

FUR-SEAL INDUSTRY OF THE COMMANDER ISLANDS, 1897 TO 1922

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INTRODUCTION

In the spring of 1882 Prof. Spencer F. Baird, secretary of the Smithsonian Institution and United States Commissioner of Fish and Fisheries, sent the writer to the Commander Islands, in the North Pacific Ocean off the coast of Kamchatka, for the purpose of collecting specimens for the United States National Museum and to investigate the natural history of the islands in general. Bering and Copper Islands were visited from May, 1882, to September, 1883, and it was thus possible, during two full seasons, to study the fur seals and the fur-seal industry of these islands and their distribution and to make maps and sketches of the seal rookeries. At that time pelagic sealing had not yet begun and the Commander Islands, which belong to Russia, were at the zenith of their productivity, the take of sealskins during

the years 1880 to 1889 averaging 44,363 per year. The insight into the fur-seal industry thus gained during its most prosperous period was of great value later. With the year 1892 began the terrible onslaught of pelagic sealers on the seal herd of the Commander Islands, which resulted in an average loss of about 100,000 seals a year in excess of the normal mortality of the herd.

In 1895 the United States Fish Commission, wishing to obtain reliable information as to the status of the fur-seal industry in the North Pacific, commissioned Dr. F. W. True and the writer to proceed to the seal islands, Doctor True to report on the Pribilof Islands while to this author was allotted the investigation of the Commander Islands. The stay on the Commander Islands lasted from July 3 to September 16, during which time all the rookeries were thoroughly investigated, photographed, and mapped. As a result of this trip there was published in the bulletin of the United States Fish Commission (Vol. XVI, 1896) the writer's report on *The Russian Fur-Seal Islands*¹ (148 pp. and 66 pls., including maps of both islands and every rookery, showing the distribution of the seals in 1883 and 1895).

As a member of the Commission on Fur-Seal Investigations appointed by President Cleveland in 1896, to act in conjunction with commissioners appointed by Great Britain and Canada with special reference to the effect of the regulations made by the Paris Arbitration Tribunal for the protection of the seal herd, the writer again visited the Pribilof Islands, spending 10 days there. The Commander Islands were next visited, and the rookeries on both islands were inspected and photographed between July 30 and August 8, after which the writer proceeded to the Kuril Islands belonging to Japan. On August 29 and 31 the then Russian seal rookery, Robben Island, in the Okhotsk Sea off the east coast of Sakhalin, was inspected, photographed, and mapped. During the summer of 1896, therefore, practically all of the fur-seal rookeries of the North Pacific, Bering Sea, and Okhotsk Sea were inspected.

In 1897 the writer again inspected the Russian islands. The entire sealing season, from July 7 to September 2, was spent on Copper Island and Bering Island studying the various problems with special reference to the effect of pelagic sealing on the greatly reduced Russian herd.

During five sealing seasons on the Commander Islands it has thus been possible for the writer to gain an intimate knowledge of the fur-seal question, not only during the period of greatest expansion but also during the period of greatest decline due to the nefarious practice of pelagic slaughter by foreign sealers.

The final report on this work was published in volume 4 of the large Report of the Fur-Seal Investigations, 1896-97, as Part IV of *The Fur Seals and Fur-Seal Islands of the North Pacific* by David Starr Jordan and associates, under the title *The Asiatic Fur-Seal Islands and Fur-Seal Industry* (1898, 384 pp., 113 pls., including diagrams and maps). In this report, which will be referred to hereafter merely as *The Asiatic Fur-Seal Islands*, a detailed description is given of the islands, the flora and fauna, the inhabitants, the fur-seal industry and its history on the Russian islands from their first discovery in 1741 to and including 1897, accompanied by photographs and maps of all the rookeries showing the distribution of the seals in 1882-83 and 1895-1897. The report also includes a full account of the Japanese fur-seal islands and pelagic sealing on the Japanese and Russian coasts.

¹ This report was reprinted in *Alaska Industries*, House Document No. 92, part 4, 1898, pp. 613-754, pls. 1-67.

The investigations of the commission indisputably demonstrated the fact that the disastrous decline of the various seal herds was due to pelagic sealing alone. It was made equally evident that the measures of protection devised by the Paris tribunal for the conservation of the seals were utterly inadequate and that if relief were not afforded soon the seal herds would eventually be destroyed commercially. The regulations made by the Paris tribunal legalized pelagic sealing during the migrations of the seals in the Pacific Ocean south of Bering Sea. The American side of the latter was closed to all pelagic sealing until August 1, after which date it was permitted up to within 60 miles of the Pribilof Islands, it being supposed that this time limit and zone sufficed for the protection of the female seals during the breeding season. It should be noted that the regulations of the Paris tribunal related only to the Pribilofs, the American islands, and not to the Russian or Commander Islands, over which the tribunal had no jurisdiction. Russia, in the meantime, negotiated a separate treaty with Great Britain for the protection of the herd of the Commander Islands; but illusory as was the American protection, that devised for the Russian islands was even worse, for the protecting zone was fixed at 30 miles around the Commander Islands with no restrictive time limit during the breeding season.

In the meantime the annual yield from the killing of bachelor seals on land and breeding females at sea was gradually dwindling, and a flourishing industry, the income from which had more than reimbursed the United States for the entire original purchase price of Alaska, was threatened with extinction when the Governments of the United States, Great Britain, Russia, and Japan finally realized that something had to be done. The negotiations that followed resulted in the abolition of legal pelagic sealing by the nationals of the four powers in the North Pacific and adjacent seas, a convention to that effect being concluded in Washington on July 7, 1911.

The beneficial effect of this treaty became apparent almost immediately on the Pribilof Islands. Despite the cessation of commercial land killing for five years, which retarded the rehabilitation of the herd, the number of seals increased from about 216,000 in 1912 to approximately 605,000 in 1922. Returns from the Japanese Government of the 10 per cent of the skins taken on Robben Island indicated similarly improved conditions there. Only from the Russian islands no authentic information was forthcoming. The question as to whether this lack of information was due solely to the distracted condition of the Far East after the Russian revolution or whether other circumstances were responsible naturally arose, in view of the fact that the treaty of July 7, 1911, was to continue in force for a period of 15 years from December 15, 1911, and thereafter until terminated by 12 months' written notice, which notice might be given at the expiration of 14 years—consequently on or after December 15, 1925. Early in 1922, therefore, the Department of Commerce decided to make an investigation of conditions existing there.

Because of the writer's previous experience in fur-seal matters in Asiatic waters he was detailed by the United States National Museum to conduct the investigation for the Department of Commerce, and had to aid him Capt. Carl E. Lindquist, of Oakland, Calif., whose 14 years of service on various vessels in Asiatic waters and familiarity with sealing conditions made his assistance invaluable.

The writer wishes to express his thanks to Mr. Henry O'Malley, Commissioner of Fisheries, who made possible this visit to the Commander Islands, and who placed at our disposal every facility for visiting the various rookeries and for studying the fur-seal question from all angles, as well as securing for our assistance the services of Capt. C. E. Lindquist. To my old friend Captain Lindquist I also express my appreciation and thanks, and I gratefully acknowledge the help and courtesies received from all members of the crews of the Coast Guard cutters *Mojave* and *Algonquin*, on which transportation was had to and from the islands, and particularly from Ward T. Bower, of the Bureau of Fisheries, who contributed so much to the success of the investigation.

INVESTIGATION OF THE COMMANDER ISLANDS IN 1922

ITINERARY

According to the original plan the investigation was to have continued for about one month, but because of bad weather, delays in transportation, etc., only 16 days in all were spent on the islands, during most of which time conditions were unfavorable for photographing and inspecting the rookeries.

The first place visited was Glinka, the southern rookery village of Copper Island, which was reached on July 24, 1922, on the Coast Guard cutter *Algonquin*. No officials were located at the village, only a rookery guard of 10 natives. These we interrogated as to the condition of the Glinka rookeries, intimating that it was desired to inspect them, but the guards were unwilling to allow this without a permit from the fisheries official located at the main village. We therefore proceeded to that point and received permission to go ashore from the government manager of the fur industry of the islands. There being no sealing, all the inhabitants were assembled in the village and we were met with the greatest hospitality and good will. The condition of the natives was better than we had anticipated, though we found them lacking in good clothing, especially shoes, and also in certain provisions.

The authority recognized by the officials and inhabitants was that of the Merkulof government at Vladivostok and of the governor of the Kamchatka district, and the old white-blue-red flag of Imperial Russia was displayed at the signal bluff above the village. We were told that a number of Japanese seal poachers were being held in custody, having been taken prisoner the day before, and their schooner, which had been seized, was seen lying at anchor in the little cove of the village.

As the weather absolutely prevented any rookery work on Copper Island we decided to proceed as soon as possible to Bering Island. The island manager accompanied us in order to authorize our stay at that island, and toward evening on July 26 we landed at Nikolski, the main village.

On July 28 North Rookery was inspected and, as far as the rain and gale would allow, photographed. The weather continued rainy with heavy fog until August 1, but the time was not entirely lost as the writer was given free access to the official archives from the records of which valuable extracts were made relating to the fur-seal industry of the islands during the 25 years since our last visit.

The fog continued to hang so low over the island that it was impossible to make further observations on the rookeries, and on August 8 we departed on the Coast Guard cutter *Mojave*. Robben Island, in the Okhotsk Sea, was visited on August 11, and on August 20 we arrived at Hakodate, where the firm that had entered into a contract with the Vladivostok government for the handling of the Commander Islands furs for the next three years and the provisioning of the inhabitants was interviewed.

On August 30 a brief interview was had at Tokyo with the fur expert who visited the Commander Islands in 1915 and 1916 and inspected the seal rookeries there, and in Yokohama much valuable information was obtained from a former administrator of the Commander Islands, who served from 1907 to 1917.

THE RUSSIAN FUR-SEAL ISLANDS

In 1898 the fur-seal islands still belonging to the Russian Crown consisted of the Commander Islands, located off Kamchatka between the Pacific Ocean and Bering Sea, and Robben Island in the Okhotsk Sea. The latter island was ceded to Japan in the treaty of peace following the Russo-Japanese War of 1904-5. There remain, therefore, in Russian possession at the present date only the Commander Islands.

CONDITION OF THE COMMANDER ISLANDS IN 1922

The Commander or Komandorski Islands, so named after Commander Bering, who discovered the group in 1741, comprise two main islands—Bering and Copper (Miedni)—situated off the east coast of Kamchatka between $54^{\circ} 33'$ and $55^{\circ} 22'$ north latitude and $165^{\circ} 40'$ and $168^{\circ} 9'$ east longitude, about 750 miles west of the Pribilof Islands. Bering Island is about 50 miles long by an average of 10 miles wide, and Copper Island 30 miles long by 2 miles wide on the average. Both islands are very mountainous, the altitude of the highest peak on Bering Island, Mount Steller, being given as 670 meters ² (2,198 feet), and that on Copper Island, Mount Stejneger, as 637 meters ³ (2,090 feet).

BERING ISLAND

During my former visits the seals on Bering Island were distributed between two rookeries—great North Rookery, situated on the northernmost prolongation of the island (Severni Mys or Cape Yushin), and South Rookery, situated about midway on the western coast of the island—but the latter rookery is now extinct.

Reef, North Rookery, in 1922.—This rookery was formerly the largest and most important on the Commander Islands and has, perhaps, received the greatest attention. The inspection in 1922 took place on July 28.

Upon arrival at the rookery great changes from former days were noticed. Several of the old buildings were missing, among them the small house of the sealer near the salt house, as well as the house marked on the 1895 map as the "cossack's house." Nearly every trace of the "abandoned village" of the same map had dis-

² Fedtschenko, Boris: *Flore des îles du Commandeur*, 1906, p. 1. Cracovie.

³ Morozewicz, J.: *Mémoires du Comité Géologique* (N. S.), Pt. 72, 1912, p. 45.

appeared, and many of the sod huts of the "new village" were in ruins. In their place a large frame house had been erected by the Government just back of the old village for occupancy by the overseer and other officials, evidently built at a time when the rookery was in a more flourishing condition but now plainly showing evidence of decay. As no sealing was going on at this season, the native population was congregated at the Saranna village, nearly 7 miles farther east, busy with catching and drying salmon for winter food, and only a guard of a dozen young men was located at the rookery village. The salt house, which contained nothing but a small quantity of old and discolored salt, was in a very dilapidated condition. The floor was covered with mold and slime and had rotted away in places; the roof was leaking badly.

The decay of the buildings was as nothing, however, compared with the desolation presented to view from the salt-house platform overlooking the rookery, from which the writer's first sketch of the teeming masses of seals was made just 40 years before (July 30, 1882; see plate 20, Asiatic Fur-Seal Islands). At first only a few straggling bulls could be discovered on the main rookery and a handful of seals on the Sivutchi Rocks. Presently, as the overseer pointed them out, a thin line of seals was observed above the grass to the left. In the beginning some difficulty was experienced in becoming oriented, as the first things looked for were the white "sands" and "parade grounds," where the breeding harems used to be lying in thick masses with the characteristic black "band" of seals obliquely across the sandy, gently rounded peninsula (fig. 1). To the writer's astonishment it became apparent that this entire space, except a very narrow fringe of whitish sand along the northern edge, was overgrown with a tall, dense growth of coarse grass (*Elymus*), and that not only was this grand rookery depleted almost beyond belief, but it must have been so for a considerable period for this gravelly surface to have become so densely overgrown with vegetation.

We descended on the rookery. It was low tide, and we walked out to the large rocks directly north of the peninsula without seeing a cow or pup seal, over ground where formerly thousands of seals bred and where it would have been impossible to have walked except in the spring before the seals had arrived or during the sealing season when taking part in a drive. Occasionally a roaming bull or half bull, of which there seemed to be a great superfluity, would amble across our path apparently in search of cows. By this time the wind had increased almost to a gale so that it was impossible to set up a tripod and camera, and a few instantaneous exposures with the small kodak were the only photographs that could be secured. The extent of the arc covered by the seals was sketched in on the map (fig. 8)⁴ and an attempt was then made to estimate the number of seals present on the rookery.

The first location of our observation point being found very unsatisfactory (fig. 3)⁵, we proceeded cautiously to the western edge of the reef and there gained a somewhat better view (fig. 4). An attempt was then made to count the bulls, at least, but the count was quite illusory. It is certain that among the females there were many bulls which we could not and did not see. At a rough estimate, based on the various "counts" by the writer, Captain Lindquist, Mr.

⁴ The accuracy of this has since been verified from the photographs.

⁵ This was chiefly because only a few seals could be seen. For comparison with conditions in 1895 and 1897 photographs from nearly the same standpoint are added (figs. 5 and 6).



FIG. 1.—North Rookery, Bering Island, July 13, 1897, 1.30 p. m., from driveway. Sunshine

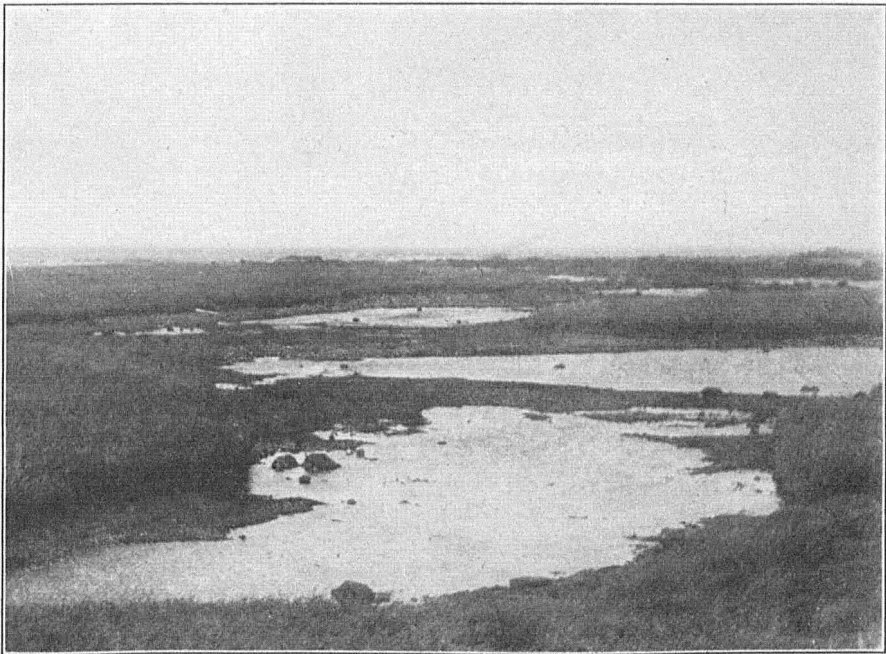


FIG. 2.—North Rookery, Bering Island, July 28, 1922, 1.30 p. m., from same standpoint as above Rain

