

Article VII. — THE MUSK-OXEN OF ARCTIC AMERICA AND GREENLAND.

By J. A. ALLEN.

PLATES XII-XVII, AND 7 TEXT FIGURES.

A fine series of Musk-Oxen, collected by Lieut. R. E. Peary, U. S. N., on Bache Peninsula, October 7, 1898, and recently received at the Museum through the Peary Arctic Club, has furnished opportunity for comparison of the coast form with the Musk-Oxen of the Barren Grounds east of the Mackenzie River, and with others alleged to have come from the barren grounds of Alaska, west of the Mackenzie.

Respecting these specimens, the following extract from a letter from Mr. Peary to the President of the Peary Arctic Club, dated "Etah, Greenland, Aug. 28, 1899," will be of interest :

" I send you skins and skulls of Musk-Oxen killed on Bache Peninsula in October, 1898, with skulls of eight others, killed in the same place. I regret that there are no measurements of these animals. I have been unfortunate in not being present at the killing of any of the animals. Fifteen, comprising all of one herd, were killed on the afternoon of Oct. 7, when the days were very short; and what with the cold and darkness and the necessity for skinning the animals with the utmost speed before they became frozen and before the meat was tainted, seven of the skins were spoiled as specimens, and the corresponding leg bones of the other eight were not noted by the Eskimos and were not possible of identification when I reached the place the next day.

"Also skin and skull of another (a bull) killed in the same locality April 14, and the skin and skull of a calf killed by Dr. Dedrick at Fort Conger and brought in by him intact so that I was able to get measurements."

This material proved on examination to consist of ten skins with skulls, one skin (of a yearling) without skull, one head of an old bull, and seven additional skulls without skins, representing in all nineteen individuals. The skins comprise two adult females and a female calf, three old males, and five young males of different ages. Five of the skins have been selected to mount for a group, with the proper accessories. The mounting of the animals is so nearly completed that it is practicable

to give photographs of them in the present connection, as well as photographs of mounted specimens from the Barren Grounds.

For comparison with the Peary material the Museum has three mounted specimens,—two adult males and an adult female,—an unmounted adult male, and two calves a few weeks old, from the Barren Grounds east of the Mackenzie, but without data as to exact locality. For opportunity to examine also three Alaska specimens,—two old males and an old female,—said to have been taken a few miles inland from Camden Bay, I am indebted to the kindness of Mr. Hubert H. Vogelsang, taxidermist, of New York City.

As regards both skins and skulls, it has thus been possible to compare the nineteen Peary specimens from Bache Peninsula with nine specimens from the Barren Grounds. This comparison has resulted in the rather surprising discovery that the Musk-Oxen of the insular lands west of Kane Basin differ very markedly from those of the Barren Grounds to the westward, not only in coloration but in shape and relative size of the basal portion of the horns. As *Ovibos moschatus* (Zimmermann) was based exclusively on the Barren Ground form (the type locality being the Churchill River region), it seemed fitting to name the new coast form in honor of the intrepid Arctic explorer, Lieut. R. E. Peary, U. S. N., to whose labors in the high North the Museum is indebted for a large amount of valuable material in various lines of research. Since adopting this name in my manuscript, however, Mr. R. Lydekker, of the British Museum, has named the East Greenland Musk-Ox *Ovibos moschatus wardi*, taking for his types a mounted male and female from East Greenland, in the possession of Mr. Rowland Ward, the well-known natural history dealer of Piccadilly, London, for whom the species is named. (See *Nature*, Vol. LXIII, p. 157, Dec. 13, 1900.)

Although the Peary specimens came from Bache Peninsula, on the western side of Kane Basin, they probably are referable to the Greenland form, and I hence adopt for them Mr. Lydekker's name, citing "*Ovibos pearyi* Allen, MS.," as a provisional synonym, which may be accepted for the Grinnell Land animal in case it should prove separable. On geographical and other grounds, this appears hardly probable, as the Musk-Ox of this

region seems to have a practically continuous distribution on the American side from the southern part of Ellesmere Land (about Lat. 78°) northward to the Polar Sea, and on the Greenland side, from Melville Bay (about Lat. 75°) northward, eastward, and southward along the east coast to King William Land in about latitude $74^{\circ} 30'$. It seems probable, as stated by Greely (Three Years of Arctic Service, Vol. II, 1886, p. 361), that the Musk-Ox may have reached Greenland from the west at two points, namely by crossing Smith Sound from Ellesmere Land, and also by crossing Robeson Channel from Grinnell Land, thence finding easy passage along the low Greenland coast to East Greenland.

As very few details have been published regarding the external characters of the East Greenland Musk-Ox,¹ and none in regard to the Ellesmere Land form, it seems desirable to utilize the present materials as a contribution to the subject.

Ovibos wardi (Lydekker).

PEARY'S MUSK-OX.

Ovibos moschatus wardi LYDEKKER, Nature, LXIII, p. 157, Dec. 13, 1900.

Ovibos pearyi ALLEN, MS.

General coloration, including horns, lighter than in *O. moschatus*, with a white or whitish face-spot, and the ears and whole front of the head more or less gray, instead of wholly dark brown as in *O. moschatus*; basal portion of the horns much narrower and of different shape from those of *O. moschatus*.

