

SCIENCE

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THE FUR-SEAL INVESTIGATION OF 1896.

THE preliminary report of the commission appointed in June, 1896, to investigate the condition of the northern fur-seals has recently been issued, although it has been in print for some time. It gives a resumé of the summer's work and of the conclusions reached, and will be followed later on by a full report giving in detail the observations and facts on which this summary is based. The work was prosecuted under exceptionally favorable conditions, not only from the facilities afforded the commission, but from the number of observers engaged, since what was not seen at one time or place might be seen at another, while the representatives of the various governments worked harmoniously together in the accumulation of data. Much, too, is also due to the thorough manner in which the work was planned and carried on by Dr. Jordan, the head of the American commission, while finally the reduced number of seals facilitated the work of observation.

We have for the first time a fairly accurate census of breeding seals, based not on estimates, but on an actual count of females and males present on the breeding grounds, checked by comparison with the number of young seals present. This last is an important factor, since a count of the pups shows that only about one-half the females are on the rookery grounds at any one time. While an *exact* census is, from the nature of things, impossible, it appears that there were in October, 1896, a little less than 360,000 seals left on the Pribilof Islands, 123,000 being breeding females, 5,009 males with harems, and 2,966 idle bulls, or those which were unable to secure any females through the scarcity of those due to pelagic sealing.

The breeding habits of the seals were carefully studied and the facts definitely settled that the young 'cows' make their appearance on the rookeries for the first time at the age of two years. This occurs late in July, after the vast majority of young have been born and the breeding grounds or rookeries have lost the compact appearance they present earlier in the season, and the arrangement of the females in regular fixed harems has been broken up; the young females are not in the harems with the older cows. Mr. Townsend's investigations of the condition of female seals taken at sea were continued and extended and fully corroborate his conclusions that, with rare exceptions, all over two years old taken during August and September are not only pregnant but nursing. The statements that the females taken at sea are largely barren or non-breeding are unsupported by any shadow of evidence, as are the assertions that the fur-seal breeds biennially, all observations proving that seals bear annually and throughout life.

Some additions have been made to our knowledge of the food of the fur-seal, although the data for this have mostly been

obtained by Mr. Townsend and Mr. Alexander in previous years. In Bering Sea the Alaskan Pollack (*Pollachius chalcogrammus*) forms by far the most important item of the seal's diet, a squid (*Gonatus amœnus*) coming next. Salmon are eaten when found, and large numbers of a small, undescribed fish, allied to the Surf Smelt (*Hypomesus olidus*). Cod are not touched, at least in only one case out of three hundred, nor any species of bottom-frequenting fish, the seals feeding on such as are found near the surface, while the feeding grounds are in deep water. In regard to the young it is clearly shown that up to the time of leaving the islands they subsist entirely on their mother's milk, deriving no nourishment from fish or crustaceans, much less if the hibernicism be allowed, from kelp or sea weed. Thus every seal pup whose mother is killed at sea inevitably perishes from starvation, even the largest gray pups being unable to care for themselves late in October.

An important feature of the work of the commission was the ascertaining of the fact that a large number of seals die when very young and the reason for this loss of life. It has been generally considered that *all* seal pups which have been found dead of late years have starved to death on account of the loss of their mothers from pelagic sealing. On the other hand, the English commissioners in 1892 took the ground that there was a considerable loss from other causes, particularly drowning and epidemics. As a result of the investigations of 1896, it is now known that many young seals die before they are a month old and prior to the date on which pelagic sealing begins, through being trampled on by the old seals and mainly by the bulls. This loss does not take place all over the breeding grounds, but is almost wholly confined to those sections which are level or free from boulders. In such places there is no

protection for the young and no obstruction to the movements of the adults, and in consequence there is great loss of life through the quarrels of the bulls and the commotion thus caused among the others, during which the small pups are trampled under foot and many killed. In rocky places there is little loss, and about a fortnight or so after birth the pups draw out of the breeding grounds and are comparatively safe. A few young seals are drowned and a few die from disease or are killed by accidents, and a few starve from the death of their mothers and other unknown causes, but the number is not great and there is no evidence of any epidemic. All the dead seals were counted between August 6th and August 14th, or as soon as conditions would allow, and there were found 28 adult males, 131 females and 11,045 young, over 10,000 of these latter having been killed by trampling. The old bulls are killed in combat and the females by being pulled about in the struggles for their possession which take place among the bulls. The vast majority of young are killed so early in the season that by the time it is possible to enter the breeding ground they are in an advanced stage of decomposition.

In October the dead seals were again counted, and 14,343 were found starved to death, and 1,546 more in a perishing condition, all this being directly due to the killing of females at sea.

In regard to pelagic sealing, and the effects of the award of the Paris Tribunal, the conclusions are emphatically expressed, and, while there has never been any doubt on these points in the minds of those who have given them the least unprejudiced attention, it is to be hoped that some impression may be made even on prejudiced minds. The closed zone of 60 miles about the islands affords little real protection, save against raids, since the majority of seals feed at a distance of 75 to 150 miles

from the Pribilofs, and all that the sealers need do is to lie just outside the 60-mile limit and there await the coming of the seals. The selection of August as an open month is about the worst that could be made, as during that month the weather is the finest of the year and the most seals are going to and coming from the feeding grounds. The majority of seals taken at sea are females, and nursing females at that, all reports that the numbers of sexes are even approximately equal being intentionally or unintentionally false.

The nursing females are obliged to go to sea in search of food at times when the males are safe on shore or in the vicinity of the islands, and, as they are not allowed to leave their harems until impregnated, the killing of each nursing seal means the death of her pup, as well as the loss of that which would have been born during the succeeding season.

It is evident that pelagic sealing and the seal herd cannot exist together; the continuation of the one means the practical extermination of the other, and nothing short of the total cessation of pelagic sealing will enable the seals to recuperate. The closure of Bering Sea might possibly preserve the seals in their present reduced condition, but this is by no means certain, as they are exposed to capture all the way from San Francisco to the Aleutian Islands during six months of the year, and, so long as pelagic sealing is permitted at all, the fur-seal question cannot be considered as settled.

*PROPOSED EXPLORATIONS ON THE COASTS
OF THE NORTH PACIFIC OCEAN.*

THE American Museum of Natural History is about to undertake a systematic exploration of the peoples inhabiting the coasts of the North Pacific Ocean between the Amoor River in Asia and Columbia River in America. The funds for this important undertaking have been very generously