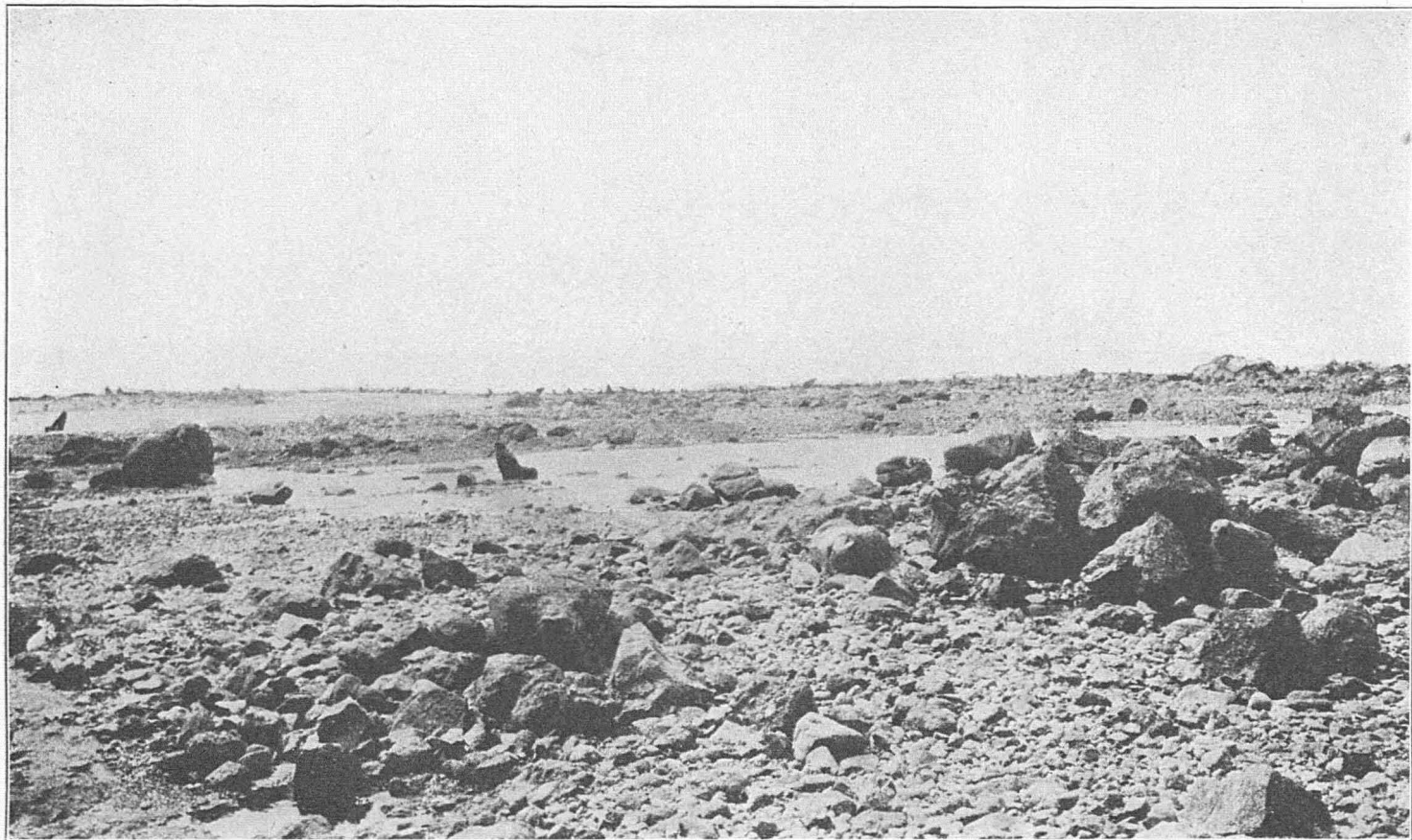


FIG. 3.—North Rookery, Bering Island, July 28, 1922, 12.30 p. m. From photo station No. 1 shown in Figure 7. Cloudy

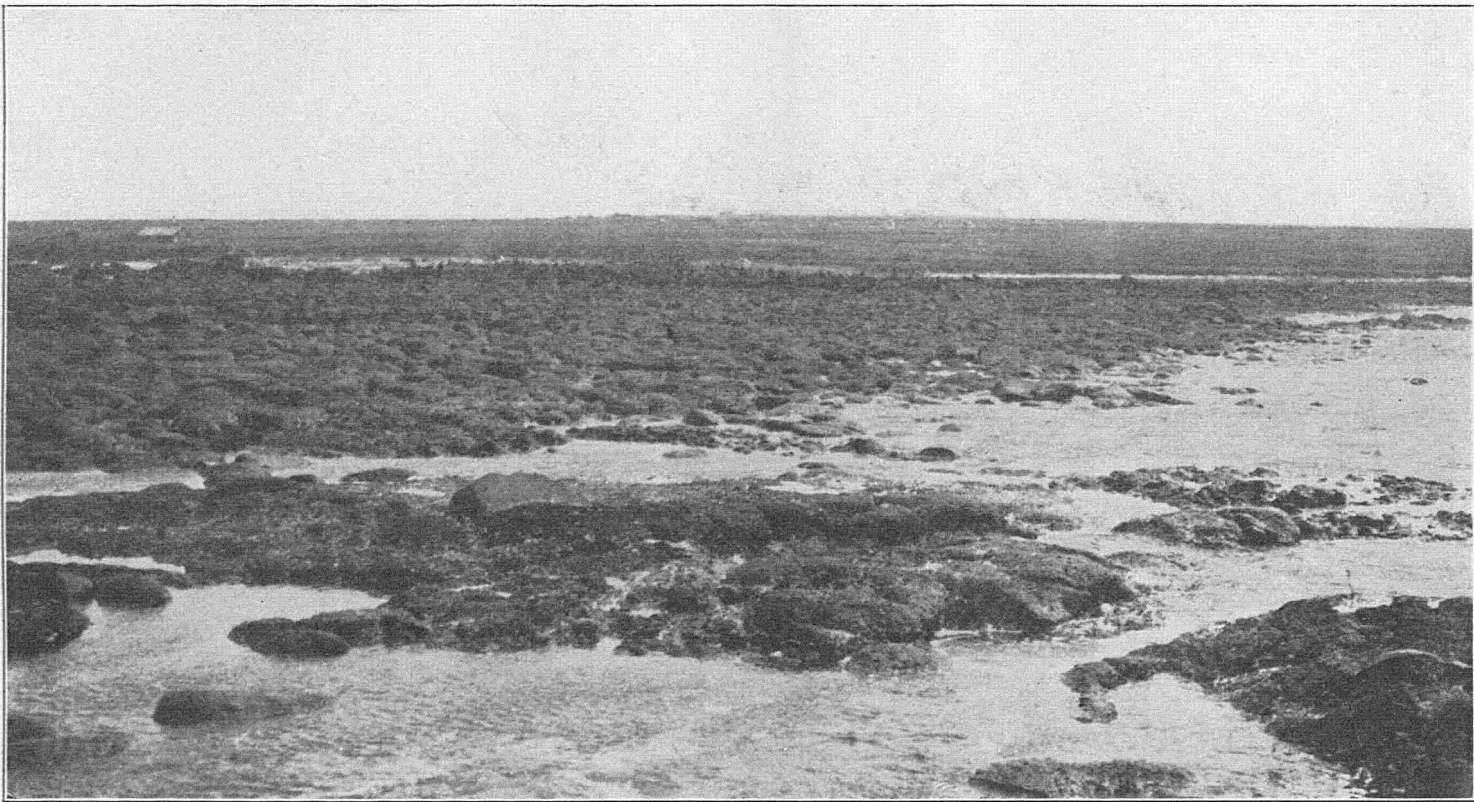


FIG. 4.—North Rookery, Bering Island, July 28, 1922, 1 p. m. From photo station No. 2 shown in Figure 7. Rain



FIG. 5.—Part of North Rookery, Bering Island, July 13, 1897, 1 p. m. From nearly the same standpoint as Figure 3

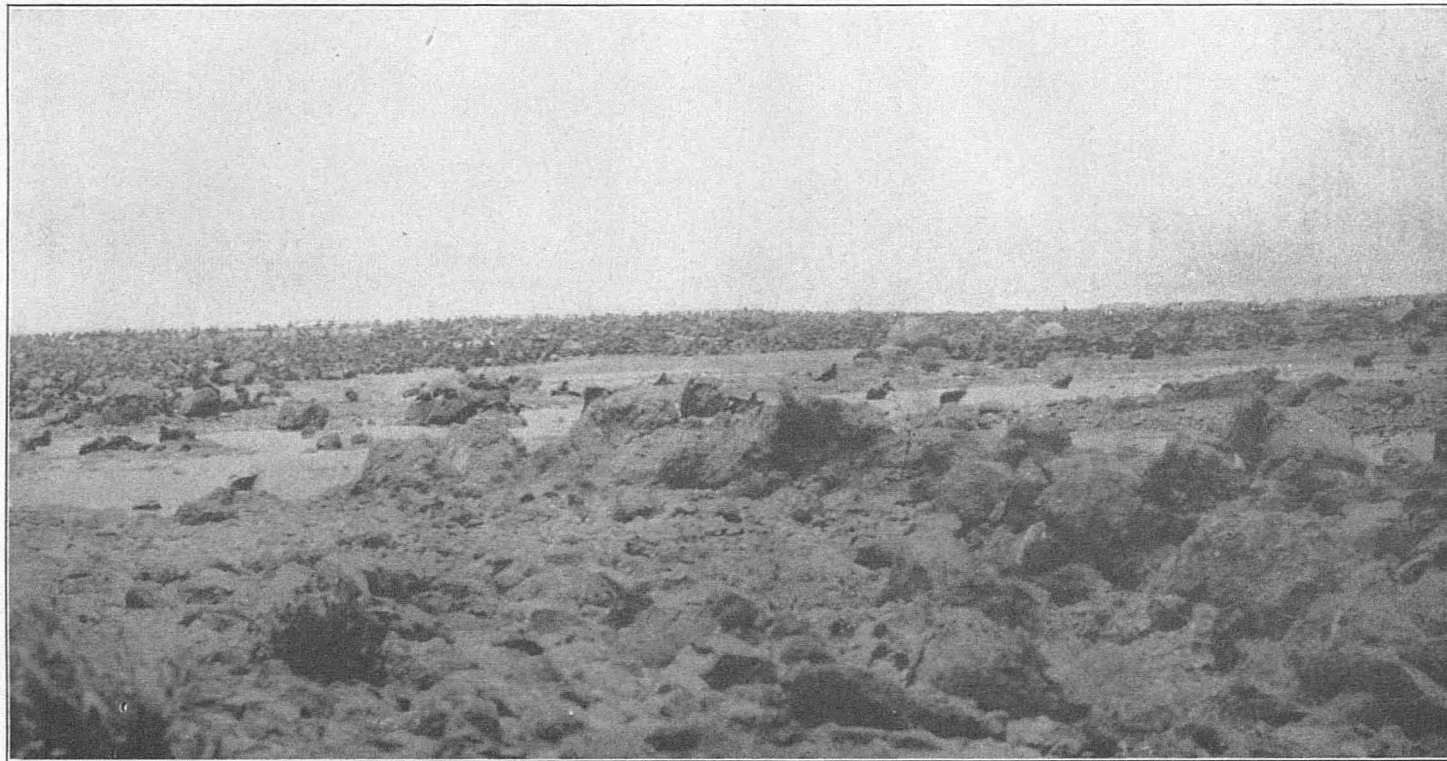


FIG. 6.—Part of North Rookery, Bering Island, 1895. From same standpoint as Figure 5



FIG. 7.—Kishotchnoye Rookery, Bering Island, July 13, 1897, 2 p. m. Northern third from north end of rookery

Pyeshkof, and the native overseer, about 100 bulls, "idle" or otherwise, were actually seen, but it would not be surprising if there were as many more lying down among the females or hidden behind rocks which escaped our observation. After a reconsideration of all the various factors involved, we reaffirm our first impression that the total number of seals, exclusive of pups, on North Rookery on July 28, 1922, did not equal the rough count of seals on Kishotchnoye Rookery

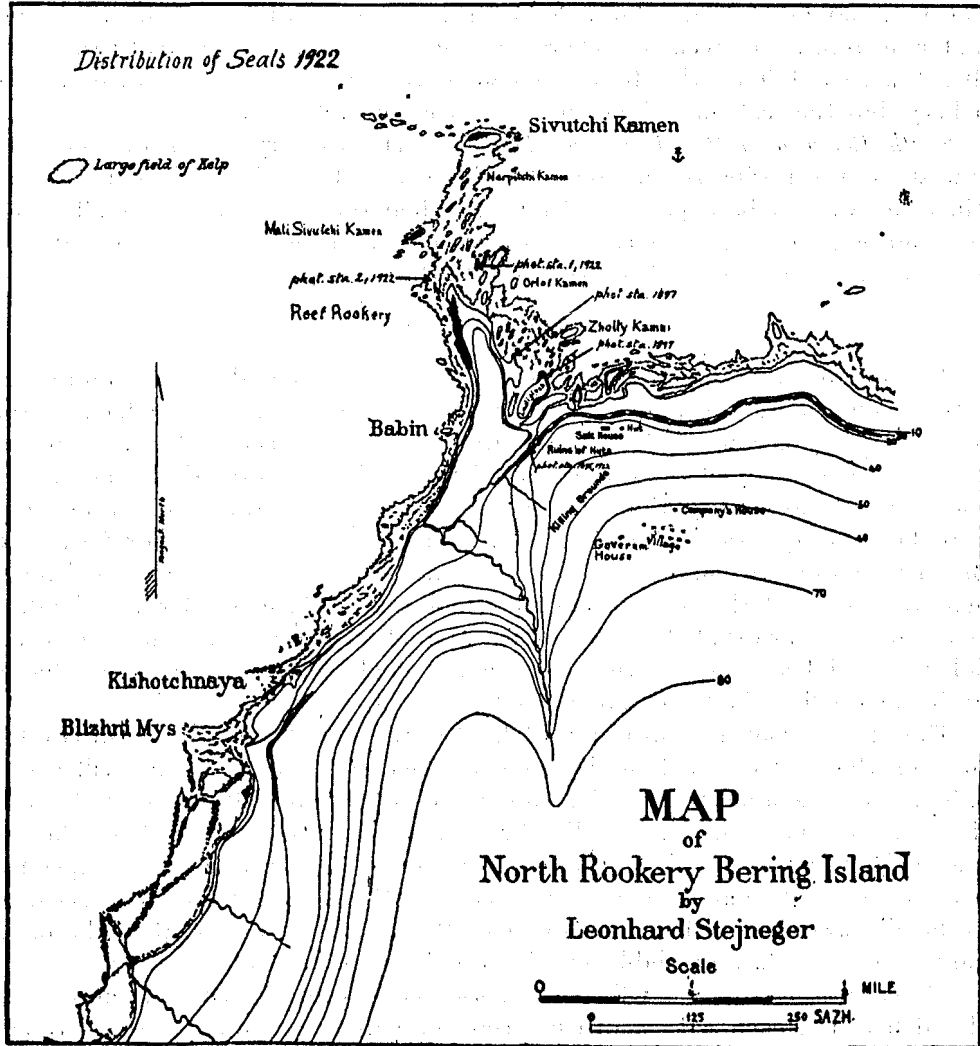


FIG. 8.—North Rookery, Bering Island, showing distribution of seals July 28, 1922, according to Stejneger on July 16, 1897, viz, 3,000 (Asiatic Fur-Seal Islands, p. 166). The seals were lying in a comparatively thin belt along the western edge of the Reef proper, from the extreme northern point of the "peninsula" halfway down toward the large rock marked on the map as Babin. In addition, two harems were seen on the outlying rock known as Little (Mali) Sivutchi Kamen, while a few others, probably less than a dozen, were located on the outer or northern side of Sivutchi Kamen itself (fig. 8).

Returning from the rookery a final attempt was made to take a photograph from the identical station and with the same lens employed in 1897, but owing to the fierce wind and the rain the plate shows nothing beyond the fact that the grass now extends over the entire area formerly showing up white—the “sands” and “parade grounds” (fig. 2).

Kishotchnoye Rookery.—The chapter relating to the fur seals on this and many other Commander Islands rookeries must now necessarily read like the famous chapter on reptiles in Iceland: There are none. Even as late as 1910 there were still a few seals left on this beach, which in 1882 was continuous with the Reef Rookery, but the seals have long since left it completely (fig. 8).

South Rookery or Poludionnoye Rookery.—This rookery, which was located on the west coast of Bering Island about 20 miles south of Nikolski village, is long since extinct, as was to be expected. In 1897, when the seals on that small rookery were counted, there were only 2 able-bodied harem bulls and about 526 cows. The rookery, as such, ceased to exist shortly thereafter.

COPPER ISLAND

A visit to the Copper Island rookeries was prevented by the unfavorable weather conditions, the shortness of the time available, and the lack of transportation. The account given the writer by the overseer at Glinka, however, was sufficiently detailed to present a fairly reliable picture of the actual situation. What was said of the conditions there seemed to us, who had not visited the rookeries in question since 1897, almost incredible in spite of our faith in the reliability of our informant, but his account received a startling confirmation when we witnessed the destruction that had taken place on Bering Island. It was a shock to learn that the big complex of rookeries known as the Karabelnoye Rookeries had been totally wiped out, not a single seal remaining, and that the Karabelnoye village had been abandoned years ago.

The fur-seal rookeries on Copper Island were formerly distributed in two large groups on the west coast of the island with the corresponding sealing villages and salt houses on the opposite side, viz, a northern group (Karabelni) about $8\frac{1}{2}$ nautical miles south of the main village (Preobrazhenskoye), and Glinka, about the same distance farther south, near the southeastern end of the island. The capacity of these rookeries at that time was in excess of the Bering Island rookeries, and Karabelni's was slightly less than one-half that of Glinka. For the sake of uniformity the scant data available are given under their separate headings.

Glinka rookeries.—The Glinka rookeries consist of a string of more or less isolated beaches, each with a distinct rookery name, spreading over a stretch of coast approximately 5 statute miles long. From north to south the principal features are named as follows: Lebiazhe, Urili, Zapadnoye, Sabatcha Dira, Palata, Zapalata, Sikatchinskoye (Vodopad), Gavarushetche, and Babitche. In 1897 the first and the last were inhabited by bachelors only, and the others ranked in importance in the following order: Palata, Urili, Zapalata, Zapadnoye, Sikatchinskoye, Gavarushetche, and Sabatcha Dira. In 1910, according to Suvorof, the sequence

was: Zapalata, Urili, Lebiazhe, Zapadnoye, Sikatchinskoye, Palata, Babitche, and Gavarushetche, while Sabatcha Dira had disappeared as a rookery.

In 1922 the seals had practically disappeared south of Palata. Where 25 years ago they were in evidence at Sikatchinskaya and other places, as shown by Figure 9, now there was none. Palata itself, one of the grandest views on the island* (Plate 72, Asiatic Fur-Seal Islands), had shrunk to a handful of seals. Khabarof mentioned 25 big bulls and about 35 cows. Zapadnoye also had vanished, but Urili and Lebiazhe were still holding their own; that is, in comparison with the last 10 years or more.