Adult Male.—Above with a 'saddle-mark' of light brown or whitish brown on the middle of the back, varying somewhat in degree of lightness, size, and shape in different individuals; rest of the body dark brown, lighter and more rufous brown on the shoulders; a white area on the front of the head, forming a broad face-spot; ears and a rather broad, not well-defined patch below the ears, spreading forward on the sides of the head, gray; the rest of the head, where not white, whitish, or grayish white, is more or less grizzled through the admixture of white hairs; whole nose white or whitish, the white of the nose separated from the white of the forehead by a darker band half way between forehead and nose; feet white or whitish from the hoofs upward to or a little beyond the carpal and tarsal joints, including nearly all of the portion of the limbs not concealed by the long shaggy coat of the body, becoming darker proximally so that the white of the feet rather gradually merges into the darker color of the upper segments of the limbs. The white on the head in old

¹ Its soft anatomy has been recently described by Dr. Einar Lönnberg ('On the Soft Anatomy of the Musk-Ox (*Ovibos moschatus*),' Proc. Zool. Soc. London, 1900, pp. 142-167, with 14 text figures), and the same author (*l. c.*, pp. 686-718, with 10 text cuts) has also given an account of the development of the horns, the character of the hoofs, and a detailed description of the skull, based on specimens obtained in East Greenland by the Swedish Expedition in 1899. Sir John Richardson's description of the osteology of the Musk-Ox, based on specimens from the Arctic Barren Grounds, in the 'Voyage of the Herald,' is well known.

males often forms a white band behind the horns ; in others it is partly in front of them and partly behind them, or entirely in front of them.

Females and Young Males.—The females and young males are similar, as regards the light markings. The white on the head is somewhat variable in respect to purity and extent in different individuals ; it is never wanting and averages about as above described.

Young.—A young female calf, probably not more than six weeks old, killed at Fort Conger May 18, 1899, is nearly black throughout, except for the grayish ears, whitish nose, dingy brown feet, and a lighter, brownish, incipient saddle-mark on the back, being much darker than the adult and half-grown specimens, and with only a trace of the white face-spot of the adults.

Measurements.—Unfortunately, as already explained, no measurements were taken from the animals before skinning. The following are from

MEASUREMENTS OF MOUNTED SPECIMENS OF

Ovibos moschatus AND *O. wardi*.

Museum Number.	<i>O. moschatus.</i>			<i>O. wardi.</i>	
	326	10034	11986	15594	15591
Sex.	♂ ad.	♂ ad.	♀ ad.	♂ ad.	♀ ad.
Total length, nose to rump, along curves.....	2500	2400	2200	2540	2000
Total length, nose to rump, in straight line.....	2230	1980	1970	2045	1660
Length of head.....	575	620	450	500	420
Height at shoulder.....	1200	1280	1100	1230	980
“ “ hips.....	1150	1090	1000	1160	940
Length of hind foot.....	445	500	375	450	355
“ “ fore foot.....	338	335	285	295	290
“ “ ear.....	85	110	134	156	115
Width of hind foot.....	90	160	105	95	78
Length of one hoof, vertical.....	85	80	68	47	46
Width of fore foot.....	107	127	125	105	90
Length of one hoof, vertical.....	98	75	73	58	54

mounted specimens, and probably do not vary much from the true dimensions.¹ For comparison, perfectly comparable measurements (in millimeters) are given of three mounted specimens of *O. moschatus* from the Barren Grounds east of the Mackenzie River.

Skull.—The skull does not appear to differ materially in size or proportions from that of *O. moschatus*. But there is a marked difference in the size and form of the basal portion of the horns, as shown in the accompanying illustrations (Figs. 1-5). The greatest width (taken with calipers) at the extreme base is one fourth less in *O. wardi* than in *O. moschatus*, and at 100 mm. from the base, one sixth narrower, resulting in very different outlines for

¹ Mr. Peary's measurements of the calf killed at Fort Conger, May 18, 1899, are as follows : " Length over all, 3 feet 5 inches (1050 mm.) ; height at foreshoulder, 2 feet (610 mm.) ; girth of chest, 2 feet 3 in. (584 mm.) ; girth of abdomen, 2 feet 1 in. (511 mm.) ; girth of neck, 1 foot 3 in. (330 mm.). Eyes, black. Weight, 43 pounds."

the basal portion of the horn in the two species. In length and curvature of the horns there is very little difference between the two forms. The apparent difference in the length of the horns of the two skulls photographed is due to the horns of the Bache Peninsula specimen being very much worn, as is commonly seen in the horns of old bull Bisons.

In these illustrations the relative greater breadth of the base of the horns is strikingly indicated in the side view, where, in *O. moschatus*, the anterior extension of the base of the horn conceals the greater part of the left eye-socket, while in the Bache Peninsula specimen it does not hide even its posterior border. It will also be noted that the occipital portion of the skull is exposed, in both views, in *O. wardi*, and concealed in *O. moschatus*, by the expanded posterior base of the horns.

Figures 1-4 are from photographs, all made to the same scale. The two skulls here shown are both old males, in prime of life, the teeth being not greatly worn; the two specimens are strictly comparable as to age, as shown by the teeth and sutures of the skulls.

MEASUREMENTS OF SKULLS OF MALES OF
Ovibos moschatus AND *O. wardi*.

	<i>O. moschatus.</i>			<i>O. wardi.</i>		
	A	B	16604	15594	15593	15596
	♂ ¹	♂ ¹	♂ ²	♂ ³	♂ ³	♂ ³
Total length.....	500	515	480	510	476	480
Basal length.....	437	455	445	465	440	445
Palatal length.....	265	275	260	280	260	260
Length of nasals.....	154	158	?	160	148	155
Mastoid breadth.....	168	182	182	184	174	175
Interorbital breadth (at outer posterior border of eye-sockets)...	265	—	250	263	220	225
Length of upper tooth-row.....	138	132	123	130	138	139
Width of palate opposite m'....	77	75	80	82	80	77
Lower jaw, length from incisive border to posterior edge of condyle.....	370	—	—	385	370	374
Lower jaw, height.....	180	—	—	175	170	170
Length of lower tooth-row.....	145	—	—	130	140	141
Distance between tips of horns.....	620	675	583	495	630	540
Breadth of horn at base.....	235	230	250	165	167	213
“ “ “ 100mm. from base.....	148	126	127	116	117	108
Length of horn measured along curvature of upper surface....	650	565	575	490	560	530

¹ A. and B. Camden Bay, Alaska. Both specimens are fully adult, but specimen B is a little older and larger than specimen A, the teeth in the latter being practically unworn, while in B the teeth are moderately worn.

