ACT to prevent the extermination of fur-bearing animals in Alaska.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful to kill any fur-seal upon the islands of Saint Paul's and Saint George's, or in the waters adjacent thereto, except during the months of June, July, September, and October, in each year; and it shall be unlawful to kill such seals at any time by the use of fire-arms, or use other means tending to drive the seals away from said islands: *Provided*, That the natives of said islands shall have the privilege of killing such young seals as may be necessary for their own food and clothing during other months, and also such old seals as may be required for their own clothing and for the manufacture of boats for their own use, which killing shall be limited and controlled by such regulations as shall be prescribed by the Secretary of the Treasury.

SEC. 2. *And be it further enacted*, That it shall be unlawful to kill any female seal, or any seal less than one year old, at any season of the year, except as above provided; and it shall also be unlawful to kill any seal in the waters adjacent to said islands, or on the beaches, cliffs, or rocks where they haul up from the sea to remain; and any person who shall violate

either of the provisions of this or the first section of this act, shall be punished on conviction thereof, for each offense, by a fine of not less than two hundred dollars nor more than one thousand dollars, or by imprisonment not exceeding six months, or by both such fine and imprisonment at the discretion of the court having jurisdiction and taking cognizance of the offense; and all vessels, their tackle, apparel, and furniture, whose crew shall be found engaged in the violation of any of the provisions of this act, shall be forfeited to the United States.

SEC. 3. *And be it further enacted*, That for the period of twenty years from and after the passage of this act the number of fur-seals which may be killed for their skins upon the island of Saint Paul's is hereby limited and restricted to seventy-five thousand per annum; and the number of fur-seals which may be killed for their skins upon the island of Saint George's is hereby limited and restricted to twenty-five thousand per annum: *Provided*, That the Secretary of the Treasury may restrict and limit the right of killing, if it shall become necessary for the preservation of such seals, with such proportionate reduction of the rents reserved to the Government as shall be right and proper; and if any person shall knowingly violate either of the provisions of this section, he shall, upon due conviction thereof, be punished in the same way as is provided herein for a violation of the provisions of the first and second sections of this act.

SEC. 4. *And be it further enacted*, That immediately after the passage of this act the Secretary of the Treasury shall lease, for the rental mentioned in section 6 of this act, to proper and responsible parties, to the best advantage of the United States, having due regard to the interests of the Government, the native inhabitants, the parties heretofore engaged in the trade, and the protection of the seal-fisheries, for a term of twenty years from the 1st day of May, 1870, the right to engage in the business of taking fur-seals on the islands of Saint Paul's and Saint George's, and to send a vessel or vessels to said islands for the skins of such seals, giving to the lessee or lessees of said islands a lease duly executed, in duplicate, not transferable, and taking from the lessee or lessees of said islands a bond, with sufficient sureties, in a sum not less than \$500,000, conditional for the faithful observance of all the laws and requirements of Congress and of the regulations of the Secretary of the Treasury touching the subject-matter of taking fur-seals and disposing of the same, and for the payment of all taxes and

dues accruing to the United States connected therewith. And in making said lease the Secretary of the Treasury shall have due regard to the preservation of the seal-fur trade of said islands, and the comfort, maintenance, and education of the natives thereof. The said lessees shall furnish to the several masters of vessels employed by them certified copies of the lease held by them, respectively, which shall be presented to the Government revenue-officer for the time being who may be in charge at the said islands, as the authority of the party for landing and taking skins.