Karabelnoye Rookeries.—The rookeries opposite Karabelnoye village were more contiguous than those at Glinka (see Plate 99, Asiatic Fur-Seal Islands) and extended not more than about $1\frac{1}{2}$ statute miles along the coast. Most of the coves under the overhanging cliffs were difficult of access from the land side and individually less significant than the Glinka rookeries, hence they have always been treated of as a whole and no estimate made of the seals occupying each cove or rock. In 1896 I thought there were still 10,000 breeding seals present on those beaches. In 1910 there were still some left at Nerpitcha Bukhta (or Nerpitchi Kamen), for Suvorof estimated the number present at 3 bulls and 150 cows. In 1911 the last seal disappeared, and in 1922 Karabelnoye rookery was ancient history.

NEW HAULING GROUNDS

There has always been a tendency among the Commander Islands fur seals, at least among the bachelors, to haul out in new places at certain seasons. This was noticed in 1882 and 1883, but at that time it was attributed to the continued expansion of the rookeries, which compelled the bachelors to occupy new ground as they were being crowded out of the breeding area. Thus on Bering Island the beach at Kisikof (Tisikof) (Plate 94, Asiatic Fur-Seal Islands) was taken possession of in 1882; similarly on Copper Island bachelors at Glinka were hauling out in Gorelaya Bukhta north of Lebiazhi Mys and at the other end at Kulomakh beyond Babinskaya Bukhta. At the latter place in 1895 there were a few half bulls left when on August 2 of that year Mr. Grebnitski and the writer camped on that very beach. Likewise at Lebiazhi Mys only bachelors formerly hauled out. It seems, however, as if with the diminishing rookeries the cows, possibly attracted by the half bulls, that had hauled out there and become unduly numerous in proportion, must also have come ashore at some of these points, thus creating new breeding grounds; for in 1910 Suvorof reports 700 cows and a number of bachelors at Lebiazhe and 200 cows and 200 black pups at Babitche, though in neither place did he see any bulls.

It should therefore, perhaps, not cause great surprise that in 1921 and 1922 seals were reported to have hauled out on Bering Island not far from Northwest Cape, and at the southeastern extremity of Copper Island as early as 1917. In fact, it was at this recently formed hauling ground that the Japanese raiders, to be mentioned later on in this report, were caught killing seals. It was said by the natives on Bering Island that the seals hauled out near Northwest Cape consisted of some

* "Palata [in 1882 and 1883] to the looker-on coming over the mountains, was probably the most impressive rookery view in the whole Commander Islands group. The solid blackening masses of breeding seals, filling the gully to overflowing and extending under the bluffs and along the beach on both sides, was a sight never to be forgotten." (Asiatic Fur-Seal Islands, p. 146).

bulls and many females, as well as bachelors. However, it was expressly stated that no black pups were seen, and consequently the gathering did not as yet represent a new breeding ground. The ability of the natives to distinguish females and bachelors on shore at some distance is not always to be trusted, as the writer has had opportunity to observe on several occasions. We have even seen them quarrel over individual seals in the mixed drives on Bering Island. On the other hand, if cows returning from the feeding grounds to the northwest of the island should happen to pass by a band of half bulls and bachelors hauled out on a beach or reef there would be nothing surprising in their going ashore, either for a rest or a frolic. With the large number of superfluous bulls and half bulls on the Bering Island North Rookery it is quite likely that some of them hauled out by themselves in their search for stray cows. It is therefore improbable that we have here to deal with the incipient formation of new rookeries, although it is possible that when bulls are disproportionately abundant new breeding grounds may become established in just such a way.

SUMMARY OF CONDITIONS IN 1922

In view of the above, the condition of the Commander Islands seal rookeries in 1922 must be characterized as highly deplorable. Large and flourishing rookeries, the breeding population of which as late as 1897 was still to be reckoned in thousands, had entirely vanished, while those remaining had shrunk to about one-tenth of what they were at that time.

In addition to this numerical decline there is another ominous circumstance to be recorded, which bodes ill for the future of the Commander Islands herd, viz, the great superabundance of old males on the breeding grounds. The evil effects of the five years' prohibition of killing after the conclusion of the treaty of 1911, which in spite of the predictions of experts was established on the Pribilof Islands, have proved even more disastrous on the Commander Islands. With the number of seals fallen below the 18,000 mentioned in Article XII of the treaty, the continued suspension of land killing of males except such as may be necessary for the support of the natives of the islands is bound to increase the handicap of the herd. The disorganization of the orderly rookery service, the trampling of the newborn seals, and, as mentioned above, the possibility of the unmated bulls attempting to start rival rookeries, are logical consequences of the policy of leaving the management of biological problems like those involved in this business to persons unversed in such matters.

EXPLANATION OF CONDITIONS

The debacle of the Commander Islands fur-seal herd is not of to-day or yesterday; it dates back to the beginning of pelagic sealing on the Asiatic side of the North Pacific Ocean. It will not be necessary to go into detail with regard to the origin and early phases of this destructive business, as they have already been fully dealt with in a previous report (*Asiatic Fur-Seal Islands*, pp. 190-216), and it will suffice merely to quote from the summary of that paper on page 203:

* * * the known pelagic "Asiatic catch" from 1892-1897 was about 295,000 skins. Allowing 8,000 skins for the Kurils and Tiuleni, the *known* loss in that period to the Commander Islands herd was about 287,000 seals, apart from the loss of wounded ones, etc. The number of seals

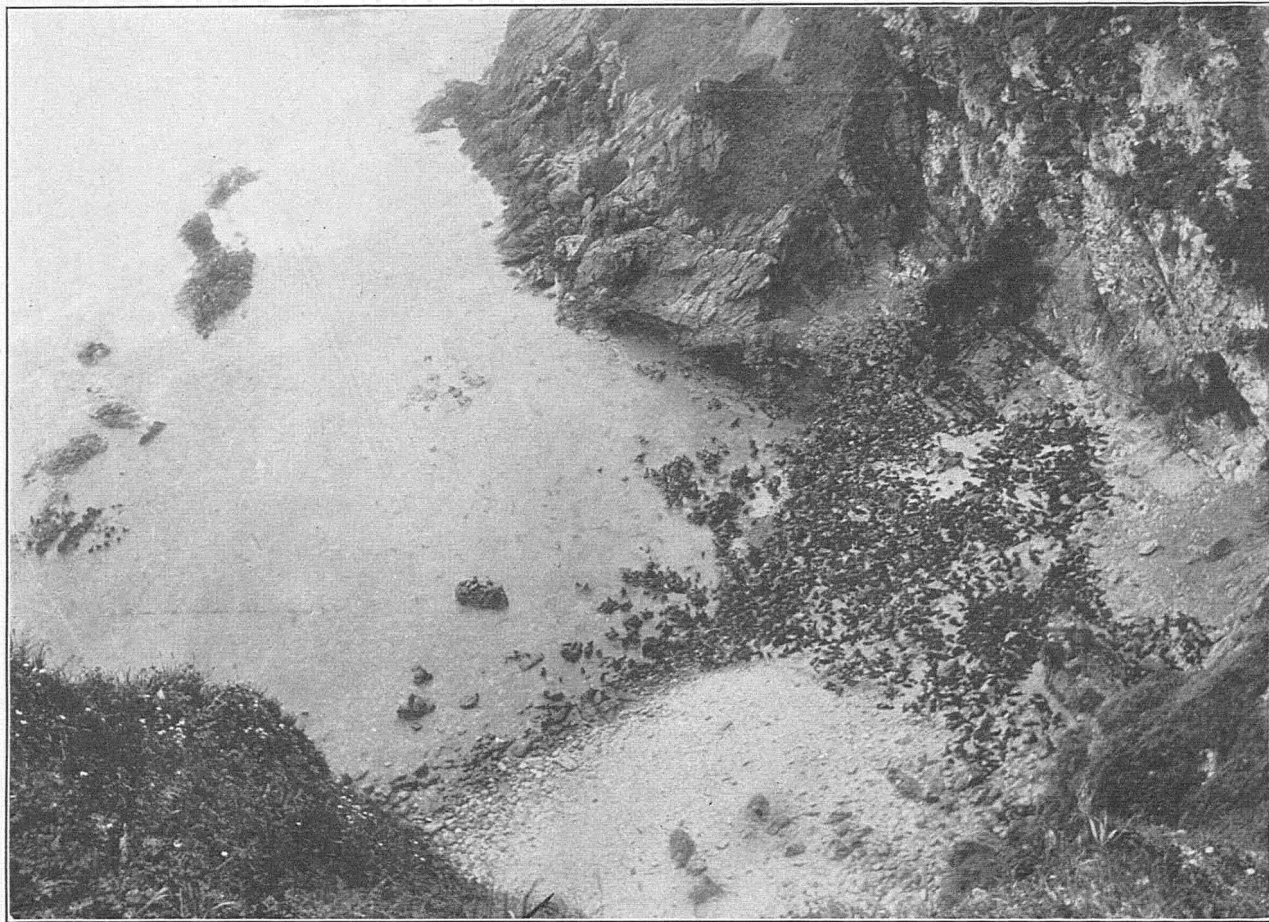


FIG. 9.—Sikatchinskoye Rookery, Copper Island, August 21, 1897, looking toward Stolbi

killed on the islands in the same period was 119,708. The pelagic catch was therefore considerably more than twice as large as that on the islands, while the loss to the herd from that cause was much greater, due to starved pups and seals shot but not secured. It is certainly no exaggeration to say that the actual loss to the herd in those six years has averaged 100,000 a year, more than one-half of which were females, * * *.

It will thus be necessary only to pick up the historical thread of the destruction since the close of the investigations of 1897.

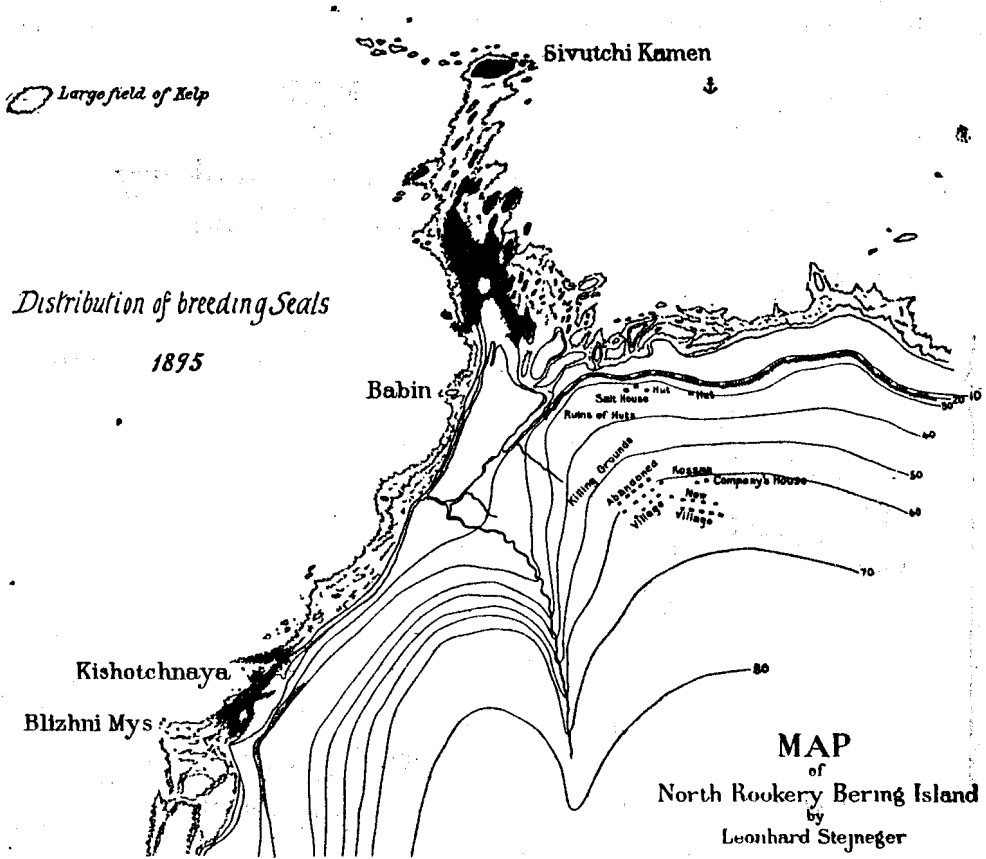


FIG. 10.—North Rookery, Bering Island, showing distribution of breeding seals in 1895, according to Stejneger

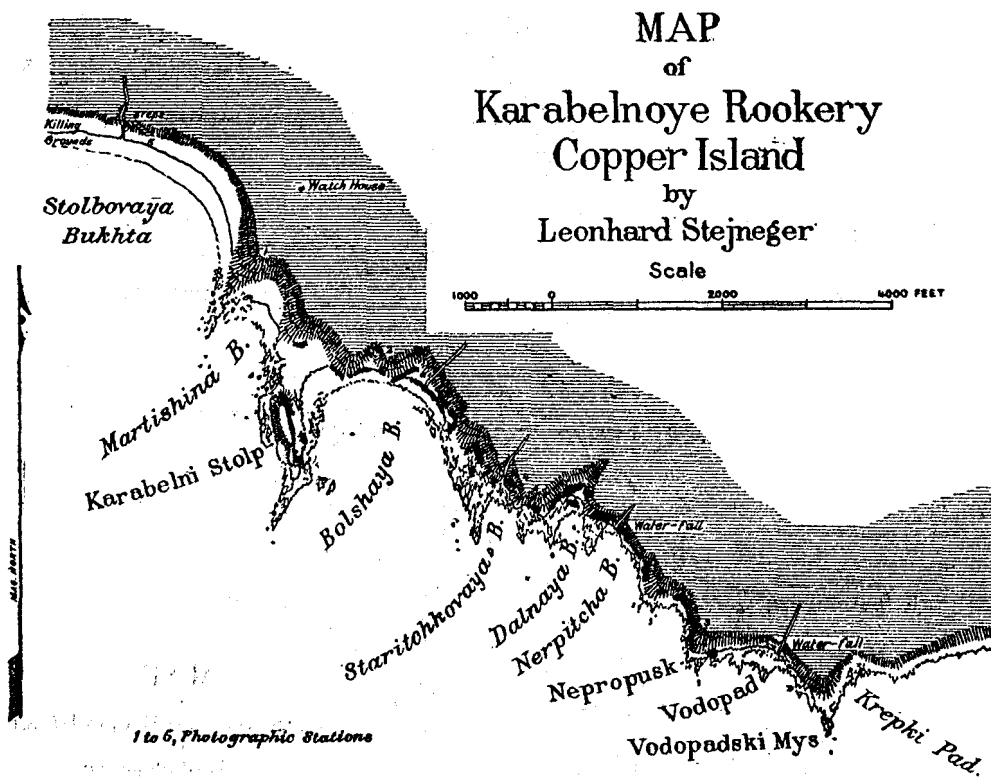
HISTORY OF THE COMMANDER ISLANDS FUR-SEAL ROOKERIES AND FUR-SEAL INDUSTRY SINCE 1897

CONDITIONS AT THE END OF 1897

Two factors played an important rôle in the decrease of seals on the Commander Islands—the action of the Russian administration, which, in negotiations with the British pelagic sealing interests, accepted the 30-mile zone limit without time restriction, and the optimism of the local officials, whose estimates of the number of seals still on the rookeries were based wholly upon the so-called counts of

the natives and their Cossack overseers, whose ideas of numerical figures that exceeded 10,000 were very fantastic indeed. On one occasion a Cossack, being told by Governor Grebnitski to count the seals on Bering North Rookery, returned within an hour and reported having counted considerably more than 100,000 seals.

In 1896 the writer reluctantly made an estimate of the number of seals breeding on the rookeries of both islands, claiming for it only a remote approximation, the chief merit of which was that it would serve to eliminate fanciful estimates that had no foundation in any tangible facts. The figure presented was 65,000 breeding seals on both islands, which would presume a maximum presence of



Distribution of Seals Aug. 1-3, 1895

FIG. 11.—Karabelnoye Rookery, Copper Island, showing distribution of seals in 1895, according to Stejneger

about 36,000 females (including 2-year-olds) at any one time; but for the same year the assistant administrator estimated the number of cows on both islands at about 135,000.⁷ No wonder they went on killing as they did.

The rookeries on the Commander Islands were at that time "raked and scraped" for the last bachelor seal to such an extent that while it might have been safe to have killed 7,000 seals that year, actually 14,472 were taken, or more than twice as many. After 1897, however, additional factors appear, which make it important to review the fur-seal industry on the Commander Islands in some detail in order to fully understand what has happened to the seal herd.

⁷ Suvorof: Komandorski Ostrova, 1912, p. 179.