² No. 16604 is from the Barren Grounds east of the Mackenzie River,—an adult male with the teeth moderately worn. The skull lacks the lower jaw.

³ Nos. 15594, 15593, and 15596, from Bache Peninsula are all adult males, the teeth showing full maturity, being moderately worn in two of them; they are therefore strictly comparable with the specimens from the Barren Grounds.

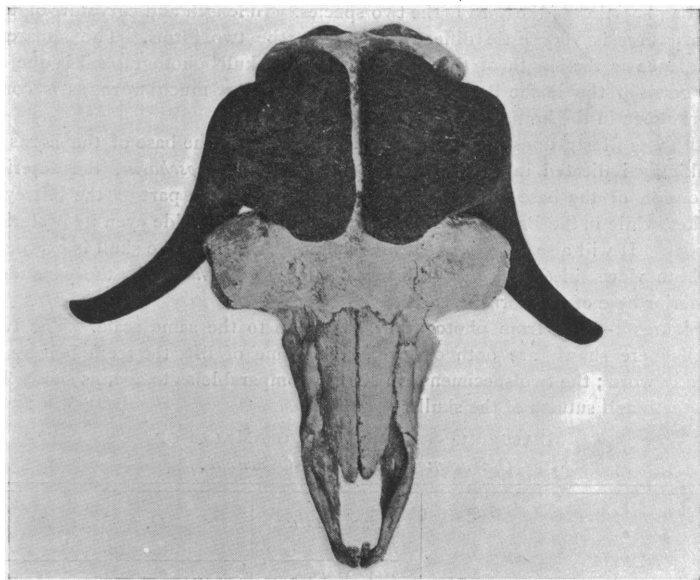


Fig. 1. *Oribos wardi*, ♂ ad., No. 15594. Bache Peninsula.

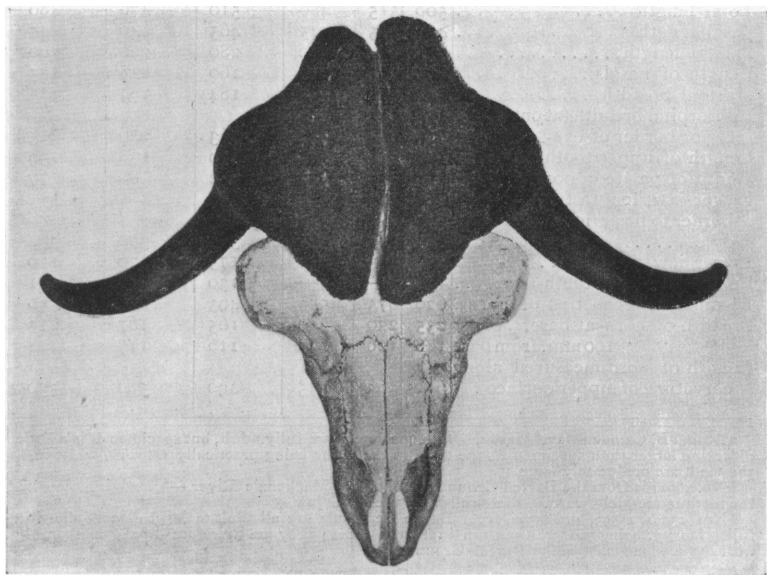


Fig. 2. *Oribos moschatus*, ♂ ad., No. 16604. Arctic Barren Grounds.

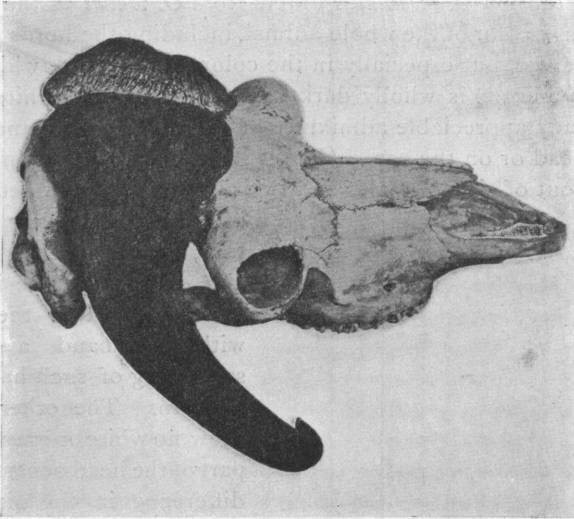


Fig. 3. *Ovibos wardi*, ♂ ad. Same specimen as shown in Fig. 1.

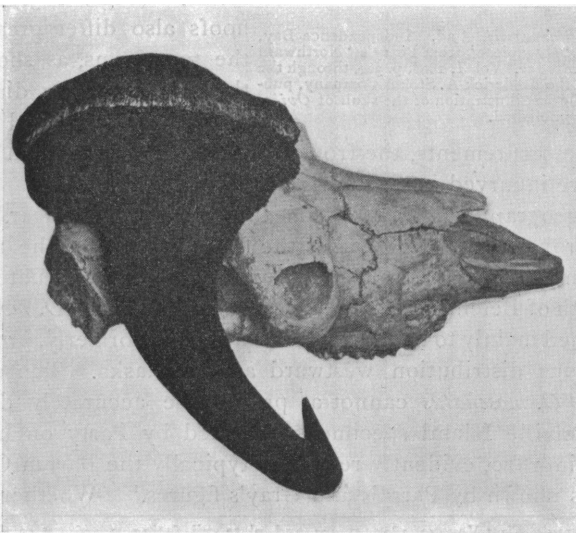


Fig. 4. *Ovibos moschatus*, ♂ ad. Same specimen as shown in Fig. 2.