SEC. 5. *And be it further enacted*, That at the expiration of said term of twenty years, or on surrender or forfeiture of any lease, other leases may be made in manner as aforesaid for other terms of twenty years ; but no persons other than American citizens shall be permitted, by lease or otherwise, to occupy said islands, or either of them, for the purpose of taking the skins of fur-seals therefrom, nor shall any foreign vessel be engaged in taking such skins ; and the Secretary of the Treasury shall vacate and declare any lease forfeited if the same be held or operated for the use, benefit, or advantage, directly or indirectly, of any person or persons other than American citizens. Every lease shall contain a covenant on the part of the lessee that he will not keep, sell, furnish, give, or dispose of any distilled spirits or spirituous liquors on either of said islands to any of the natives thereof, such person not being a physician and furnishing the same for use as medicine ; and any person who shall kill any fur-seal on either of said islands, or in the waters adjacent thereto, (excepting natives as provided by this act,) without authority of the lessees thereof, and any person who shall molest, disturb, or interfere with said lessees, or either of them, or their agents or employés in the lawful prosecution of their business, under the provisions of this act, shall be deemed guilty of a misdemeanor, and shall for each offense, on conviction thereof, be punished in the same way and by like penalties as prescribed in the second section of this act ; and all vessels, their tackle, apparel, appurtenances, and cargo, whose crews shall be found engaged in any violation of either of the provisions of this section, shall be forfeited to the United States ; and if any person or company, under any lease herein authorized, shall knowingly kill, or permit to be killed, any number of seals exceeding the number for each island in this act prescribed, such person or company shall, in addition to the penalties and forfeitures aforesaid, also forfeit the whole

number of the skins of seals killed in that year, or, in case the same have been disposed of, then said person or company shall forfeit the value of the same. And it shall be the duty of any revenue-officer, officially acting as such on either of said islands, to seize and destroy any distilled spirits or spirituous liquors found thereon: *Provided*, That such officer shall make detailed report of his doings to the collector of the port.

SEC. 6. *And be it further enacted*, That the annual rental to be reserved by said lease shall be not less than \$50,000 per annum, to be secured by deposit of United States bonds to that amount, and in addition hereto a revenue tax or duty of two dollars is hereby laid upon each fur-seal skin taken and shipped from said islands during the continuance of such lease, to be paid into the Treasury of the United States; and the Secretary of the Treasury is hereby empowered and authorized to make all needful rules and regulations for the collection and payment of the same, for the comfort, maintenance, education, and protection of the natives of said islands, and also for carrying into full effect all the provisions of this act: *Provided further*, That the Secretary of the Treasury may terminate any lease given to any person, company, or corporation, on full and satisfactory proof of the violation of any of the provisions of this act or the rules and regulations established by him: *Provided further*, That the Secretary of the Treasury is hereby authorized to deliver to the owners the fur-seal skins now stored on the islands, on the payment of one dollar for each of said skins taken and shipped away by said owners.

SEC. 7. *And be it further enacted*, That the provisions of the seventh and eighth sections of an act entitled "An act to extend the laws of the United States relating to customs, commerce, and navigation over the territory ceded to the United States by Russia, to establish a collection-district therein, and for other purposes," approved July 27, 1868, shall be deemed to apply to this act; and all prosecutions for offenses committed against the provisions of this act, and all other proceedings had because of the violations of the provisions of this act, and which are authorized by said act above mentioned, shall be in accordance with the provisions thereof; and all acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

SEC. 8. *And be it further enacted*, That the Congress may at any time hereafter alter, amend, or repeal this act.

Approved, July 1, 1870.

BY-LAWS OF THE ALASKA COMMERCIAL COMPANY,
SAN FRANCISCO, CALIFORNIA.

I. The corporate name of this company is the Alaska Commercial Company, and its affairs are under the control of five trustees, who shall hereafter be chosen by the stockholders of the company on the second Wednesday of June in each year, and who shall hold office until their successors are elected. The annual meetings of the stockholders shall be held at the office of the company. At all elections of trustees by the stockholders each stockholder shall be entitled to one vote for every share of stock held by him on the books of the company. Stockholders may vote by proxy. All proxies shall be signed by the party owning the stock represented.

II. The principal place of business of the company is San Francisco, California.

III. The regular meetings of the board of trustees will be held at the office of the company on the first Wednesday in each month, at 12 o'clock m., and no notice of such meeting to any of the trustees shall be requisite. Other meetings of the board of trustees may be held upon the call of the president, by notice, signed by him, of the time and place of meeting, personally served on each trustee residing within this State, or published in a newspaper of general circulation in San Francisco for ten days successively next preceding the day of such meeting. Special meetings may be held upon notice, signed by three trustees, stating the time and place of meeting, and the purpose for which the meeting is called, having been duly served on each trustee, or published in a newspaper of general circulation in San Francisco for ten days successively next preceding the day of meeting, and no business other than that specified in the notice shall be transacted at such special meeting. At all meetings of the board any three of the trustees being present shall constitute a quorum for the transaction of the business of the company. Adjourned meetings may be held in pursuance of a resolution of the board adopted at any regular or general meeting of the board. Any three trustees elected at any annual meeting of the stockholders of the company, and being present at the close of such stockholders' meeting, may, on the same day, without notice to any of the trustees, meet and organize the board by the election of officers, and

may transact such other business as may come before the board at such meeting.