CONDITIONS AFTER 1897 UNTIL THE TREATY OF 1911

Pelagic sealing.—The first circumstance to be noted is that pelagic sealing, which started so destructively to the Russian herd in 1892, continued without let or hindrance. The 30-mile protected zone around the islands, without time limit, was

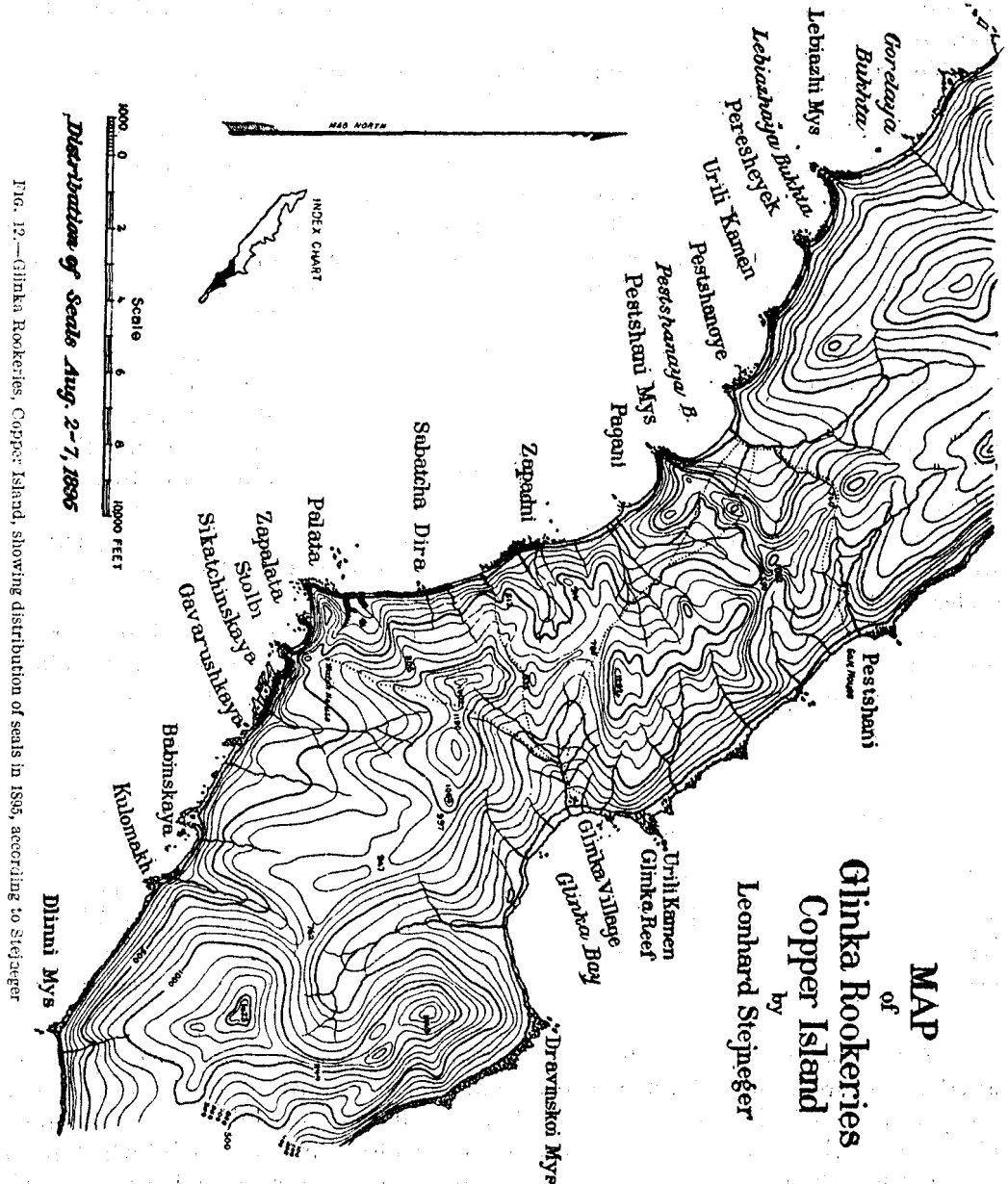


FIG. 12.—(Glinka Rookeries, Copper Island, showing distribution of seals in 1895, according to Stejneger)

absolutely valueless as a protection for the seals. Moreover, pelagic sealing on the Asiatic side was fully four times as disastrous, in proportion to the stock of seals, on the Russian islands as was the destruction visited on the American seals. The pelagic catch fell off so rapidly as to become unprofitable to the Canadian and Amer-

ican schooners, which were gradually driven out of the business by the Japanese, who, because of their cheaper outfit and labor, were able to make a big profit where foreign schooners would starve. In addition, the Japanese Parliament passed a law in March, 1897, by which, from April 1, 1898, under certain conditions, a money subsidy was paid to the Japanese sealers,⁸ a law that was not repealed until 1909 (Imperial Japanese Decree No. 173, June 26, 1909).

The award of the Paris tribunal, with its partial protection of a 60-mile zone around the seal islands and the close of hunting in Bering Sea until August 1, as well as the elimination of firearms, applied only to the American and not to the Russian islands. In addition, the 30-mile limit thrown around the Commander Islands was only a separate treaty agreement between Great Britain and Russia and bound no other nations. Thus when the Canadians ceased pelagic sealing on the Asiatic side and the Japanese took it up, even that slim protection was done away with. Although utterly valueless as a protection against regular pelagic sealing, the 30-mile zone had afforded a fair defense against raids on the rookeries by poaching schooners, against whom the 3 miles of the Territorial waters was of very little protection because of the frequent dense fogs which made it is an easy task for the marauders to get close up to the rookeries unobserved. The Japanese were not restricted to the use of bow and arrows, but employed the shotgun with all its terrible waste of life. As their catches steadily increased in spite of the dwindling of the herd, it is evident that the Japanese were gaining efficiency from their experience, and there is also reason for believing that the increase was due, at least partially, to the taking of oversized skins, for which the earlier Canadian and American sealers had no market.

The seriousness of the Japanese pelagic sealing and the terrible inroads made upon the Commander Islands herd may be fully understood by a glance at the following table, mainly derived from Suvorof (Komandorski Ostrova, 1912, p. 42).

Number of Japanese sealing vessels and their catch, from 1897 to 1910, inclusive

Year	Schoon-ers	Skins taken	Skins per schooner	Year	Schoon-ers	Skins taken	Skins per schooner
1897.....	14	5,247	375	1905.....	29	10,035	346
1898.....	16	4,860	304	1906.....	29	10,176	351
1899.....	12	6,518	543	1907.....	35	10,420	298
1900.....	15	7,533	502	1908.....	31	13,355	430
1901.....	19	6,945	366	1909.....	35	10,465	299
1902.....	15	7,462	497	1910.....	37	8,309	225
1903.....	21	11,240	535				
1904.....	28	15,698	561	Total.....		128,263	

If it is taken into consideration that about 30 per cent more seals were shot at than secured, and if allowance is made for one-third of these seals having escaped with their lives, it will be seen that the total number killed by the Japanese alone during those 14 years can scarcely have been less than 154,000, of which probably not less than 92,000 were cows, not to mention the loss to the herd due to the consequent starvation of the pups on the rookeries and the unborn young of the cows killed.

⁸ For more detailed provisions of the law see Asiatic Fur-Seal Islands, p. 325.

The next calamity that befell the Commander Islands seal herd was incidental to the Russo-Japanese war of 1904-5. Details of the wanton destruction are lacking, but the rookery raids, which were not uncommon before and especially after, assumed the character of willful extermination. Thus we were told that on Copper Island in 1904 a large number of Japanese landed on the Karabelni Rookery, and in addition to killing and taking the skins of a great many seals, practically all of which were cows, shot and butchered every seal they could reach for the sheer sake of destruction. This once flourishing rookery was thus to all intents and purposes exterminated during the war.

Nor did the raiding of the rookeries cease with the end of the war. The schooners came early and went late. In 1907 the first one was noticed at Copper Island on April 24 (old style). In 1908 they were observed in April, and in 1909 the first one was seen as early as February 26. Again, in 1910 the first one was reported on April 24. The piratical raiders did not confine themselves to the rookeries, but looted the houses of the natives as well. The sealing village of Glinka, inhabited only during the sealing season, was visited by the marauders on April 16, 1908 (old style), and nearly all the houses were broken into, their doors and windows smashed, and the household goods, such as dishes, linen, tools, and even the stoves, stolen; salt, sacks, and ropes were taken. The robbers even went so far as to carry away the supply of coal—about 3 tons. The same thing happened the following year when the crew of one of the schooners landed on March 6, broke the windows in 17 houses on Glinka and stole the contents (Suvorof, Komandorski Ostrova, 1912, pp. 246-247). Under conditions such as these it is a wonder that any seals were left. We shall later learn what happened to the remnant of the herd on land.

It must not be inferred that the Russians were not taking any measures against this state of affairs. The natives were organized and well armed for watch service, and during the sealing season several men-of-war patrolled the 30-mile zone and visited the islands. However, anyone familiar with the storms and fogs of the North Pacific and Bering Sea, the mountainous character of the islands, and the difficulties of transportation, must realize that effective protection against the small schooners with their reckless crews was very difficult. Nevertheless, several seizures were made during these years.

The transport *Shilka*, on August 6, 1906 (old style), arrested the schooner *Kompira Maru* 15 miles from Bering Island North Rookery. On May 16, 1908, the schooner *Miye Maru* was arrested 7½ miles from shore. Besides seals she had on board 1 sea otter and 1 blue fox, sufficient evidence of illegal catch on shore. Again, on July 25, 1909, the *Shilka* stopped the schooner *Tokiva Maru*, belonging to the firm Yeno-gono-kaisha, and confiscated 14 sea otters and 6 sealskins. On the same day the rookery guards on Copper Island caught a boat with three raiders from the schooner *Hosio Maru*, 2½ miles from the Bobrovi Rocks off the northern end of Copper Island. These few instances, however, and the punishments inflicted (the three men caught in the raid on July 25, 1909, were given sentences of three months in the Vladivostok jail) were of no avail in checking the aggressiveness of the raiders.

Sealing industry on land.—On the Commander Islands the sealing industry was in the hands of a trading and sealing company, practically the same arrangement that existed on the Pribilof Islands except that the killing of the seals was done through the agency of the Government while the company's responsibility began with the receipt of the fresh skins at the salt-house door.

In 1897 the leasing company (the Russian Seal Skin Co.) was operating under a 10-year contract from February 19, 1891, to February 19, 1901 (old style). This company, however, continued the sealing business during the season of 1901, shipping from the islands in that year 11,489 skins (Bering Island 5,438, Copper Island 5,527, and Robben Island 524), for which, at the rate of 12 rubles per skin, they paid the Government 137,868 rubles, as shown by the documents in the Bering Island archives.

On August 4, 1901 (old style), a contract for the lease of the sealing on the islands for the next 10 years from September 1, 1901, was concluded between the Russian department of agriculture and public domain and the Kamchatka Commercial-Industrial Co. much on the same conditions as previously, the company to pay 10 rubles for each sealskin, 200 rubles for sea otters of the first quality, 100 rubles for sea otters of the second quality, 18 rubles for first-class blue foxes, 9 rubles for second-class blue foxes, and 5 rubles for white foxes.⁹ Headquarters of the company were in St. Petersburg, with an agent in Petropaulski.

This company, the lease to which expired on September 1, 1912, was succeeded on that date by a new company, Ivan Yakovlevitch Tchurin & Co., also known as the I. I. Choorin Co., which held the contract for the skins to September 1, 1916 (old style), when the system of leasing was abandoned and the administration of the fur industry of the islands was taken over by the fisheries bureau in Vladivostok. As the five-year closed season for seals fell within their term, they handled principally sea-otter and blue-fox skins.

Then followed the revolution, and the subsequent events, in so far as they have any bearing on the sealing industry, will be related separately.

In the three years, 1895 to 1897, when the writer investigated the Commander Islands rookeries the hauling grounds were "raked and scraped" for the last obtainable bachelor. At the same time pelagic sealers took tremendous toll of the herd at sea, which had not even the slight protection of the 60-mile zone and the closed season before August 1. There can be no doubt that the killing on land was much too close, with pelagic sealing still going on unchecked. If the estimate of the females present on the Commander Islands in 1896 were only moderately accurate, the number of male seals killed that year (14,472) would not have been justifiable even if the herd had been in prime condition and no pelagic sealing going on. As the killings are now regulated on the Pribilofs, though possibly over-conservative, there would not have been taken 7,000 skins; but the worst of it was, of course, that in the same year probably 20,000 female seals belonging to the Commander Islands herd were killed at sea. The next year this toll of females was scarcely less than 12,000, yet by the same process of scraping the rookeries on the islands the company secured 13,620 bachelors.

⁹ The text of the contract, with the title *Kontrakt na sdachu f arendu Kamchatskomu Torgovo-Promishlennomu Obshtchestvu pushnik promishlof na Ostrovakh Komandorskikh i Tiulentiem*, is to be found as Appendix I in Suvorof's *Komandorskie Ostrova*, 1912, pp. 281-285.

In 1898 and 1899 the number of skins taken did not much exceed 9,000, but the catches of the Japanese pelagic sealers were slowly increasing in spite of the dwindling of the herd. The lease of the Russian Seal Skin Co. was now nearing its termination, the last season under the contract being that of 1900, but extended over to the end of the 1901 season as noted above. Quite naturally, then, and especially as every seal spared on the islands meant one more possible skin for the pelagic sealers, the lessees bent every effort to get by any means whatever as many seals as possible.

It was thought by us who witnessed the "raking and scraping" of the rookeries in 1895 to 1897, when the extreme methods applied yielded respectively 16,056, 14,946, and 11,335 skins, that the limit of what was possible had been reached; but notwithstanding the facts that similar methods prevailed in 1898 and 1899 and that pelagic sealing still continued to take its toll, the lessees succeeded in taking 12,540 skins in 1900 and 10,965 in 1901.

The new lessees, the Kamchatka Commercial-Industrial Co., were not able to keep up this pace, but considering the circumstances and the condition of the herd they did pretty well, taking 7,107 skins in 1902 and 7,806 in 1903. During the disastrous years of the war (1904-5) they even took 8,319 and 8,990, respectively. However, these years brought about the final collapse of the Commander Islands rookeries. It has already been mentioned how the war was taken advantage of by the Japanese raiders to partially destroy the rookeries. It may now be told how the war, by causing enormous losses to the leasing company, also became an active factor in the ultimate demoralization of the killing on land.

While the Russians at the outbreak of the war were endeavoring by negotiations to obtain permission for the company to navigate its ships under a foreign flag, the Japanese seized the company's steamer *Kotik* in Yokohama harbor and shortly afterwards its schooner *Bobrik* in the harbor of Hakodate, less than three weeks after the opening of hostilities in January, 1904, thus crippling the company at the beginning of the sealing season, though it was able afterwards to charter the American steamer *Redondo* for the island service. This vessel, however, proved worthless, and the *Mineola*, which replaced her, was wrecked in the Okhotsk Sea near Tigil on the west coast of Kamchatka, involving a total loss of the cargo of goods and furs. During 1905 two more ships were chartered but both were captured by the Japanese in August, 1905. This capture involved a loss of 4,030 fur-seal skins. It should be added that the rookery at Robben Island, which also was included in the company's lease, was lost to the Russians from the beginning of the war. Altogether the Kamchatka company's losses were enormous, and quite naturally its managers tried to save as much out of the wreck as possible.

From 1895 to 1897 there was still a superabundance of adult male seals on Copper Island, though on Bering Island the bulls were relatively much scarcer, due to the fact that the character and situation of the rookeries were much more favorable for a close killing than on Copper Island. At that time, however, the proportion of the sexes was not such as to cause alarm if pelagic sealing could have been stopped within a short time, a hope that was perfectly legitimate in view of the unanimous recommendations made by the seal experts from England, Japan,

and America at their meeting in Washington in the fall of 1897. To stop the land killing of males even for a single season, or to limit the number killed without stopping pelagic sealing, would have been not only useless but absolutely senseless, as the only possible result would have been the sparing of that many males for the benefit and encouragement of the pelagic sealers. Owing to the delay in acting upon the recommendations of the experts who investigated conditions on the islands, the seals went to their destruction, which was terribly accelerated by the circumstances detailed above.

The Russian authorities on the islands must have seen the approaching catastrophe, but their optimism apparently was not seriously shaken, since it was possible to average nearly 9,400 skins during the years preceding the debacle of the war. It then became plain not only that the breeding herd had greatly decreased but that the number of breeding males in particular was becoming alarmingly small. In 1904 the natives at the North Rookery on Bering Island reported to the administrator of the islands that only 25 old bulls were left and that bachelors were exceedingly scarce. To counteract this disproportion of the sexes, and also to make up for the loss of the bachelor skins, the company proposed that they should be allowed to stop killing bachelors and to kill females instead. This was objected to, but by a revival of the old fiction of virgin and superannuated cows the company succeeded in obtaining from the Ministry of Agriculture and Public Domain in St. Petersburg permission to kill 8,000 unimpregnated cows and 1,000 bachelors. As the permission arrived after the opening of the season, 1,608 bachelors but only 6,282 females were killed that year (1905).

Thus began a new chapter in the destruction of this herd, since, as was to be foreseen, this unique method of restoring the equilibrium between the sexes, far from accomplishing its purpose only hastened the destruction. During the next two years comparatively few females were recorded killed in the official documents, but their skins were taken unofficially and without permission, the understanding being that only nonpregnant or superannuated cows were to be killed.

At this juncture occurred the death of Nikolai Aleksandrovitch Grebnitski (fig. 13), who had been the Government manager of the islands for 30 years. When he first landed on Bering Island on August 21, 1877, the sealing industry was still on the upward grade, reaching its zenith during the following 10 years. He was a capable administrator, who was looking out for the interests of the natives in their relations with the leasing companies, and he established sensible and suitable rules for the regulation of the sealing business and blue-fox and sea-otter hunting. Grebnitski, who had studied at the University of Odessa and in Germany, had considerable biological training and was thus well qualified for his position. It may be safely said that in the days before the beginning of pelagic sealing Grebnitski knew all that could be learned about the seals on land and acted intelligently upon his knowledge. Moreover, he was practically the only man in the whole Russian Government who knew anything about the seals and the sealing business; but, of course, when pelagic sealing started in earnest on the Asiatic coast he was practically helpless and can hardly be blamed for the Russian failure to secure any practical protection for the Commander Islands seal herd.