In coloration *O. moschatus* differs from *O. wardi* in the generally darker color of the whole animal, including the horns as well as the pelage, but especially in the color of the head, which, except the muzzle, is wholly dark brown, without the white face-spot or any appreciable admixture of gray on the front and sides of the head or on the ears. (Plates XII–XVII.) In a single old female, out of six old males and two old females examined, there

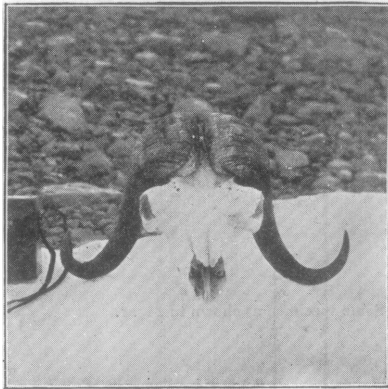


Fig. 5. *Oribos wardi*, ♂ ad. Independence Bay, Greenland. 'Headpiece' from Peary's 'Northward over the Great Ice,' Vol. I, 1898, p. 329, through the kindness of the Frederick A. Stokes Company, publishers. The first illustration of the skull of *Oribos wardi* ever published.

are a few gray hairs on the face, but they are not noticeable except on close inspection; on parting the hairs with the hand a sparse sprinkling of such hairs can be seen. The other seven show no white or gray on any part of the head or ears. The difference in the size and form of the basal portion of the horns is a further important differentiation of the two forms. (Figs. 1–5.) The

hoofs also differ greatly in the two forms, as shown in the accompanying diagrams (Figs. 6 and 7) and in the table of measurements, the front of the hoof being much longer and more incurved in *O. moschatus* than in *O. wardi*.

The geographical relations of the two are not clear, but it seems probable that *O. wardi* is the form inhabiting the numerous islands, more or less joined by ice in winter, situated east and north of Belcher Channel and Jones Sound, while *O. moschatus* is confined mainly to the Barren Grounds, with formerly, probably, continuous distribution westward across Alaska. The eastern limit of *O. moschatus* cannot at present be accurately defined. The Melville Island specimens obtained by Parry on his first voyage in 1820, evidently represent typically the Barren Ground form, as shown by Parry's and Gray's figures.¹ Whether or not

¹ See Parry's First Voyage, 1821, p. 257, and plate xvii, facing p. 256. Also Gray, Cat. Mamm. in Brit. Mus., Part III, 1852, p. 43, and pl. v., figs. 1 and 2, giving two views of skull of an old male, collected by Parry on Melville Island.

it crosses eastward to the adjoining islands there is apparently no certain evidence, but much of a negative character indicating its absence. It can easily reach Melville Island from Banks Land. It has been found in numbers in the region between Repulse Bay and King William Land, but is absent from Southampton Island, and Fox Channel has apparently proved a barrier to its extension to Cockburn and Baffin Lands. As *O. wardi* has not been traced south of Ellesmere Land, nor west of Ellesmere Land and

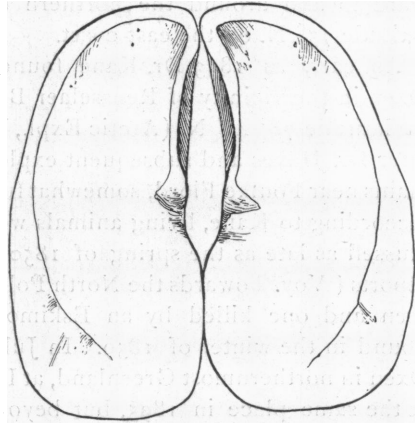


Fig. 6. Forefoot of *Ovibos wardi*,
 $\frac{1}{2}$ natural size.

Grinnell Land, there is apparently a broad interval of insular areas and estuaries where no form of Musk-Ox at present exists, leaving the ranges of the two forms well separated. When Musk-Oxen ranged far to the southward of their present limits, they doubtless had a continuous distribution over a large part of northern North America, and have become differentiated in comparatively recent times through separation in their gradual retreat northward.

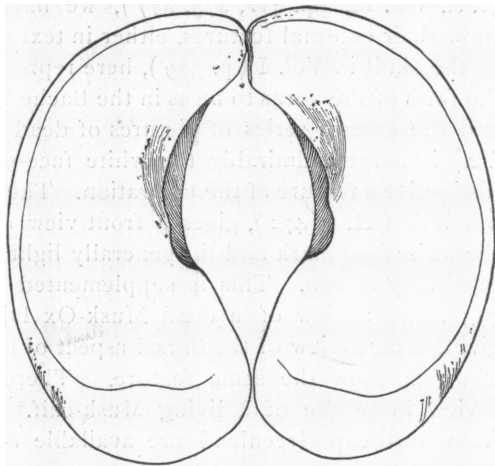


Fig. 7. Forefoot of *Ovibos moschatus*, $\frac{1}{2}$ natural size.

The known range of *O. wardi* extends from the southern border of Ellesmere Land northward through Grinnell Land to

the Polar Sea, and on the Greenland coast, either living or recently extinct, from about Lat. 78° on the western side northward to and around the northern end of Greenland to about latitude 75° N. on the east coast.

As early as 1853 Dr. Kane found recent remains of Musk-Oxen in the vicinity of Rensselaer Bay, west coast of Greenland, in latitude $78^{\circ} 41'$ N. (*Arctic Expl.*, Vol. II, pp. 80 and 456), and later Dr. Hayes and subsequent explorers discovered similar remains near Foulke Fiord, somewhat further south (Lat. $78^{\circ} 18'$ N.). According to Kane, living animals were seen near Cape George Russell as late as the spring of 1850 (*l. c.*, p. 459), while Hayes reports (*Voy. Towards the North Pole*, 1886, p. 390) that two were seen and one killed by an Eskimo hunter near Wolstenholme Sound in the winter of 1859. In July, 1892, Peary killed Musk-Oxen in northernmost Greenland, at Independence Bay, and again at the same place in 1895, but beyond a 'headpiece', giving a very good front view of the skull (Northward over the Great Ice, I, 1898, p. 329), and reproductions of indistinct photographs, almost valueless as to details (*l. c.*, pp. 337 and 339), and some very good photographs of similar subjects taken in 1895 (*l. c.*, Vol. II, pp. 472, 475, 477), we have nothing tending to show their external features, either in text or figures. The figure of the skull in Vol. I (p. 329), here reproduced (Fig. 5), shows the form of the horns to be as in the Bache Peninsula specimens,¹ and the second series of pictures of dead Musk-Oxen (Vol. II, *l. c.*) illustrate admirably the white face-mark, which forms so distinctive a feature of the coloration. The picture of a wounded old bull (II, p. 472), gives a front view of the head, in which the white face-mark and the generally light color of the head are admirably shown. This is supplemented by a side view (*l. c.*, 473), and a view of a dead Musk-Ox lying on its right side, giving a clear view of the dorsal aspect of the whole animal, both of which show the same feature. There is also (*l. c.*, p. 486) a view in profile of a living Musk-calf.² While no specimens from northeast Greenland are available for examination, these

¹ Compare Schwatka's figures of the Barren Ground Musk-Oxen in his 'A Nimrod in the North' (1885), plate facing p. 105.