IV. The officers of the company shall consist of a president, a vice-president, and a secretary, who shall be chosen by the board of trustees at their first meeting after the annual election of trustees; such officers to hold office one year, or until their successors are elected.

V. The president, or in his absence the vice-president, shall preside at the meetings of the board. In case neither are present, the board may appoint a president *pro tempore*.

VI. All vacancies in the board may be filled by the board at the next meeting after the existence of such vacancy, and it shall require the affirmative vote of three trustees to elect. In case of any vacancy occurring among the officers or agents of the company, the same may be filled at any meeting of the board.

VII. All certificates of the capital stock of the company shall be signed by the president and secretary, attested by the corporate seal of the company, and can be issued to the parties entitled thereto or their authorized agent. All transfers of stock shall be made on the books of the company by the secretary, upon surrender of the original certificate or certificates, properly indorsed by the party in whose favor the same was issued. No stock shall be transferred to any person not a stockholder of the company at the time of such transfer, unless the same shall have been offered for sale to the company, or stockholders of the company, and the purchase at the fair cash or market value refused, except by authority of a resolution of the board of trustees permitting such transfer.

VIII. The corporate seal of the company consists of a die of the following words: "Alaska Commercial Company, San Francisco, California."

IX. The corporate seal, and all property, securities, interests, and business of the company, shall be under the control and general management of the president, subject to the direction of the board of trustees. The funds of the company shall be deposited (from time to time, as they are received) to the credit of the company, with a bank doing business in San Francisco, to be designated by the president, and the said funds can be drawn from such bank only by proper checks or drafts, signed by the president or vice-president of the company. The books of the company shall be kept by the secretary, who shall

also keep a correct record of all the proceedings of the board of trustees had at their meetings, and perform such other duties as the board of trustees may require.

X. The pay and salaries of all officers of the company shall be determined, from time to time, by the board of trustees.

XI. The president of the company shall have power to appoint and employ such general business agents, factors, attorneys, clerks, and other employés as he may deem proper and requisite for conducting the business and affairs of the company; and he shall fix the pay, commissions, or salaries of all such agents, factors, attorneys, clerks, and other employés, from time to time, as circumstances shall require.

XII. All transfers of the capital stock of this company made to persons not citizens of the United States, or made for the use or benefit of any citizen or citizens of any foreign government, are absolutely void.

XIII. Dividends from the net profits of the company may be declared and paid by order of the board of trustees, in accordance with law.

XIV. These by-laws may be altered or amended by the board of trustees in the manner prescribed by law.

REGULATIONS.

OFFICE ALASKA COMMERCIAL COMPANY,

San Francisco, January, 1872

The following regulations are prescribed for the guidance of all concerned :

1. The general management of the company's affairs on the islands of Saint Paul's and Saint George's is intrusted to one general agent, whose lawful orders and directions must be implicitly obeyed by all subordinate agents and employés.

2. Seals can only be taken on the islands during the months of June, July, September, and October in each year; except those killed by the native inhabitants, for food and clothing, under regulations prescribed by the Secretary of the Treasury.

Female seals and seals less than one year old will not be killed at any time, and the killing of seals in the waters surrounding the islands, or on or about the rookeries, beaches, cliffs, or rocks, where they haul up from the sea to remain, or by the use of fire-arms, or any other means tending to drive the seals away from the islands, is expressly forbidden.

3. The use of fire-arms on the islands, during the period from the first arrival of seals in the spring-season until they disappear from the islands in autumn, is prohibited.

4. No dogs will be permitted on the islands.

5. No person will be permitted to kill seals for their skins on the islands, except under the supervision and authority of the agents of the company.

6. No vessels other than those employed by the company, or vessels of the United States, will be permitted to touch at the islands, or to land any persons or merchandise thereon, except in cases of shipwreck or vessels in distress.