FIG. 13.—Nikolai Aleksandrovitch Grebnitski, Administrator of the Commander Islands from 1877 to 1907

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ВѢДОМОСТЬ №370

о количествахъ добытыхъ на Командорскихъ островахъ морскихъ котовъ, морскихъ бобровъ и песцовъ за время
с 1-го Января по 31 Декабря 1910 года

Согласно приписания 27 Сентября 1891 г. за № 12530.
1899 1910 О. Б. Беринг

НАИМЕНОВАНИЕ ЖИВОТНЫХЪ	Беринга	МѢЛКЫЙ	Тюлений	Итого
Котикъ морской холодегловъ	206	504	—	710
идеи	1999	1988	—	3987
сѣкачей	—	2	—	2
Матокъ	1379	1788	—	3167
ислороотковъ	331	500	—	831
Бобровъ морскихъ 1-го сорта	1	60	—	61
2-го	—	25	—	25
въ сорта	—	2	—	2
Песцовъ морскихъ 1-го сорта	257	58	—	315
2-го	51	3	—	54
въ сорта	—	1	—	1
Бѣлыхъ песцовъ	1	—	—	1

1-й сортъ котикъ 2 сорта котикъ
2-й сортъ котикъ 3 сорта котикъ
3-й сортъ котикъ 4 сорта котикъ
4-й сортъ котикъ 5 сорта котикъ
5-й сортъ котикъ 6 сорта котикъ
6-й сортъ котикъ 7 сорта котикъ
7-й сортъ котикъ 8 сорта котикъ
8-й сортъ котикъ 9 сорта котикъ
9-й сортъ котикъ 10 сорта котикъ

Островъ Командорск
Начальникъ Окружнаго Начальника
Командорскихъ острововъ

Помощникъ (Секретарь)
Окружнаго Начальника

FIG. 14.—Copy of "Viedomost" or "Report on the number of fur seals, sea otters, and arctic foxes taken on the Commander Islands during the period from January 1 to December 31, 1910." From original in the Bering Island archives

No measure short of total stoppage of pelagic sealing could have prevented the final destruction of the seal herd, though, of course, the excessive scraping of the rookeries for male seals and the tragic killing of females toward the end of his administration and against his protest naturally hastened the process.

Col. Nikolai Pavlovitch Sokolnikof, who for 10 years had been administrator of the Anadyr district, was transferred to the Commander Islands after the death of Grebnitski. Upon his arrival in 1907, finding that the killing of cows was practiced upon the initiative and responsibility of the assistant manager, he put a stop to it that same fall and protested earnestly against it to the department in St. Petersburg without avail. The department issued a permit for 1909 to kill 4,000 cows and 1,500 bachelors, and in order to make sure that this maximum should be reached the leasing company agreed to accept up to 20 per cent of stagy skins. However, not more than 3,155 cows were secured, though the total quota was exceeded by 311 skins.

When this document was discovered in the archives of Bering Island in 1922, we knew already that cows had been killed quite extensively, but were so amazed to see this unblushing Governmental acknowledgment that a photograph of the "Viedomost" (herewith reproduced as fig. 14) was taken as a memento and as proof. The work begun in 1909 was continued in 1910, only there were fewer seals to take. The result on both islands was as follows:

Sealskins taken on Commander Islands, season of 1910

Island	Bachelors	Cows	Total
Bering Island	206	1,105	1,311
Copper Island	502	1,492	1,994
Total	708	2,597	3,305

In order to obtain this number it was necessary to extend the killing season to August 31 on Copper Island and to October 2 on Bering Island. In fact, of the 3,305 skins taken only 863 were secured before August 1, on which date, in the past, killing usually stopped. Finally, in the years 1907 to 1909 over 2,500 gray pups were killed in the fall for food for the natives. Just exactly what was the proportion of the sexes among these is not known, but certainly they were not all males.

The alarming reports about the condition of the rookeries, the approaching expiration of the lease of the Kamchatka company, and the proposed negotiations for a treaty to abolish pelagic sealing induced the Ministry of Agriculture and Public Domain to make an investigation in order to obtain information at first hand. Evgenij K. Suvorof, who was sent from St. Petersburg in 1910, does not seem to have had any previous experience with the fur-seal industry or the fur seals. This, however, was not of much significance, for all he could do was to confirm the utter demoralization of the whole business. It was only when he attempted to explain certain features of the debacle and its causes, and also when he attempted to make an estimate or a "count" of the number of seals remaining and the classes of seals composing the herd, a feature which will be referred to later, that his inexperi-

ence became a decided handicap. He undoubtedly did his best, and his report contains a large amount of valuable information which has been drawn upon quite extensively, but so far as the fate of the seal herd was concerned it did not and could not possibly have any influence. It was too late.

Condition of the rookeries in 1910.—Arriving on the Commander Islands in 1910, one of Suvorof's first endeavors was to ascertain the actual number of seals on the rookeries. Apparently all possible methods of ascertaining the number of seals on the Pribilof Islands had been tried, such as calculation of the area occupied by the

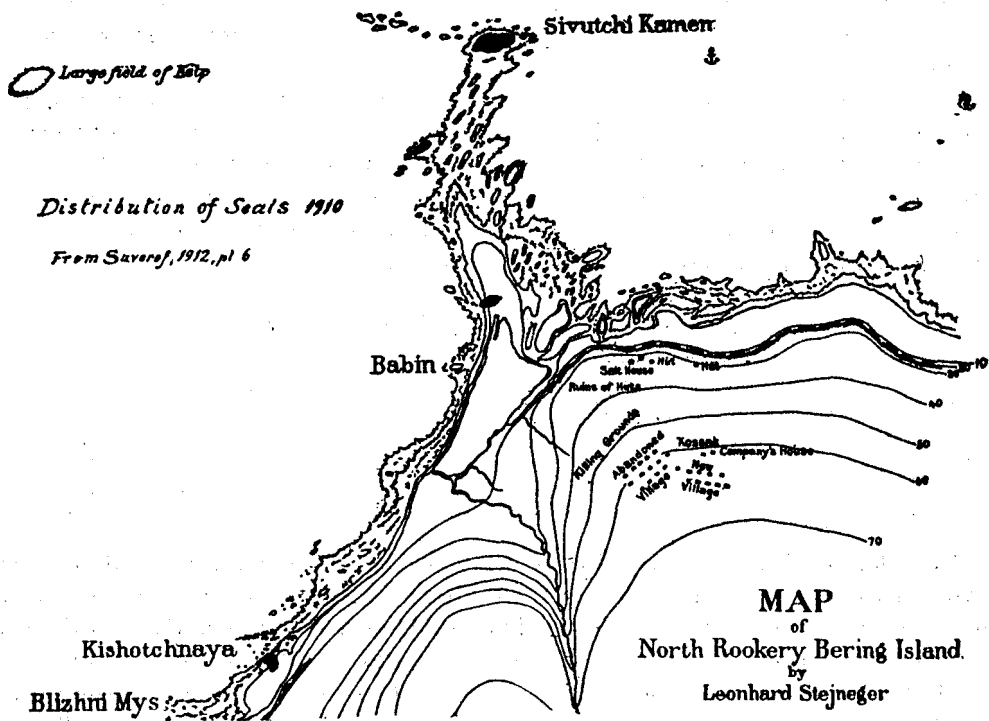


FIG. 15.—North Rookery, Bering Island, showing distribution of seals in 1910, according to Suvorof

herd divided by the theoretical space in square feet occupied by a seal; counting the cows in a number of harems, averaging their number per harem, then counting the harems (that is, old bulls) on the rookery; counting from a distance the number of seals on a certain area of apparent normal density and then applying the figures obtained to the whole rookery. Every one of these methods, however, had to be abandoned and the conclusion reached that there is only one reliable method, viz, to corral, drive off, and actually count every black pup on the rookery. Their number ascertained, the number of the breeding females, only a varying proportion of which are present at the same time on the rookeries, is consequently ascertained

with exactness, and that is the only figure that is of prime importance. With that given, the number of the other classes can be observed and computed with sufficient accuracy for all practical purposes.

In 1897 the writer declared that a count of the seals such as was undertaken on the Pribilofs could not be carried out on the Commander Islands owing to the difference in character of the rookery beaches on the two groups of islands.

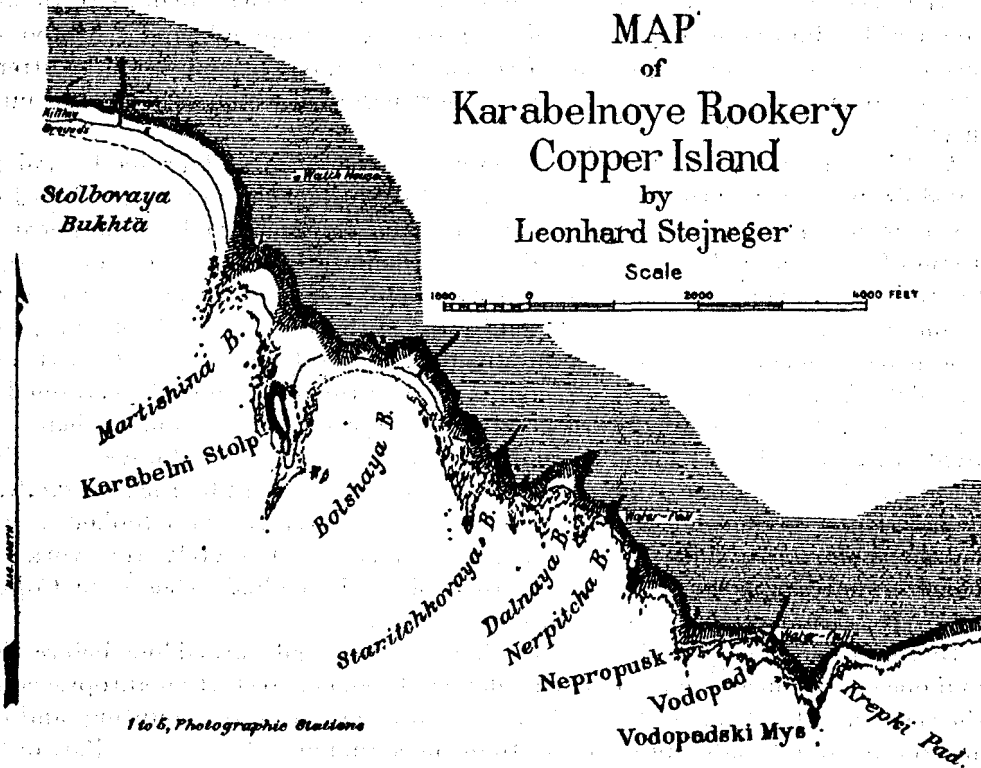
With the excessive shrinkage of the number of seals during the next 13 years, however, it seems certain from what was seen on North Rookery, Bering Island, in 1922, that a count of the black pups would have been feasible there in 1910, though it would still be impracticable on most of the rookeries on Copper Island. Moreover, on account of lack of suitable means of transportation, one person would be utterly unable to cover all the rookeries during the short period in which such a count must be made.

As Mr. Suvorof had no previous practical experience and probably had no detailed description at hand of the technique of counting the pups as developed on the American islands, he was restricted to his own resources and the application of some of the methods mentioned above, as definite statistics and not vague estimates—which can be of value only when done by persons of wide experience and tried judgment—were evidently expected by the authorities in St. Petersburg, who had been accustomed to receive most minute figures from the previous administration of the island based on the fantastic “counts” which the native guards, stationed at the various rookeries, made at certain intervals during each season. When confronted with the Bering Island rookeries—Reef and Kishotchnoye—his first attempt was directed at ascertaining the number of seals present by the area method. Red and white marks and signals were painted all over the two rookeries, and calculations of various sorts started. Unfortunately, or fortunately, this work had to be left unfinished, as by the middle of July (old style) he had to leave for Copper Island. Here that method was plainly impossible.

By that time he had also discovered, what we others had learned long before, that even if one can get near enough to even a depleted rookery to start an autoptic count of the seals in sight, “part of the seals always slip away from the counting, and the figures obtained invariably prove lower than the actual ones. * * * Part of the animals are in motion, some come out of the water, others wend their way to the sea; many are concealed by the unevenness of the beach, by jutting rocks and cliffs. Many new-born pups, in particular, are concealed in the crevices between the rocks.” He also observed that the weather, the temperature, and the time of the day made a big difference. Nevertheless, he decided that this was the only method possible on Copper Island, and he believed “that the error of the per capita count of the adults would not exceed 10 per cent and of the new-born pups 20 to 25 per cent,” adding that “the method of area never gave such exactness” (Komandorskie Ostrova, 1912, pp. 181-2).

During the latter part of July and the beginning of August, 1910 (old style), therefore, he “visited all the Copper Island rookeries and carefully counted all the black pups lying on the beach and splashing in the near-shore zone.” To the number thus obtained he “added 14½ per cent for the females without pups, and

in this way arrived at the approximate number of cows on the given rookery." It turned out that his figures "approached sufficiently near the autoptic estimate of the rookery guard" on Copper Island. With regard to the Bering Island rookeries, where his "area method" had proved a failure, he had to devise a different method, and as his figures on Copper Island had "approached sufficiently near" those of the watchmen, he assumed that those of the Bering Island guard were equally reliable. He consequently adopted the latter, applying to them, however, a "correction



Distribution of Seals 1910

From Suvorof

FIG. 16.—Karabelnoye Rookery, Copper Island, showing distribution of seals in 1910, according to Suvorof

coefficient" deduced from a comparison of his own count on Copper Island with the eye determination of the watch. In this way he obtained the figures of the following table, which in his opinion approximately express the number of animals on the rookeries, the number of bachelors present being practically negligible. He remarks specifically that the estimate relates to the number of seals left after 1,017 cows and 500 bachelors had been killed.

Suvorof's table of seals on the Commander Islands rookeries about the middle of August (new style), 1910

Rookery	Half bulls	Bulls	Cows	Black pups
COPPER ISLAND				
Glinka rookeries:				
Gavarushetche.....		1	50	25
Siskatchinskoye (Vodopad).....		7	570	500
Zapalata.....		8	1,350	1,200
Palata.....		3	550	500
Zapadnoye.....		6	600	550
Urill.....		20	1,250	1,100
Leblazhe.....			700	
Babitcha.....			200	200
Karabelnoye rookery:				
Nerpitchi Kamen.....		3	150	124
Total.....		48	5,420	4,200
BERING ISLAND				
North Rookery:				
Reef.....	1	7	1,800	1,400
Orlof Kamen.....		2	150	130
Sivutchi Kamen.....		5	250	220
Kishotchnoye.....		2	200	160
In water near rookery.....			1,600	
Total.....	1	16	4,000	2,000
Total (both islands).....	1	64	9,420	6,200

¹ Partly bachelors.

² These figures are those given by Suvorof; the actual summation gives 4,199 and 1,910, respectively.

³ Approximate.

The corresponding totals of the watchmen are given as follows:

	Cows	Black pups
Copper Island.....	7,070	5,755
Bering Island.....	4,120	2,550
Both islands.....	11,190	8,305

It is not easy to see how he has arrived at these figures and how he applied the "correction coefficient," as it appears from his tables that his own estimate on Copper Island differs much more from that of the Copper Island guards than the accepted figures for Bering Island do from those of the Bering Island guards. However, much as this census probably differs from the actual figures, it is a sufficiently eloquent demonstration of the terrible straits to which the Commander Islands rookeries had been reduced by 1910. If we add to this that afterwards during the same year 1,580 more cows and 208 bachelors were killed¹⁰ and imagine the number of black pups that must have starved to death, as their mothers were killed both on land and at sea, we get a vivid picture of the conditions that existed at the close of the season of 1910. To complete the picture of destruction it should be realized that because of the decreasing number of male seals taken, the natives were allowed to kill gray pups in the fall for food. The number of gray pups thus killed in the three years preceding 1910 averaged 860. How many of these were females it is not possible to say.

Suvorof's figures receive additional confirmation by his maps. These are only diagrammatic representations on small-scale copies of the rookery maps pub-

¹⁰ Altogether in 1910 there were killed on the Commander Islands 2,597 cows and 708 bachelors; of these 1,017 cows and 500 bachelors had been killed before the census was taken.

lished by the writer in 1896 and 1898. His data, however, have been transferred to the latter, as shown in Figures 15, 16, and 17, and to better show the destruction the distribution of the seals as the writer mapped it in 1895 has been reproduced on the same scale (figs. 10, 11, and 12).

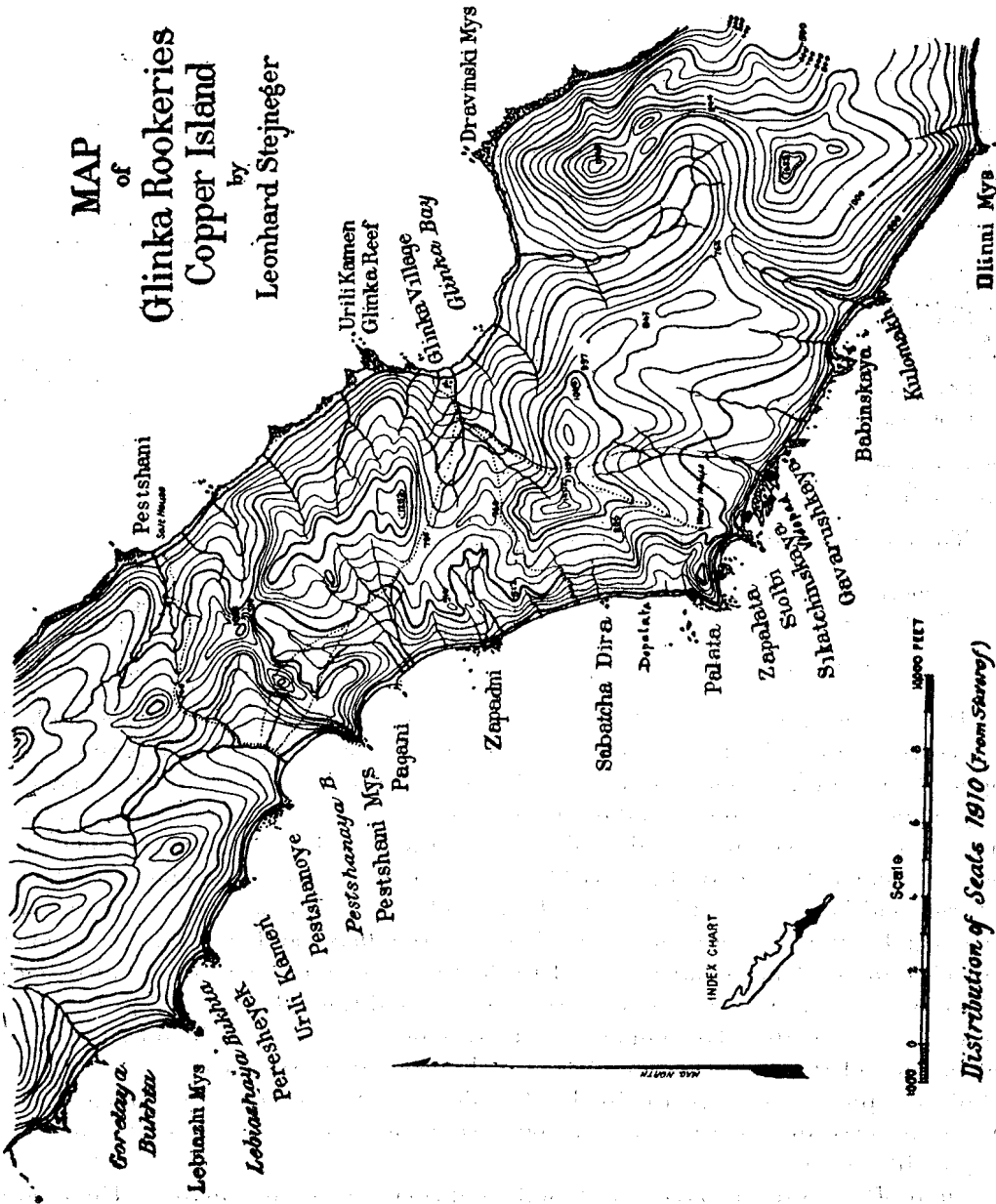


FIG. 17.—Glinka Rookeries, Copper Island, showing distribution of seals in 1910, according to Stejneger

THE TREATY OF 1911

It had become obvious to everybody by this time, to those who had profited by the pelagic sealing as well as to the powers owning the breeding grounds, that some arrangement would have to be made if the seal herds were not to be extermi-

nated, to the permanent loss of all parties. Fourteen years previously sealing experts of all the powers interested had agreed as to the essential facts and the best methods for protecting the seals, but political and financial considerations had prevented action upon their recommendations. Such considerations would obviously be of no importance when the seals themselves should have ceased to exist, hence the belated willingness of the four governments to compromise their claims.