² Through the kindness of the Frederick A. Stokes Company of New York City, publishers of Mr. Peary's 'Northward over the "Great Ice,"' I am able to here reproduce four of Mr. Peary's illustrations (see Fig. 5 and Plates XVI and XVII).

illustrations render it certain that the Independence Bay Musk-Oxen closely resemble the Musk-Oxen of Bache Peninsula.

The Nares Expedition found numerous recent traces of Musk-Oxen on the northern shore of Ellesmere Land, just south of Bache Peninsula, in 1875, and living Musk-Oxen at various points along the eastern coast of Grinnell Land (Narr. Voy. to the Polar Sea, Vols. I and II, 1878, *passim*, and Vol. II, pp. 198-202—a summary by Lieut. Feilden); while Greely (Three Years of Arctic Service, Vols. I and II, 1886, *passim*, and Vol. II, pp. 360-363, summary) found them extensively distributed over Grinnell Land; yet little has been made known respecting the animals beyond some observations on their habits and localities of occurrence. In Nares' 'Narrative' (Vol. I, p. 113) is a cut, 'Head of Musk-Ox', which shows very well the narrowness of the base of the horns, but nothing apparently of the coloration. In Greely's 'Three Years of Arctic Service' (Vol. I, facing p. 104) is an engraving from a photograph of a 'Musk-Ox killed near Fort Conger', showing imperfectly the base of the horns, but no color effects; and there is a woodcut (*l. c.*, p. 363) of 'Musk-Calves at Conger, Four Months Old', from a photograph. If specimens were collected on any of these expeditions they have apparently remained undescribed.

The first intimation that either the Grinnell Land or the Greenland Musk-Oxen differed in any way from the Barren Ground stock appears to have been given by Mr. Lydekker in a recent article in 'Knowledge' (Vol. XXIII, No. 176, June, 1900, pp. 137-139), in which appears an illustration, from a photograph, of a young male captured in August, 1899, "in Clavering Island, situated off the coast of East Greenland, opposite König Wilhelm Land, in about latitude 74.5° N." In reference to this he says: "But there is one respect in which the Clavering Island calves¹ differ from the adult specimens exhibited in the British Museum, as well as from the descriptions generally given of the species. This is the presence of a large patch of white hair on the forehead, as well as of an ill-defined white streak down each side of the face, and some scattered white hairs in the middle line between the muzzle and the eyes. When this feature was first no-

¹ The calf when photographed must have been a 'yearling,' and hence not in first pelage, in which there is no indication of the future white face-spot. See *antea*, p. 72.

ticed, it was thought that the East Greenland Musk-Ox might prove to be a race distinct from the West Greenland and American form, in which the face is, at least in most cases, uniformly dark brown. I have, however, received from Dr. A. G. Nathorst an illustrated account in Swedish of Musk-Ox hunting in East Greenland in 1899; and the photographs in this, although they are unfortunately on a very small scale and by no means distinct, seem to show that while some of the bulls have brown faces, in others there is a considerable amount of white, yet the large frontal patch of white which forms such a conspicuous feature of the calves is, of course, obliterated by the expanded bases of the horns. Accordingly, there seem no grounds for separating the Musk-Ox of East Greenland from its representative in West Greenland and Arctic America, although the two would appear to be completely isolated" (*l. c.*, p. 138).

He appears, however, to have since changed his opinion regarding its relationship, and in a note of seven lines (*Nature*, *l. c.*) has proposed to call it *Ovibos moschatus wardi*. Under the title, 'A New Race of Musk-Ox,' he says: "Mr. Rowland Ward has on view at his establishment at Piccadilly a mounted adult male and female musk-ox from East Greenland, which differ from the ordinary form in having a large whitish patch on the face, as well as in certain other details of coloration. They may be made the types of a new race, under the name *Ovibos moschatus wardi*. The female was recently exhibited at the Zoölogical Society." Mr. Lydekker thus makes no reference to any difference in the shape of the basal portion of the horns in *O. wardi* as compared with those of *O. moschatus*, and we must turn to the article in 'Knowledge' (to which, however, Lydekker here makes no reference) to ascertain what are the differences in coloration, beyond the presence of a white face-patch. It seems, however, almost beyond question that Lydekker's name *wardi*, based on East Greenland specimens, is applicable to the Musk-Oxen of North Greenland, Grinnell Land, and Bache Peninsula.

We are thus indebted to Lieutenant Peary for the first indication of the peculiarities of the animal now recognized as *O. wardi*, as furnished by his half-tone reproductions of photographs of North Greenland Musk-Oxen, and also for the first specimens of this form, received, as above noted, at this Museum in November, 1899.

OCCURRENCE OF MUSK-OXEN IN ALASKA.