7. The number of seals which may be annually killed for their skins on Saint Paul's Island is limited to seventy-five thousand, and the number which may be so killed on Saint George's Island is limited to twenty-five thousand.

8. No persons other than American citizens, or the Aleutian inhabitants of said islands, will be employed by the company on the islands in any capacity.

9. The Aleutian people living on the islands will be employed by the company in taking seals for their skins, and they will be paid for the labor of taking each skin and delivering the same at the salt-house forty cents, coin, until otherwise ordered by the Secretary of the Treasury. For other labor performed for the company, proper and remunerative wages will be paid, the amount to be agreed upon between the agents of the company and the persons employed. The working-parties will be under the immediate control of their own chiefs, and no compulsory means will ever be used to induce the people to labor. All shall be free to labor or not, as they may choose. The agents of the company will make selection of the seals to be killed, and are authorized to use all proper means to prevent the cutting of skins.

10. All provisions and merchandise required by the inhabitants for legitimate use will be furnished them from the company's stores, at prices not higher than ordinary retail prices at San Francisco, and in no case at prices above 25 per cent. advance on wholesale or invoice prices in San Francisco.

11. The necessary supplies of fuel, oil, and salmon will be furnished the people *gratis*.

12. All widows and orphan children on the islands will be supported by the company.

13. The landing or manufacture on the islands of spirituous or intoxicating liquors or wines will under no circumstances be permitted by the company, and the preparation and use of fermented liquors by the inhabitants must be discouraged in every legitimate manner.

14. Free transportation and subsistence on the company's vessels will be furnished all people, who at any time desire to remove from the islands to any place in the Aleutian group of islands.

15. Free schools will be maintained by the company eight months in each year, four hours per day, Sundays and holidays excepted, and agents and teachers will endeavor to secure the attendance of all. The company will furnish the necessary books, stationery, and other appliances for the use of the schools without cost to the people.

16. The physicians of the company are required to faithfully attend upon the sick, and both medical attendance and medicines shall be free to all persons on the islands; and the ac-

ceptance of gratuities from the people for such services is forbidden.

17. The dwelling-houses now being erected by the company, will be occupied by the Aleutian families, free of rent or other charges.

18. No interference on the part of agents or employés of the company, in the local government of the people on the islands, or in their social or domestic relations, or in their religious rites or ceremonies, will be countenanced or tolerated.

19. It is strictly enjoined upon all agents and employés of the company to at all times treat the inhabitants of the islands with the utmost kindness, and endeavor to preserve amicable relations with them. Force is never to be used against them, except in defense of life, or to prevent the wanton destruction of valuable property. The agents and employés of the company are expected to instruct the native people in household economy, and, by precept and example, illustrate to them the principles and benefits of a higher civilization.

20. Faithful and strict compliance with all the provisions and obligations contained in the act of Congress entitled "An act to prevent the extermination of fur-bearing animals in Alaska," approved July 1, 1870, and the obligations contained in the lease to the company executed in pursuance of said act, and the regulations of the Secretary of the Treasury, prescribed under authority of said act, is especially enjoined upon all agents and employés of the company. The authority of the special agents of the Treasury appointed to reside upon the islands must be respected, whenever lawfully exercised. The interest of the company in the management of the seal-fisheries being identical in character with that of the United States, there can be no conflict between the agents of the company and the agents of the Government, if all concerned faithfully perform their several duties and comply with the laws and regulations.

21. The general agent of the company will cause to be kept books of record on each island, in which shall be recorded the names and ages of all the inhabitants of the islands, and, from time to time, all births, marriages, and deaths which may occur on the islands, stating, in cases of death, the causes of the same. A full transcript of these records will be annually forwarded to the home office at San Francisco.

22. Copies of these regulations will be kept constantly posted

in conspicuous places on both islands, and any willful violation of the same by the agents or employes of the company will be followed by the summary removal of the offending party.

JOHN F. MILLER,
President Alaska Commercial Company.

NOTE.—Sections 2 and 7 of the above regulations were based upon the law of July 1, 1870; but since then Congress has given the Secretary of the Treasury the power to fix the ratio for each island upon a more intelligent understanding of the subject—and also to extend the time for taking from the 1st of June up to the 15th of August.—H. W. E.



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