Under the auspices of the United States Department of State an international conference was convened in Washington on May 5, 1911, for the purpose of concluding a treaty affecting the fur seals of the North Pacific Ocean. The powers attending the conference were Great Britain, Russia, Japan, and the United States. The principle that guided the negotiations seems to have been an acknowledgment of the right of the pelagic sealers to compensation for giving up their preying on the seal herds outside territorial waters. At any rate, the governments possessing seal rookeries agreed to pay the others 15 and 10 per cent of the sealskins taken. A treaty was signed on July 7, 1911, and after ratification became effective on December 15, 1911, and was to continue in force for a period of 15 years from that date and thereafter until terminated by 12 months' written notice given by one or more of the parties to all of the others, which notice may be given at the expiration of 14 years or at any time afterwards.

By this treaty pelagic sealing was forbidden in the waters of the North Pacific Ocean north of 30° north latitude and including the Seas of Bering, Kamchatka, Okhotsk, and Japan, with the exception that "Indians, Ainos, Aleuts, and other aborigines" may carry on pelagic sealing in canoes without firearms under certain conditions specified, among them that these aborigines must not be "under contract to deliver the skins to any person." There is nothing, however, forbidding these aborigines to sell the skins. Otherwise no person or vessel shall be permitted to use any part of the territory of any of the signatory powers for any purposes whatsoever connected with the operations of pelagic sealing, nor shall any sealskins not certified to have been taken legally be permitted to be brought into the territory of any of these powers. The latter agree to enact and enforce such legislation as may be necessary with appropriate penalties for violations, and to cooperate with each other in taking such measures as may be appropriate and available for the purpose. In addition, the United States, Japan, and Russia agree to maintain a guard or patrol in the waters frequented by their respective seal herds. This would entitle Russia to maintain a guard off the Japanese coasts during the winter and spring migrations of the Commander Islands seals.

This apparently throws the burden of protecting the seals at sea against the illegal pelagic sealing by nationals of the other powers upon the one in whose territory the herd breeds, thus relieving the government of the offending sealers of any obligation to interfere with them, except to prevent them from bringing the illegally taken skins into its territory and to try the offenders and impose upon them penalties of its own making, when such offenders shall have been delivered to its authorized official by the naval or other duly commissioned officer of the government making the seizure. In other words, in order to protect its seals against pelagic sealers the Russian Government must

have an effective guard not only in summer in the waters surrounding the Commander Islands within a radius of at least 150 miles around the islands, as the breeding seals are known to go that far to sea in search of food, but also in winter and spring along the coasts of Japan from the latitude of Yokohama to and including the Kuril Islands. The Japanese Government is under no obligation to interfere with its own subjects in all that big stretch of ocean except to forbid them the use of its ports, etc., to prevent them from bringing in the illegally taken skins, and to try and punish them according to Japanese law when they have been seized by a Russian officer and duly handed over to an authorized Japanese official.

Article XII of the treaty is of particular interest to the Commander Islands sealing industry. It reads as follows:

It is agreed on the part of Russia that of the total number of sealskins taken annually upon the Commander Islands, or any other island or shores of the waters defined in Article I subject to the jurisdiction of Russia to which any seal herds hereafter resort, there shall be delivered at the Commander Islands at the end of each season fifteen per cent (15%) gross in number and value thereof to an authorized agent of the Canadian Government, and fifteen per cent (15%) gross in number and value thereof to an authorized agent of the Japanese Government; provided, however, that nothing herein contained shall restrict the right of Russia at any time and from time to time during the first five years of the term of this Convention to suspend altogether the taking of sealskins on such islands or shores subject to its jurisdiction, and to impose during the term of this Convention such restrictions and regulations upon the total number of skins to be taken in any season, and the manner and times and places of taking them as may seem necessary to preserve and protect the Russian seal herd or to increase its number; but it is agreed, nevertheless, on the part of Russia that during the last ten years of the term of this Convention not less than five per cent (5%) of the total number of seals on the Russian rookeries and hauling grounds will be killed annually, provided that said five per cent (5%) does not exceed eighty-five per cent (85%) of the three-year-old male seals hauling in such year.

If, however, the total number of seals frequenting the Russian islands in any year falls below eighteen thousand (18,000) enumerated by official count, then the allowance of skins mentioned above and all killing of seals except such as may be necessary for the support of the natives on the islands may be suspended until the number of such seals again exceeds eighteen thousand (18,000) enumerated in like manner.

THE COMMANDER ISLANDS ROOKERIES IN 1911

While this treaty was being negotiated and signed in Washington and during the months following the signing things went from bad to worse on the Commander Islands, where two important rookeries literally became extinct.

On April 18, 1911, a council was held in St. Petersburg at the Department of Agriculture, at which the condition of the rookeries and the fur-seal industry, as ascertained by Mr. Suvorof in 1910 was considered. As a consequence of the alarming report made by him it was decided to institute a closed season for the land killing of seals, to begin in 1912 and to remain in force 5 years. The reason for not starting the closed period at once was that, according to the contract with the Kamchatka company which expired in 1911, the latter was entitled to a quantity of sealskins, though the Government had reserved to itself the right to determine each year the number and kind of seals to be killed. The number of seals to be killed for skins was therefore set at 200, and as this would not furnish sufficient food for the natives, the latter were allowed to kill in addition 200 gray pups. Mr. Suvorof was also ordered to continue his examination of the condition of the seal herd during 1911.

Upon his arrival at the islands it was found that the rookeries had been still further depleted during the intervening winter by at least 30 per cent, according to his estimates, and that there were scarcely more than 200 bachelors present at any time on the hauling beaches. Moreover, even if that many could have been killed, to do so would have endangered the future supply of male life; hence, after consultation with the local administrator of the islands, he decided to allow the killing of 200 cows, 60 on Bering Island and 140 on Copper Island, in place of 200 bachelors.

The number of seals on the rookeries was now so small that he thought an approximate count could be easily made. It is probable that this is the most nearly correct estimate made of the Commander Islands herd at any time, though the number of pups is probably considerably (possibly 20 per cent) underestimated.

The tabulation of the count on all the rookeries follows:

Fur seals on Commander Islands rookeries in 1911

Rookery	Half bulls	Bulls	Cows	Black pups
COPPER ISLAND				
Glinka rookeries (July 22-25, new style):				
Gavarushetche.....			8	37
Sikatchinskoye.....	1	2	311	457
Zapalata.....	1	8	650	962
Palata.....		4	184	535
Zapadnoye.....		2	73	216
Urili and Peresheyek.....	7	16	1,101	1,078
Karabelnoye rookery (July 20, new style):				
Nerpitchi Kamen.....			20	15
Total.....	9	31	2,347	3,350
BERING ISLAND				
North rookery:				
Reef.....		4	1,150	891
Orlof Kamen.....			20	35
Sivutchi Kamen.....		2	159	338
Kishotchnoye.....				47
Total.....		6	1,329	1,311
Total (both Islands).....	9	37	3,676	4,661

¹ Suvorof (Viestnik Rybopromyshlennosti, Vol. 31, Sept., 1916, p. 440) gives 4,988 cows as the total for both Islands.

In addition, there were counted on the various beaches 128 dead black pups and in the water off the rookeries about 415 cows. If, however, allowance is made for the probable number of black pups overlooked, the cows absent at sea feeding, the number of bachelors hauled out (220), and those at sea (including yearling males and females), the probability is that the Commander Islands herd in 1911 did not exceed 15,000 of both sexes and all ages.

By contrast it may here be noted that at the same time the Pribilof herd numbered about 125,000 seals all told, or eight times as many. During the prosperous days of the fur-seal industry, about 1880, the Commander Islands herd was nearly one-half that of the Pribilof Islands. Now, at the lowest ebb, the decline had been so entirely out of proportion that it was only one-eighth the size of the American herd. Nothing can better illustrate the disaster which had befallen the Russian herd. Even during this year of its extreme decline the factor that brought on the disaster was more active and destructive than ever before. The Japanese raiders and pelagic sealers, driven to desperation by the gradually diminishing catches, were growing more and more aggressive and reckless. It is necessary,

in order to understand fully the causes of the continued decadence of the Commander Islands rookeries, to go into the history of the 1911 raids in some detail. The following account is therefore based on the story told by Mr. Suvorof, who, as stated above, was present on the islands that year.

Rookery raids in 1911.—From the table of the count on Copper Island (p. 315) it will be noted that no bulls or half bulls arrived in 1911 on Nerpitchi Kamen, the last remnant of the once big Karabelni rookeries. Immediately after the rookery guards had been withdrawn from this rookery in the fall of 1910 the seal pirates raided it, with the result that when Suvorof visited the place on July 20, 1911, he found only about 20 cows and 15 black pups; "of bulls there was not one." Five days later he returned and found not a single seal—"there was not even a carcass of a newborn pup." The pirates had apparently been there in the interval and literally cleaned out the rookery.

About the same time a raid on the Zapadni and Urili rookeries of the Glinka group was successfully carried out without attracting the attention of the rookery guards, for on July 21 they found there 80 cows killed and the carcasses of 121 black pups, and at Peresheyek the carcasses of 2 cows and 6 pups were picked up the next day. Here were also found, among other things, a Japanese oar, a double-barreled shotgun, a pair of binocles, a boat compass, skinning knives, cartridges, and ropes ready with slipknots for towing the seals killed. Evidently one of the pirate boats had been upset in the breakers. The raid must have taken place some time before, for the skins of some of the seals killed had already spoiled, and the birds had picked out the eyes of some.

A much more serious affair took place on July 21. During the evening of that day the guards noticed some Japanese schooners signaling to each other with flags. A concerted raid was therefore anticipated and reinforced guards were placed at different points along the coast. About midnight about 25 boats landed near the waterfall at Sikatchinskaya. Alarmed by the large number of men disembarked, the rookery guards fired several shots. Some of the raiding party then attempted, aided by the darkness, to sneak along the beach and to land near Palata but were met here by the fire of another squad of the rookery guards, so that they hurriedly went off to sea. One empty boat, however, was afterwards taken by the Aleut guards near the same beach. In the meantime another party hastened in the opposite direction but soon disappeared in the fog. At daybreak, however, a boat belonging to this party, in which were the corpses of two Japanese, was found at Babinskaya. Knowing that in the raiders' whaleboats there usually are three or four men, a search was made along the coast for the missing ones, and soon a live Japanese was taken on the beach near the rookery. During the whole of the following day a thick fog prevailed, out of which the firing of guns was heard, presumably the schooner summoning its boats. The captive Japanese was afterwards taken to Vladivostok for trial in order that an example might be established which would put a stop to the ever-increasing boldness of the raiders. The Russians believed that at this raid they killed about 14 raiders in addition to capturing the two boats.

Whether this repulse discouraged the pirates is not known, but the usual raids on the Bering rookery did not take place. However, the marauders for the first time landed on the southern shore of Bering Island. During the first half of July

three natives of that island, who made a trip to Tolstoi Mys, noticed tracks of people who had piled up dry grass around the fox-hunting shelter hut at that place and set it on fire. The fire had gone out and the hut was spared.

While these events took place on shore the naval guard was kept even busier. At the request of the Department of Agriculture in St. Petersburg the Russian Navy Department detailed the gunboat *Manzhur* to do guard duty around the Commander Islands. In spite of adverse circumstances she probably averted further attacks on the rookeries and achieved considerable success in protecting the remnants of the seal herd by compelling the pirates to leave the islands earlier than usual. During the summer months the *Manzhur* made six trips to the islands, seized one schooner and three boats, examined a long line of schooners, and confiscated a quantity of skins. Nothing will better illustrate the methods of the pirates as well as their recklessness and boldness even in the face of the naval guard vessel than a detailed account of some of these occurrences.

During the second cruise to Copper Island the *Manzhur*, on June 26, seized the Japanese schooner *Kofudzi Maru* about 2½ miles from Sikatchinskaya Bukhta. A boat belonging to this schooner was captured at the same time about 2 miles from shore. On board the schooner there were found and confiscated 3 sea-otter skins (one perfectly fresh and with flesh still partly adhering) 6 salted fur-seal skins, 2 quite fresh, and 1 hair seal. The vessel was supplied with small 37-millimeter guns and military ammunition.

On its fourth cruise the commander of the *Manzhur* was informed of the raid and shooting that had taken place at the Glinka rookeries on July 21. On the 31st of that month he therefore proceeded to the strait between Copper and Bering Islands in search of Japanese schooners, hoping by an examination of their muster rolls to discover which ones had taken part in the nocturnal affair. The first to be examined was the *Chitose Maru No. 2* (*Dai-itchitose Maru*). Unfortunately a confrontation of the crew with the muster roll was impossible, since 8 of her 10 boats were hunting away out of sight at sea. However, one of the boats remaining on board as well as one arrested near by showed traces of having been hit by bullets, mute evidence of their having taken part in the shooting affair. An examination of the hold of the schooner revealed 59 skins of adult seals and 15 skins of black pups, some of them just turning gray, proof positive that they had been killed on the rookery, since the pups can not swim at that age. The skins were consequently confiscated, but the schooner itself was released, as the search was made outside the 3-mile Territorial zone.

The next schooner examined was the *Toei Maru*. All its boats were away, and in the hold were found only 3 adult skins and 2 black pups. The skins were seized but the schooner was released. The *Hashiman Maru* was next searched, but no skins found. All her boats were away. While the search was going on shots from the direction of the coast were heard on the *Manzhur*. Leaving the schooners at once and steaming toward Copper Island, three boats were met and seized within the 3-mile limit, not far from the Bobrovi Kamni at the northwest extremity of the island. The first of them, which belonged to the *Chitose No. 2*, contained no skins, but in the last two, belonging to the *Toei Maru*, 3 freshly killed seals with the skins still on were found. It was at once decided to seize both schooners, but

these, observing the arrest of the boats, put on all sail in a hurry and were soon lost to sight. Nothing can better illustrate the hardihood of these raiders than the fact that they continued their depredations inside the Territorial limit with the Russian naval guard ship plainly on the horizon.

The *Manzhur* then turned toward Bering Island again and caught up with two more schooners. On the *Ivaki Maru* skins of 13 adults and 1 black pup were found, and on the *Kinkai Maru* 63 adult skins and 4 black pups. The skins were seized and the vessels released. On the *Konzen Maru* only 2 adult sealskins were found, and these were restored to the owner. On this schooner the log book proved to be in perfect order. However, on all the others the logs were found to be very carelessly kept, and the last two days not even written up.

On this trip the *Manzhur* searched 6 schooners, seized 3 boats with 10 Japanese sailors, and confiscated 3 sea-otter skins, 138 skins of adult seals, and 22 of black pups. As a result not more than 5 schooners were afterwards observed from Copper Island, and that a long distance off, while no more raids took place on shore that year. The schooners did not leave the neighborhood, however, for on August 24 the *Manzhur* boarded 3 vessels in the sea between the two islands, among them the same *Hashiman Maru* that had been searched three weeks before. As no black pups were found, and as it was impossible to prove that the adult skins had been taken inside the Territorial zone, no confiscation could be made.

Taking into consideration the vastness of the sea, the precipitous nature of the islands, the constant fogs and incessant storms, the impudent recklessness of the pirates, and the difficulty of chasing a fleet of small schooners in such dangerous, uncharted seas with a large naval vessel hundreds of miles from any harbor, it is small wonder that it has been almost impossible to protect the islands effectively.

PERIOD FROM 1912 TO 1917, THE 5-YEAR ZAPUSKA

With the treaty of 1911 going into effect and a 5-year Zapuska or closed season decreed, the Russian authorities began to hope for better times for the Commander Islands seals. At the end of the Zapuska in 1917 it was estimated, though without any particular pretense whatever at exactness, that the Commander Islands herd would number 40,000 seals, and that by 1926 it would be possible to take at least 18,000 to 20,000 bachelor skins. Unfortunately these expectations were entirely too rosy and could only lead to bitter disappointment.

The available material for a history of the Commander Islands fur-seal industry from 1912 to 1917 is rather scanty. The archives on Bering Island gave scarcely any information of value. Colonel Sokolnikof continued in charge of the administration during this period, but as he was generally at odds with the officials in the Department of Agriculture at St. Petersburg the latter relied chiefly on their own "specialists." Finally, in 1915, the fisheries and the fur industry were organized as a separate administration with headquarters at Copper Island, independent of the district official. In 1917 the department in St. Petersburg again sent Mr. Suvorof to the islands for the purpose of taking the necessary steps for the resumption of seal killing after the expiration of the five-year closed season.