Richardson, in the 'Fauna Boreali-Americana' (Vol. I, 1829, p. 276), says: "From Indian information we learn that to the westward of the Rocky Mountains, which skirt the Mackenzie, there is an extensive tract of barren country, which is also inhabited by the musk-ox and reindeer. It is to the Russian traders that we must look for information on this head; . . ." In the 'Zoölogy of the Voyage of the Herald' (Fossil Mammals, 1854, pp. 22-28), he describes various fossil remains of the Musk-Ox from the ice-cliffs of Eschscholtz Bay, and repeats, in substance (*l. c.*, p. 28), the above-quoted statement from the 'Fauna Boreali-Americana.' He also considers that the Musk-Ox skull described by Buckland (Beechey's Voyage to the Pacific, App.), found "on the beach at the bottom of the mud-cliff in Eschscholtz Bay," and "so slightly decayed that it seems to have been derived from a carcass that has long since been stranded by the waves," and not figured, "as it cannot be considered fossil," really had fallen from the cliff, and was therefore to be considered as a part of the fossil fauna of the ice-cliff (Richardson, *l. c.*, p. 22).

Mr. John Murdoch states (Rep. Exped. to Point Barrow, 1885, p. 98) that just before leaving Point Barrow, a skull of a Musk-Ox "was brought in by one of the trading parties from the eastward. . . . In the hurry and excitement of the time, we neglected to find out more accurately the locality from which it came. The party had been as far east as the Colville, and the skull may have been brought from there. The natives knew the animal well, and called it by nearly the same name as the eastern Eskimos, but none had ever seen it alive. The skull obtained appeared very old and much weathered." Apropos of this skull, Dr. F. W. True says (Nelson's Report on Nat. Hist. Coll. made in Alaska, 1887, p. 233, footnote): "This may be subfossil. The skull procured by Mr. Murdoch is very much broken and worn."

According to Mr. Witmer Stone, in his recent 'Report on the Birds and Mammals collected by the McIlhenny Expedition to Pt. Barrow, Alaska' (Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 35), the McIlhenny collection made at Point Barrow contained "One weather-beaten [Musk-Ox] skull picked up on the tundra."

[*March, 1901.*]

Mr. L. M. Turner (Contr. to the Nat. Hist. of Alaska, 1886, p. 203), referring to the Musk-Ox, says : " There is no positive evidence of the actual occurrence of this mammal within the region here included [the Yukon District and the Aleutian Islands] ; but, as the northern Innuits and Indians are so well acquainted with it, there can be no doubt that it has but recently disappeared, *if scattered individuals do not yet inhabit the region northeast of the Rumianzof Mountains and near the Arctic coast.*" (Italics not in the original.)

In 1898, Mr. Frank Russell, in his ' Explorations in the Far North ' (1898, pp. 235, 236), makes the following statement : " The musk-ox was formerly common between the Mackenzie and Behring Straits, as evidenced by the remains which are scattered over the tundra. The oldest natives at Point Barrow say that their fathers killed musk-ox which were then abundant. Their present distribution is from the vicinity of the Mackenzie north of Great Bear Lake to Sabine Island ($74^{\circ} 47' N.$) on the east coast of Greenland, and from $60^{\circ} N.$ in the Barren Ground west of Hudson's Bay through the Northern Islands as far as man has penetrated."

The foregoing respecting the supposed existence, or recent existence, of the Musk-Ox at points near the Arctic coast of Alaska is of special interest, though mainly in the nature of hearsay evidence, in connection with the statements here following : About a year since I was informed by Mr. E. Bowsky, a furdresser of New York City, that he had received a fine large male Musk-Ox skin from Alaska. Although I was naturally skeptical as to the locality, I examined the specimen with great interest ; it seemed, however, not to differ appreciably from the Musk-Ox of the Barren Grounds east of the Mackenzie. It was an unusually fine winter skin, with the skull. A few months later the same gentleman kindly called my attention to two other supposed Alaskan Musk-Oxen, a pair, adult male and female, and submitted correspondence showing that they were purchased and shipped at Camden Bay, Alaska, by the agents of the well-known and reliable house of Herman Liebes & Co., of San Francisco, Cal., who had also obtained, from the same point, the first specimen of this series of three. They were supposed to have been killed and prepared by the natives, who presumably obtained them a few

miles inland from Camden Bay,— in other words, just where Mr. Turner believed “ scattered individuals ” might still exist in 1886, namely, between the Rumianzof Mountains and the Arctic coast, in northeastern Alaska.

As already said, these ‘ Alaskan ’ specimens do not appear to differ appreciably from examples of corresponding age and season from the Barren Grounds east of the Mackenzie. This is not perhaps surprising, since in comparatively recent times the species doubtless had a continuous distribution throughout the barren grounds of the Arctic coast, from Alaska eastward. Richardson, in 1854, gave its range as extending westward “ to the eastward outlet of the Mackenzie,” but had only vague Indian reports of its existence west of the Mackenzie.

As the remains of Musk-Oxen have been found at various points in the frozen soil of Siberia, in the ice-cliffs of Eschscholtz Bay, and, in Postpliocene times, even as far south in Europe as England and France, and in the United States as far south as Utah, Kentucky, and Mississippi, it is evident that the genus *Ovibos* is a declining type, which has reached its last stronghold in the Arctic Barren Grounds, the islands of the northeast coast of America, and a narrow coast belt in northern Greenland. Its recent history shows that it will soon be a creature of the past wherever it can be reached by man. Mr. Andrew J. Stone states (this Bulletin, Vol. XIII, 1900, p. 42) : “ Their range is becoming more and more contracted all the time, as roving bands of Indians from the Hudson Bay posts, on Great Slave Lake and near Great Bear Lake, make occasional raids upon them, and almost always destroy the entire herd attacked.”

In Mr. Stone’s notes on the Musk-Ox (*l. c.*) he stated that his inquiries among the Indians and Eskimo west of the Mackenzie River had led him to believe that this animal “ has not inhabited that region for a very long period.” Since the preceding part of this paper was put in type I have had opportunity again to discuss with him the question of the existence of Musk-Oxen in Alaska, and as a result he has kindly acceded to my request to put in writing a more detailed statement of his reasons for this opinion. This statement is herewith appended, since it seems to show that there is very little if any probability that the Musk-Ox

still exists in any part of Arctic America west of the Anderson River. While Mr. Stone does not question that the supposed Alaska Musk-Ox skins mentioned above were shipped to San Francisco from Camden Bay, he claims, apparently with good reason, that they must have been taken far to the eastward of this point and brought to Camden Bay by whalers. His statement, dated Feb. 28, 1901, is as follows :

MY DEAR DR. ALLEN :—

In response to your inquiry in reference to the existence of the Musk-Ox (*Ovibos moschatus*) west of the Mackenzie River, or in Alaska, I will state there are none of these animals in any part of Arctic America west of the Mackenzie. Previous to my departure for the North in the spring of 1897, I had for several years carefully searched for information upon this subject, and from what I had gathered I had a faint hope of finding some of these animals in the mountains west of the Mackenzie, just south of the Arctic Coast. These mountains are known, respectively, as the Richardson, Buckland, British, Romanzof, and Franklin Mountains, but in reality they are the western extension of the main Rocky Mountain range that bends west from the Mackenzie along the Arctic Coast. On reaching the neighborhood of these mountains, however, in the winter of 1898-99, all hope of finding living specimens of Musk-Ox in them was destroyed.

The Romanzof Mountains, from which specimens of Musk-Ox are reported to have recently been brought, by way of Camden Bay, are about one hundred and seventy-five miles west of Herschel Island. The Pacific Steam Whaling Company, with offices at No. 30 California Street, San Francisco, have maintained a whaling station at Herschel Island for a number of years ; there has also been established there for a number of years a Church of England Mission, under the direction of the Rev. I. O. Stringer. I visited Herschel Island in November and December, 1898, for the purpose of collecting all possible information relative to the animal life of those regions. On my way to and from Herschel Island I sledged the very base of the Davis Gilbert, Richardson, and Buckland Mountains. I stopped over night on both journeys with a lot of Eskimo, at that time hunting the Davis Gilbert Mountains and living in what is known as Oakpik (willow camp), in the extreme western part of the Mackenzie delta, very near the foot of the mountains. Specimens of *Ovis dalli* (White Sheep) and of Caribou and fur-bearing animals were plentiful in their camp, but there was no sign of Musk-Ox.

At Shingle Point, on the Arctic Coast, near the Richardson Mountains, I spent several days with a man who was trading with the Eskimo who were hunting the Richardson Mountains. There were several Eskimo in his camp at the time, and he had in his possession skins of the White Sheep, Caribou, and a variety of fur-bearing animals, but there was no sign of Musk-Ox, and I learned on careful inquiry through my interpreter that the natives seemed to know nothing of them, with the exception of one young man who had been to

the eastward on one of the whaling ships. The Tooyogmioots, a tribe of Eskimo who once lived along this coast and hunted these different mountains, are now almost extinct. I found between the mouth of the Mackenzie and Herschel Island a very few individuals living in snow houses, but I did not find in or around their places of residence any sign of Musk-Ox skins, bones, or heads.

I remained at Herschel Island from Nov. 24 to Dec. 14, visiting the Rev. I. O. Stringer and Capt. Haggerty of the steam-whaler 'Mary Dehume.' Both men were able to converse readily with the Eskimo in the Eskimo tongue, and they gave me every possible assistance in making my inquiries. This whole coast far to the westward of Herschel Island is now occupied by the Noonitagnioot tribe of Eskimo. There were a large number of these people at the island, and among them were parties who hunted all the mountains of the mainland mentioned, living in the mountains a great part of the time. Many skins of Caribou, Sheep, and fur-bearing animals were seen in the possession of these people, but none of them possessed any part of the Musk-Ox, and the only members of the tribe who knew anything of the Musk-Ox were those who had been carried to the east by whaling ships. The Rev. Mr. Stringer takes great interest in the natural resources of the country and travels extensively among these people, but he had no knowledge of the existence of any Musk-Oxen west of the Mackenzie. Capt. Haggerty had wintered along this coast for a number of years, trading extensively with the natives, but he had never secured or heard of a Musk-Ox skin west of the Mackenzie.

All the whaling ships, which have wintered here for years, sometimes as many as fifteen at the same time, keep Eskimo hunters in the field continually for the purpose of securing fresh meat for the crews, sending white sailors in charge of dog sleds to visit the Eskimo camps to bring in the meat. It is not uncommon for these sleds to go one hundred and fifty to two hundred miles for meat, and all the mountains to the north and west of Herschel Island have been visited many times by these hunters and sledding parties, without obtaining any trace of Musk-Ox. Collinson, who wintered near Camden Bay in 1853-54, does not mention the Musk-Ox. The U. S. Government Survey party, which wintered on the Porcupine several years ago and visited Rampart House, a Hudson Bay trading post at the Ramparts on the Porcupine River, and who went from there with Mr. John Firth, the Hudson Bay Company's trader, north through these mountains to the Arctic Coast and returned, did not find Musk-Ox. Several white men have travelled back and forth through these mountains from Fort Yukon, on the Yukon River, to Herschel Island, for the purpose of securing sled dogs of the Eskimo on the Arctic Coast, to be used on the Yukon, without securing or learning anything of the Musk-Ox. Mr. Hodgson and Mr. Firth, both in the service of the Hudson Bay Company, have been stationed at Fort Yukon at the mouth of the Porcupine, at Rampart House on the Porcupine, and at Lapierres House on Bell River, a tributary of the Porcupine, during a period of over thirty years, trading with the Loucheaux Indians, several tribes of which hunt north of these places into the mountains mentioned, without ever obtaining any knowledge of the existence of Musk-

Ox; and the Hudson Bay Company have never secured at any of these posts any skins of the Musk-Ox.

Previous to the advent of the whalers on this coast, the coast Eskimo also traded at these Hudson Bay posts. The country between the Porcupine River and the Arctic Coast, in which district the mountains above mentioned are situated, is entirely accessible from the north or south, and every part of it has been hunted for years by the Eskimo and Indians. Barter Island, near Camden Bay, has been the rendezvous of the north coast Eskimo for years, where they meet every summer to barter and trade with each other. At one of these mid-summer festivals there may be seen spotted Reindeer skins from Siberia, Walrus ivory and Walrus skins from Bering Sea, or the stone lamps from the land of the Kogmoliks (the far-away people) of the East, and it is not impossible, though hardly probable, that Musk-Ox skins might be found there.