These five years were on the whole quiet. The seals apparently were becoming more numerous. The increase in the number of bulls and males in general was

particularly noticeable. Besides, raiders and pelagic sealers were not troubling the rookeries to any extent.

Unfortunately there is available no reliable or even approximately rational census of the increase. The treaty of 1911, it is true, assumes that an official count shall be made as a basis for all calculations regarding the permissible number of skins to be taken. Accordingly, instructions were given the local authorities to count the various classes of seals present on the rookeries at regular intervals throughout the season.

In all previous reports the writer has emphasized the physical difficulties in the way of a reliable count of the seals on the Commander Islands. The difficulties encountered on the Pribilof rookeries were multiplied and amplified enormously on the Russian islands, and, besides, there were no persons on the islands competent to make even an intelligent estimate. The count was placed in the hands of the native overseers of the rookery guards and the results are positively grotesque. There are available the certified official counts for Copper Island from 1915 to 1921, inclusive (except that of 1917, which was missing), and the counts for Bering Island during 1914 and 1915, which were extracted from the original documents in the archives on Bering Island. A glance at these figures demonstrates beyond question the above assertion. It would serve no useful purpose to set them forth in detail, but, considering the importance of establishing the facts once and for all, there are given below the tables for the year 1914 for Bering Island, 1915 for both islands, and 1916 for Copper Island.

Count of fur seals on Bering Island by rookery guards in 1914

Date	Bulls	Half bulls	Bachelors	Cows	Pups	Seen in the sea	Total
May 11	1						1
May 16	1						1
May 17	2						2
May 23	3				3	1	7
May 24	3				3	2	8
May 26	4				5		11
May 31	5	2			16	3	27
June 1	6	4			13	12	35
June 3	6	7			20	1	35
June 7	10	7			25	3	55
June 14	18	13	45	88	56	65	279
June 16	18	13	66	144	83	125	249
June 21	31	23	130	450	150	139	
June 28	32	20	132	880	340	150	
July 1	32	11	121	754	553	210	
July 5	32	11	133	994	623	180	
July 12	45	61	144	1,300	1,384	30	
July 16	45	61	152	1,340	1,384	70	
July 19	45	61	152	1,410	1,390	100	
July 26	45	61	150	1,455	1,433	200	
August 1	36	56	108	1,143	1,148	150	
August 9	27	38	330	1,977	1,713	1,415	
August 16	23	16	207	1,960	2,093	2,955	
August 23	20	14	215	1,960	2,073	2,000	
August 30	14	13	200	1,545	1,690	1,600	
September 1	17	14	204	1,798	1,910	1,100	
September 6	15	13	173	1,995	2,000	1,100	
September 13	12	11	130	1,799	1,819	1,110	
September 15	11	11	110	1,665	1,720	1,800	
September 20	11	11	110	1,665	1,680	1,200	
September 27	8	7	40	809	1,033	1,500	
October 1	7	8	38	745	861	2,000	
October 4	5	2	10	1,069	1,360	700	
October 11	5	1		633	105	500	
October 16	1	1		85	58	130	
October 18				230	210	20	
October 25	2			104	50	1	

Count of fur seals on Bering Island by rookery guards in 1915

[No distinction made between harem bulls and idle bulls; yearlings not counted separately]

Date	Bulls	Half bulls	Bachelors	Cows	Pups	Seen in the sea	Total
May 1	1						1
May 9	1	1					2
May 15	3	1				2	6
May 16	3	1				4	8
May 20	6	1				8	15
May 23	10	5	1	5		4	25
May 30	16	5	1	13		1	36
June 1	23	6	6	17		5	57
June 4	28	9	8	20	1	3	69
June 6	25	9	9	25	5	9	82
June 13	26	17	18	63	28	16	168
June 15	28	18	25	79	40	27	217
June 20	29	20	42	140	82	80	393
June 27	74	20	127	1,901	1,071	30	3,223
July 1	90	20	100	2,241	1,501	100	4,062
July 4	93	27	100	2,331	1,521	200	4,272
July 11	91	20	100	2,201	1,701	500	4,613
July 18	99	30	100	2,561	1,600	300	4,690
July 25	116	29	419	2,989	1,700	600	5,853
August 1	92	28	130	2,579	1,700	300	4,829
August 8	78	23	107	1,428	1,770	500	3,406
August 10	80	48	149	1,362	1,193	600	3,432
August 19	31	15	223	1,266	1,034	1,800	4,369
August 29	38	21	206	967	656	400	2,088
September 4	37	25	170	918	880	341	2,371
September 9	46	18	274	1,078	770		2,186
September 18	14	5		273	1,319		1,611
September 26	9	4	14	186	222	1,800	2,235
October 3				800		2,000	2,800
October 10				950		1,400	2,350
October 17	1			120	115	60	292
October 23				22	26	10	58
October 30				10	9	4	23
November 6							

Count of fur seals on Copper Island by rookery guards in 1915

[Schedule probably misunderstood; the figures under "Idle bulls" are probably intended for both harem and idle bulls]

Date	Harem bulls	Idle bulls	Half bulls	Bachelors	Cows	Pups	Yearlings	Seen in the sea	Total
May 17		4							4
May 21		5	2						7
May 28		9	3	4	1				17
June 8		34	13	36	1				84
June 14		71	33	78	1				183
June 18		81	37	149	1	1			169
June 25		117	71	361	74	38			662
June 27		117	75	546	123	65			926
July 7		170	137	882	778	482			2,449
July 13		215	150	1,168	3,174	1,671			6,578
July 21		223	180	2,858	4,075	2,549			9,875
July 25		225	188	3,617	5,378	3,206			12,614
August 3		316	191	2,163	6,618	3,891			13,179
August 12		243	172	3,760	5,038	3,990	60	760	14,023
August 27		89	84	3,154	1,984	1,626	183	1,161	7,501
August 31		218	160	3,509	4,732	2,926	161	2,318	14,024
September 3		214	168	2,822	4,468	4,647	158	2,987	15,464
September 14		305	206	1,635	1,778	1,796	196	1,750	7,666
September 18		222	183	1,666	3,405	3,207	200	570	9,453
September 23		206	170	1,165	3,240	4,186	178	658	9,803
September 28		239	202	1,282	4,678	4,630	156	750	11,937
October 7		107	103	384	2,860	3,506	173	2,785	9,918
October 12		167	103	345	2,797	2,675	178	3,250	9,485
October 22		68	78	490	2,622	2,688	119	500	6,655
October 28		41	49	311	2,180	2,400	62	902	5,945
November 5		9	15	10	990	850	95	345	2,314

Count of fur seals on Copper Island by rookery guards in 1916

Date	Harem bulls	Idle bulls	Half bulls	Bachelors	Cows	Pups	Yearlings	Seen in the sea	Total
May 5		2							2
May 9		1	1	6					8
May 23		18		42					60
May 29		36	1	23					60
June 2		63	6	52					121
June 16		99	4	72	1		2	7	185
June 29		103	82	383	257	130	7	12	1,174
July 3		358	91	322	672	376	13	58	1,890
July 16		182	50	276	978	854	3	180	2,503
July 25		164	33	188	595	657	16	147	1,800
August 4		267	34	289	2,755	2,678		1,710	7,733
August 15		275	39	3,750	4,400	2,004	147	431	11,046
August 30		214	163	1,136	2,600	2,324	398	846	7,681
September 7		230	145	1,290	2,360	1,970	376	4,484	10,955
September 13	271	75	174	1,300	2,178	1,605	335	1,675	7,613
September 26	149	81	113	2,100	2,326	1,438	373	1,980	8,760
October 1		190	135	1,002	2,500	2,358	191	1,715	8,091
October 10		82	26	468	900	1,150	60	2,863	5,558
October 22		140	118	1,316	1,900	1,220	67	1,348	6,110
November 5		31	6	240	270	560		719	1,826
November 14		13	2	100	139	294		133	681
November 17		15		15	19	15		90	154
November 22		5	2	5	6	3		17	38
November 27								4	4

Certain features of these extraordinary tables which otherwise might seem incomprehensible are explained hereafter.

In the Copper Island count it will be noted that the column designated "harem bulls" has been left blank. Evidently the official who made the count did not understand the difference between "harem bulls" and "idle bulls," hence the latter may be considered as including both categories. No such distinction was made in the Bering Island count. However, in 1916 the Copper Island census taker actually counted harem bulls on two dates. Thus we find enumerated on September 7 no harem bulls but 230 idle bulls; on September 13, 271 harem bulls and 75 idle bulls; on September 26, 149 harem bulls and 81 idle bulls; and on October 1, again, no harem bulls and 190 idle bulls. In 1918 he was evidently better instructed, for now we find harem bulls consistently enumerated from June 28 to September 2. In 1919, however, according to his figures, the harems lasted from July 2 to October 11, in 1920 from June 15 to August 30, and in 1921 from July 27 to August 30.

Another peculiarity of the Copper Island census is the detailed figures representing the seals counted in the sea off the rookeries. Thus the pretense of having counted 7,150 seals in the water on August 23, 1921, will be appreciated by anyone who has ever attempted a similar task. The Bering Island enumerator, on the other hand, shows better judgment in this respect, since his figures, when he deals with more than 30, are round number estimates up to 2,000, except on September 4, 1915, when he counted 341 in the sea.

Utterly hopeless as these enumerations are, at least one general conclusion may be reached, namely, that the bulls have been steadily increasing since 1911. The bulls form the only conspicuous class of seals that may be counted with some approximation to the actual number present. It is true that even in this regard the tables leave much to be desired; nevertheless, the fact of the increase can not well be doubted. From the Copper Island tables I have compiled the following significant figures:

*Bulls present on Copper Island, 1915 to 1921*¹.

	1915	1916	1918	1919	1920	1921
Count between June 12 and 17.....	104	103	287	254	404	271
Maximum count (on various dates before Aug. 15).....	507	449	682	572	643	822
Average of the counts in July (not including half bulls).....	230	197	469	343	355	477

¹ Count for 1917 missing.

Remembering what has been said about the Copper Island census taker not understanding the difference between the categories of bulls, and without attempting to account for the glaring inconsistencies and the lack of an even approximately orderly increase, the significant fact remains that in 1911 a maximum of 40 bulls was counted on Copper Island. This figure, from its very smallness, can not have been far from the actual number. We may therefore safely conclude that the number of males engaged in reproduction increased from less than 50 in 1911 to not less than 250 in 1918 and 300 in 1921.

It must be admitted that the census of the Bering Island North Rookery is less fantastic than that of Copper Island. The maximum of bulls for 1914 and 1915—namely, 106 and 145, respectively—may not be much out of the way, and taken in connection with the fact that in 1911 there were said to be only 6 bulls on that rookery it is fully in agreement with the indications for Copper Island.

While a certain degree of credibility attaches to the estimates of bulls present on the rookeries, the same can not be claimed for the so-called count of cows and pups. The figures presented are nothing but wild guesses, and are only less fantastic than the figures presented for the seals counted at sea in front of the rookeries. The acme of absurdity is reached by the Copper Island census taker who, for instance, on August 13, 16, and 23, 1921, reports, respectively, 6,090, 7,162, and 7,150 seals sporting in the water off the Glinka rookeries.

KILLING RESUMED IN 1917

In 1917 the five-year closed season expired and the question of resuming killing and determining the quota of young bachelors to be killed was being taken up by the authorities in St. Petersburg. Mr. Suvorof, who made the last examination of the rookeries in 1911, was again sent to the Commander Islands for the purpose of looking into conditions on the rookeries and deciding these weighty questions accordingly.

It will be remembered that at the conclusion of the treaty in 1911, Mr. Suvorof, on the basis of a combined count and estimate of about 4,800 pups, made by himself, indulged in the hope that by 1917 the total herd might have grown to 40,000 seals of all ages. After a combined count and estimate, presumably made upon the same principles and according to the same methods employed by him in 1911 (see page 315), he came to the conclusion that in 1917 the total number of seals was about 13,500. Naturally he was disappointed. However, before concluding this discussion we believe it will be shown that on the one hand his expectation of 40,000 was too sanguine and on the other his estimate of the size of the herd, both in 1911 and in 1917, was too low.

As shown above, the great calamity of the Commander Islands during the years preceding 1911 was supposed to have been the disproportionate falling off of the bull element, which had reached such a low ebb that the Russians thought it necessary to slaughter cows by the thousands for the purpose of establishing the desired proportion between the sexes. It was with some satisfaction, therefore, that upon his return in 1917 Mr. Suvorof found this condition changed. It may be assumed that the count of the bulls is approximately correct—at least the number is probably not too low. He says that 572 bulls and 172 half bulls were counted, but that a number of bulls could not be counted on Lebiazhe and Babitche rookeries and that consequently the total was considerably higher. The number of harems given is 265, and the number of cows per harem about 18.8, but inasmuch as the uncounted bulls on the two rookeries were not included in the calculation the average harem was even smaller (though it is not explained how the pups could have been counted on rookeries where the bulls could not be counted). Bearing in mind that the average harem in 1911 was supposed to be over 96, this reduction to 18 or less in 1917 is certainly astonishing, especially if we compare it with what took place on the Pribilofs during the same period and under the same conditions, where, with a not unduly depleted bull stock in 1911, the average harem in 1917 had not been lowered below 26 cows.

The conclusion is therefore inescapable that if the number of bulls was even approximately correct that of the breeding cows was estimated too low. This is the more plausible because of the methods used in taking the census, as remarked before. Inevitably the number of pups was underestimated both in 1911 and in 1917. In the latter year for the first time Mr. Suvorof proceeded on the theory that the number of black pups on the rookeries is equivalent to the number of breeding cows. His figure for the two classes of seals for 1917 was 4,982. It would not be surprising if this were an undervaluation of 20 per cent.

While it is admitted that the estimates made by Mr. Suvorof in 1911 and 1917 are comparable with each other because they were made according to the same principles and methods, no value whatever can be attached to the figures given for each of the intermediate years based upon the enumerations made by the local authorities. The figures received in St. Petersburg during the years 1912 to 1916 (except 1915, for which none were submitted) are given by Suvorof in an article published in 1916 (*Viestnik Rybopromyshlennosti*, vol. 31, Sept., 1916, p. 446), as follows:

Comparison of figures received in St. Petersburg for Commander Islands seal herd

Class of seals	1912	1913	1914	1916
Bulls.....	37	64	249	533
Half bulls.....	19	74	255	252
Cows.....	5,329	5,240	4,983	3,326
Black pups.....	5,212	5,000	4,647	4,671
Bachelors.....	375	783	671	1,365
Seen in water.....				4,000
Total.....	10,972	11,161	110,775	14,169

¹ These figures are those given by Suvorof; the actual summation gives 10,805 and 14,147, respectively.

Just what relation these figures bear to the official counts, the absurdity of which has been demonstrated above, can not be stated, but no system of calculation or interpretation can possibly produce credible figures for those years. Mr. Suvorof, after his visit in 1917, submitted the following figures ¹¹ for breeding females:

1911.....	4,839	1914.....	4,872
1912.....	5,234	1916.....	4,769
1913.....	4,860	1917.....	4,982

He thus came to the conclusion that while the male life had progressed satisfactorily, the number of females practically remained stationary, and he tried to explain this alleged fact by the curious assumption that pelagic sealing had caused a great surplus of superannuated cows, which, after pelagic sealing ceased, died off as fast as new ones were born; but he failed to explain how old cows would have a better chance to escape the pelagic sealers than young ones. The true explanation seems to be that the Russians reckoned with a lower mortality than experience has shown to occur. The whole history of the fur-seal industry of the Commander Islands seems to indicate that the normal mortality of the Russian herd during the migration season is even higher than that of the American herd; but if that is true, the expectation for 1917, based on Suvorof's own estimate of the living black pups in 1911, should not greatly exceed the number he reported having found in that year.¹²

The total number of seals present on the Commander Islands rookeries in 1917 according to his calculation was 13,267. It has already been said that his figures for 1911 probably were too low, and also that those given for 1917 are correspondingly low. This belief is based, first, on the conviction that the combination count-estimate of black pups, from the way it was undertaken, must have fallen considerably short of the actual number, and, second, on the fact that his calculations, at least those of 1911, did not take into consideration the number of seals that remain at sea during the whole season. With these probabilities in mind, we have indulged in the following speculation:

Assuming for 1911 an undervaluation of 10 per cent in the number of black pups alleged to have been on the Commander Islands rookeries at that time, viz, 4,661, we start with a round number of 5,100, and accepting the count of 46 bulls at its face value we would be justified in estimating the total number of seals of all the other classes to have been, in 1911, *including those absent at sea*, as follows:

Cows.....	5,100
Black pups.....	5,100
Bulls.....	46
Bachelors.....	1,350
2-year-old females.....	1,200
Yearling females.....	1,275
Yearling males.....	1,275
Total.....	15,346

¹¹ These figures differ somewhat from his tabulation given above.

¹² His own estimate in 1916 as to how many might be expected in 1917 was 5,830 cows (Viestnik Rybopromyshlennoski, vol. 31, 1916, p. 448).

Assuming again a mortality equal to that believed to occur in the Pribilof herd, the Commander Islands herd in 1917 should have been composed somewhat as follows:

Cows.....	6, 640
Black pups.....	6, 640
Bulls (harem, surplus, and idle).....	800
Bachelors.....	5, 708
2-year-old females.....	1, 609
Yearling females.....	2, 066
Yearling males.....	2, 052
Total.....	25, 515

Mr. Suvorof's figures for 1917 are as follows:

Cows.....	4, 982
Pups.....	4, 982
Bulls (harem, surplus, and idle) over.....	744
Bachelors.....	2, 559

It will be noted that he left out the yearlings, which, according to my figures, should have amounted to 4,118, as well as the 2-year virgins, 1,609, a total of 5,727 seals not accounted for. Presumably the 2,559 bachelors enumerated are those supposed to be seen on or about the rookeries without accounting for those absent on the feeding grounds. Suvorof expressly stated that the number of seals on all the rookeries in 1917 was about 13,267, and that the total number in the Commander Islands herd was 16,957. With the above explanation it will be seen that there is less discrepancy between the figures than is apparent at first glance. At any rate, it seems certain that the number of seals of all classes present on the rookeries, including pups, yearlings, and 2-year-old females, did not exceed 18,000.

The question now presented itself as to the number of seals to be killed in 1917. As already noted, Article XII of the fur-seal treaty stipulates that during the last 10 years of that convention not less than 5 per cent of the total number of seals on the Russian rookeries and hauling grounds will be killed annually, provided that said 5 per cent does not exceed 85 per cent of the 3-year-old male seals hauling in such year.

Suvorof's figures indicate that at least 2,559 bachelors hauled out during that year, but apparently he did not ascertain the relative number of the various year classes, which would, in fact, have been an impossible task. It is thought, however, that no matter what figures we accept for the total the number of 3-year-old males hauled out did not exceed 700. The Russians would consequently not have been required to kill more than 600 seals all told; but that article of the treaty provides further that if the total number of seals frequenting the Russian islands in any year falls below 18,000, as enumerated by official count, killing may be suspended. It is taken for granted that by "frequenting" the treaty means hauling ashore, for surely nobody, not even an official count, can enumerate the thousands of seals remaining hundreds of miles away at sea without going ashore. As stated above, it is almost certain that even under the highest estimate the number

of seals hauling out on the Commander Islands in 1917 did not exceed 18,000. Nevertheless, the Russians decided to proceed with the killing. Mr. Suvorov gives the following result:

Seals killed on the Commander Islands in 1917

Classes	Bering Island ¹	Copper Island	Total
3-year-old males	296	238	534
4-year-old males	4	211	215
Half bulls		35	35
Bulls		17	17
Cows	6	3	9
Total	306	504	810

¹ From the "akts" in the Bering Island archives the seals on that island were chiefly taken in three drives: July 18, 86; July 25, 162; and Aug. 3, 88 seals.

The few females were killed accidentally or because they were "sickly," and the bulls and half bulls to reduce the dangerous excess of these classes.

The latter fact is the most eloquent demonstration of the value of the treaty in protecting the Commander Islands seals against pelagic sealing. The amazing reduction of bulls before 1911, which even served the Russians as an excuse for the desperate expedient of the wholesale killing of breeding females, was not only overcome, but it was even found necessary to kill off some of the superfluous adult males to protect the cows and pups against the dangers resulting from the crowding and fighting of the bulls.

In order to complete as far as possible the history of the sealing in 1917, the following details relating to the drives on North Rookery are given:

Weight of skins taken in drive on North Rookery, Bering Island, July 18, 1917

Class	Weight in pounds	Number of skins	Class	Weight in pounds	Number of skins
Bachelors	5¼	1	Bachelors	8¼	1
Do	6	1	Do	8½	6
Do	6¼	1	Do	8¾	2
Do	6½	4	Do	9	3
Do	6¾	6	Do	9¼	2
Do	7	7	Do	9½	2
Do	7¼	9	Do	9¾	1
Do	7½	3	Cows	10½	1
Do	7¾	7			
Do	8	3	Total		61

Count of seals on North Rookery, Bering Island, July 18, 1917

Class of seals	Reef	Hauling ground	Mali Sivutchi Kamen	Botshoi Sivutchi Kamen	In water or on outlying rocks	Total
Bulls	96	13		29		138
Half bulls	20	42		2		64
Bachelors	15	379	5?	3		402
Cows	1,031		?	191		1,222
Black pups	1,157			2		1,159
Dead black pups	65			3		68
Bachelors and cows					87	87
Total	2,384	434	5	230	87	3,140

¹ Of these, 59 bachelors and 1 cow were killed, as shown in preceding table, and 25 3-year-old bachelors were branded on the shoulder with the figure 7.

On July 25, 1917, there was another drive on North Rookery, Bering Island, in which 152 bachelors were killed. On the succeeding day the following count was made:

Count of seals on North Rookery, Bering Island, July 26, 1917

Class of seals	Reef	Sivutchi Kamen	In water or on outlying rocks	Total
Bulls.....	110	14		124
Half bulls.....	39	1		40
Bachelors.....	171	2		173
Cows.....	1,317	99		1,416
Black pups.....	1,161	216		1,377
Dead black pups.....	30	5		35
Bachelors and cows.....			210	210
Total.....	2,828	337	210	3,375

On the same rookery a drive on August 3, 1917, yielded 87 bachelor skins, minimum weight 6 pounds, maximum weight 9¼ pounds, and 1 cow skin weighing 6 pounds.

THE COMMANDER ISLANDS AFTER 1917

While the somewhat exaggerated expectations were not realized, nevertheless there had been noticeable progress, and the outlook for the future was undoubtedly promising. Commercial killing had been resumed and with proper management from then on should have become a steadily increasing source of revenue. The total of 810 skins taken was obtained from those age categories of seals that were practically nonexistent five years before. In 1911 in order to obtain 200 skins it was necessary to kill 200 cows; in 1917 four times as many young bachelors were killed without difficulty, and not only with no danger to the future welfare of the herd but to its decided advantage. Evidently the restoration of the Commander Islands fur-seal herd was only a question of time. Unforeseen complications, however, intervened to the great detriment of the herd.

With the Russian revolution of March 15, 1917, a new chapter in the history of the seal herd was inaugurated. The immediate result on the islands was the retirement of the old officers. In 1920, after the Bolshevik Soviet Republic had taken over the Russian Government, Piotr Aleksandrovitch Khramof, as the head agent for the fisheries and sealing industry, was sent to the islands. He arrived at Bering Island on September 6 and afterward made his headquarters on Copper Island. He was young, enthusiastic, and energetic, but without experience.

On October 24, 1920, two Bolshevik representatives of the Communist Government of Kamchatka in Petropaulski arrived. They stayed on Bering Island long enough to organize a Communist Government and then departed.

In the spring of 1921 two representatives of the Soviet of the Eastern Republic were landed at the islands. To them the natives of Bering Island delivered the furs taken during the winter of 1920-21, to be converted into supplies of various kinds. According to the official receipt issued to the fisheries agent on May 27, 1921, the following furs were taken: 614 good blue fox skins, 2 damaged blue and 6 white fox skins, besides 4 whole skins and 1 damaged skin of gray fur-seal pups and 1 skin from a full-grown seal found dead.

In the meantime the Soviet Government in Vladivostok had been superseded by a "white" one and plans were laid for the suppression of the Kamchatkan Federal Republic in Petropaulski. The "white" government in Vladivostok was in turn overthrown by the forces of the "Chita Government," or the so-called Far Eastern Republic, during October, 1922. Shortly afterwards the Petropaulski Government was also deposed and the whole Coast Province, including Kamchatka and the Commander Islands, was again in the hands of the "red" or Soviet Republic.

The details as to what took place on the Commander Islands since 1917 have been set forth in order that the conditions on the Russian fur-seal islands during this highly critical period, when the seal herd needed the most careful nursing, may be fully understood. As will be seen, it was mainly a period of instability and lack of authority and discipline. The natives had been taught not to pay any attention to the orders of the officials, and naturally all law and regulation practically ceased.

That under such circumstances complete chaos did not ensue speaks well for the common sense of the natives, yet it was but natural that the seal herd should suffer much as it did during the "interregnum" from 1868 to 1871 (*Asiatic Fur Seal Islands*, p. 117). Alcohol now, as then, played an important role. The natives, unrestrained by the strong arm of the Russian officials, would sacrifice anything for the chance to get drunk. With the many vessels of varying allegiance—Japanese and "white" and "red" Russians—touching at the islands, there was no lack of supply, and the means of obtaining the much desired alcohol were the furs of seals, foxes, and sea otters surreptitiously killed and secretly stored away. The number of fur-seal skins disposed of in this way by the natives may not have been very great because of their bulk and the difficulties connected with curing them, but there is reason to believe that in 1919, 1920, and early 1921 there were shipped fur-seal skins in considerable quantity of which no official records were kept.

Of course, all these transactions being illegal, it was next to impossible to obtain definite and reliable data. Even the crews of the Japanese men-of-war that visited the islands several times each year were reported to trade extensively with the natives, obtaining furs in exchange for liquor and old clothes. Copies of official reports to that effect were furnished the writer.

With the practical abandonment of the naval seal patrol by the Russians after the revolution, the seal pirates began their destructive work again, but while before the treaty of 1911 it was lawful for them to sell their skins in the markets of at least three of the contracting powers, they were now compelled to dispose of their illegal catches surreptitiously. Consequently, while formerly it was possible to demonstrate by figures the pelagic losses of the seal herd, it is now only a matter of conjecture how many skins were taken at sea and in raids on the rookeries. If it be recalled with what boldness the seal pirates operated about the islands in 1911 (see pages 316 to 318) almost in the presence of the Russian men-of-war, it may easily be understood that during the critical years of the revolution and after, when no naval authority was there to check them, their activities and recklessness increased from year to year.

Schooners were hovering around the islands and were sighted from time to time by the natives when the fog lifted long enough to afford a clear view of the ocean, but as to their catches nothing definite is known. It was only when the crews attempted raiding the seals on shore and were discovered in the act by the rookery guards that tangible facts became available. Thus in 1921 North Rookery, on Bering Island, was raided. The schooner escaped, but five Japanese sealers were caught on shore, and were afterwards taken off by a Japanese transport and presumably taken to Japan and given a trial according to the treaty.

In 1922 no less than four schooners were observed hanging around the rookeries. On July 11 a Japanese schooner anchored off the seal rookery on Copper Island and sent a boat ashore with five armed men who started killing seals. The native rookery guards, who had been watching the performance from behind the rocks, suddenly descended on the beach and seized the boat, at the same time firing at the landing party, who ran away. The natives also shot at the schooner, which was compelled to weigh anchor and disappear, leaving the captain and the owner, as well as the senior machinist, behind. They, with two sailors, surrendered to the guards the next day and were taken to the main village of the island, where they were locked up by the fisheries agent.

Less than two weeks after this affair another schooner anchored off the rookery near the southeastern end of the island less than 300 feet from shore and was caught, together with the captain, the owner, and the entire crew, 14 men altogether. On board the schooner were found 96 fresh sealskins and 5 live blue foxes, which it was stated had been caught on Bering Island where the schooner's men had also been ashore.

It is not even necessary to give credence to the assertion that the natives had on occasion accepted whisky from the raiders in return for permission to kill seals in order to understand that with the lawlessness and the loosening of all obligations which followed the revolution, as set forth above, the slow but sure increase of the seal herd up to 1917 met with a decided check, so great in fact that orders were given in 1921 immediately to stop all official killing of seals on land. A report at that time represented the exact number of seals on the Bering Island rookery as being 4,339, including the newborn. On Copper Island the day of inspection was very warm and besides it was very late in the season after the harems had broken up, hence only an approximate estimate could be made, the total number of seals there being estimated at 6,000. As the total for both islands consequently fell far below the 18,000 stipulated in the treaty prohibiting further killing seemed justified.

The writer was assured the Bering Island census of 1921 had been made "head by head," and that it was not a mere estimate. It was taken on August 16, 1921, and the detailed figures follow:

Old bulls.....	48
Young bulls.....	60
Half bulls.....	56
Bachelors.....	418
Cows.....	2, 221
Black pups.....	1, 438
Yearlings.....	98
Total.....	4, 339

Experts will know how to value this "count," and the writer calls attention merely to the curious proportion of cows and black pups, there being nearly half more of the former than of the latter, a feature that characterizes so many of the Russian estimates.

How the estimate of 6,000 seals for Copper Island was arrived at is not known, but it was certainly not based upon the periodical count of the rookery guards, which for August 16, the same date as the above Bering Island count, gave the following figures:

Harem bulls.....	118
Bulls without harems.....	264
Half bulls.....	220
Bachelors.....	1,381
Cows.....	2,680
Black pups.....	2,200
Yearlings.....	80
In the water.....	7,162
Total.....	14,105

Counting the 7,162 seals in the water must be regarded as an astonishing performance, but does not inspire great confidence in the accuracy of the rest of the count. However, disregarding these fantastic figures, in view of the status of the rookeries as the writer found them in 1922 we have no hesitation in accepting the statement that in 1921 there were less than 18,000 seals frequenting the rookeries and that there was ample justification for stopping the killing of seals for skins.

NUMBER OF SEALS KILLED ON THE COMMANDER ISLANDS BETWEEN 1917 AND 1922

Unfortunately complete official returns as to the number of skins taken since land killing was resumed in 1917 until it was again stopped in 1921 have not been available. The writer has seen only Mr. Suvorof's figures for 1917, as given above, embracing the killings on both islands, amounting to 810 skins. In the Bering Island archives were found reports of killings on that island only for 1918 and 1919, and with regard to these it is not certain that they are complete. For 1920 we know of no record except a statement said to have been taken from "A report published by the special delegation of the Far Eastern Siberian Republic to the Washington Conference, 1922," to the effect that the production of fur-seal skins on the Commander Islands during 1920 was 1,000, probably only an approximate figure, which may or may not include 813 skins shipped by A. S. Yakum in the *Admiral Zavoiko* in May, 1921, as the *Magnit* took 400 skins away from Bering Island on September 9, 1920. On Bering Island in 1920 the natives were given permission to kill 100 seals, but they killed 400. These were the skins shipped on the *Magnit*. The *Yana*, in October, 1920, took the skins of 73 half bulls and 6 bachelors, and in Petropaulski we were informed that the sailors of the *Yana* brought "a lot of dried sealskins." It was also said that 52 skins were landed there in 1921 from the *Kamchatka Maru*.

On Bering Island the following killings were made in 1918: July 16, 115 bachelors, and July 24, 187 bachelors and 1 half bull, a total of 303 skins; and in 1919: July 3, 107 bachelors, and July 7, 68 bachelors, a total of 175. In 1921, 66 seals were killed July 7 on Bering Island for food and leather for the natives, and 32 seals were killed for the same purposes on Copper Island.

When the writer left the Commander Islands on August 8, 1922, no seals had been killed officially, nor was there any evidence in the Bering Island salt house that any skins had been salted, and the natives complained bitterly over the lack of fresh meat. We were informed shortly afterwards that a killing of 500 seals on both islands for food would be permitted later. The killing of over 2,700 seals is thus accounted for. To this number about 1,000 probably should be added for Copper Island during 1918 and 1919.

CONCLUSIONS

Taking all the above facts into consideration, there should be no surprise over the fact that the Commander Islands seal herd has not recuperated as rapidly as has the Pribilof herd. The writer's dismay at the sight of North Rookery on Bering Island on July 28, 1922, was primarily due to the fact that it had not been seen since 1897 and no information giving an adequate idea of the conditions as they existed in 1911, the year of the seal treaty, had been received. It was, of course, known to me in a general way that the herd was then in a serious state, and even that females had been killed, but nothing had reached Washington to make one realize the full extent of the disaster. Furthermore, the complete story of the depredations that have taken place since 1917, the number of seals killed on land and at sea during those years of lawlessness, and the lack of authoritative control on all sides probably never will be known; but allowing for all this, there seems to be a further circumstance which may have had a baneful influence in retarding or even checking the rehabilitation of the Commander Islands rookeries.

The northward movement of the two seal herds in the spring along the American and the Japanese coasts, respectively, is approximately alike on both sides. However, as has been pointed out heretofore,¹³ the Commander Islands seals off the Japanese coast in the spring congregate in relatively greater masses and for a longer time in certain limited areas, a circumstance that makes them much more susceptible to close offshore attack.

At the beginning of May the seals commence to crowd the Gulf of Mororan, between Hondo and Yezo, and for nearly three weeks they are assembled here, during which time the heaviest damage is done to the herd. Toward the end of May the seals move northeastward along the coast of Yezo, comparatively near land, making a last stand to the east of Iturup about the middle of June.

The islands of Yezo and Iturup are the home of the Ainos, the aborigines of this region. Now, Article IV of the treaty of July 7, 1911, provides as follows:

It is further agreed that the provisions of this Convention shall not apply to Indians, Ainos, Aleuts, or other aborigines dwelling on the coast of the waters mentioned in Article I, who carry on pelagic sealing in canoes not transported by or used in connection with other vessels, and propelled entirely by oars, paddles, or sails, and manned by not more than five persons each, in the way hitherto practiced and without the use of firearms; provided that such aborigines are not in the employment of other persons, or under contract to deliver the skins to any person.

In practice this article is probably the easiest to evade in the whole treaty. It has been found so on the American side. Effective control is very difficult, and there is a strong suspicion that every provision of the article is being violated.

¹³ Asiatic Fur-Seal Islands, p. 203 and Pl. 113.

Dr. G. Dallas Hanna says,¹⁴ referring to this question, that dispatches in the daily press indicate that the figures as to the number of fur seals killed at sea under the treaty provisions are assuming proportions little short of alarming. Of course, official information as to the illegal killing and disposal of the skins can not be obtained, but the loss to the herd, especially as such a large percentage of the seals thus killed undoubtedly consists of gravid females, can readily be appreciated. If conditions are thus unsatisfactory on the American side there is no reason to believe that they are better on the Asiatic side, since in view of the peculiar bunching of the seals there, as stated above, the losses are probably proportionately greater. If there is ground for believing that the mainstay class of the Pribilof herd has been reduced in a single season by over 1 per cent,¹⁵ the losses to the Commander Islands herd presumably exceed that figure considerably. The future prospects for the Russian fur-seal herd are thus less bright than for the American herd. The annual mortality is almost certainly greater, hence the recuperative power of the herd is correspondingly less.

This condition can be remedied only by a more effective control at sea according to Article VII of the treaty, both during the spring migration and the breeding season of the seals, as well as by a strict enforcement of Article IV. With regard to the latter, the only rational remedy would be the revocation of the privilege of the aborigines to take seals at sea, as suggested by Dr. Hanna.

¹⁴ Report of U. S. Commissioner of Fisheries, 1921 (1922), Appendix VI, p. 110.

¹⁵ Hanna, *op. cit.*