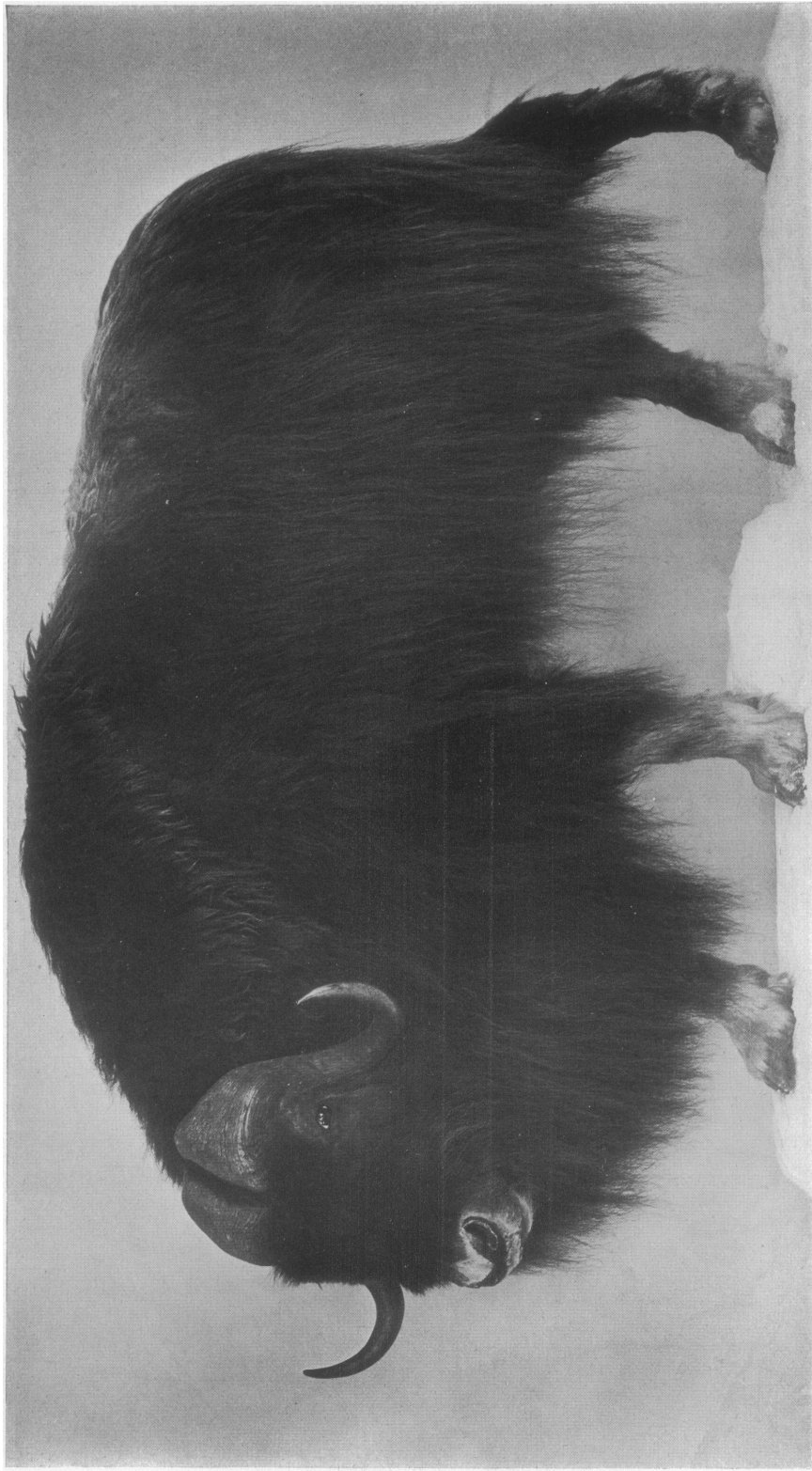
I also travelled through the country of the Kookpugmioots and Abdugmioots of the Arctic Coast, east of the Mackenzie. The first people encountered along the coast east of the Mackenzie are the Kookpugmioots—they hunt the coast country as far east as Liverpool Bay, but many of their best hunters never saw a Musk-Ox. The Abdugmioots originally hunted the Anderson River country, but now live around Liverpool Bay, and most of them have hunted Musk-Ox. The Kogmoliks, who once lived around Liverpool and Franklin Bays, but who are now practically merged with the Kookpugmioots, along the shores of Allen Channel have been Musk-Ox killers.

A good many of the Port Clarence natives, living near Bering Straits, have killed Musk-Oxen, but only around the head of Franklin Bay and on Parry Peninsula, they having been taken there by whalers. Nearly all the whaling ships pick up Port Clarence natives, on their way north and east to the whaling grounds, and keep them with them until their return, perhaps thirty months later. Some of these vessels have wintered at Cape Bathurst and in Langton Bay at the head of Franklin Bay. Four of these vessels wintered in Langton Bay in 1897-98, and during the winter their Eskimo and sailors killed about eighty head of Musk-Oxen, most of which were taken on the Parry Peninsula. When I was at Herschel Island, in the winter of 1898, I saw forty of these skins in one of the warehouses of the Pacific Steam Whaling Company. They were the property of Capt. H. H. Bodfish of the steam whaler 'Beluga.'

The range of the Musk-Ox at the present time does not extend westward to within three hundred miles of the Mackenzie delta. Any information concerning the Musk-Ox gathered around Point Barrow and thence south to Bering Straits and Port Clarence, has been obtained from natives who have accompanied whaling ships to the East; and all the Musk-Ox skins that find a market in San Francisco have been purchased, directly or indirectly, from the whaling ships.

Very truly yours,

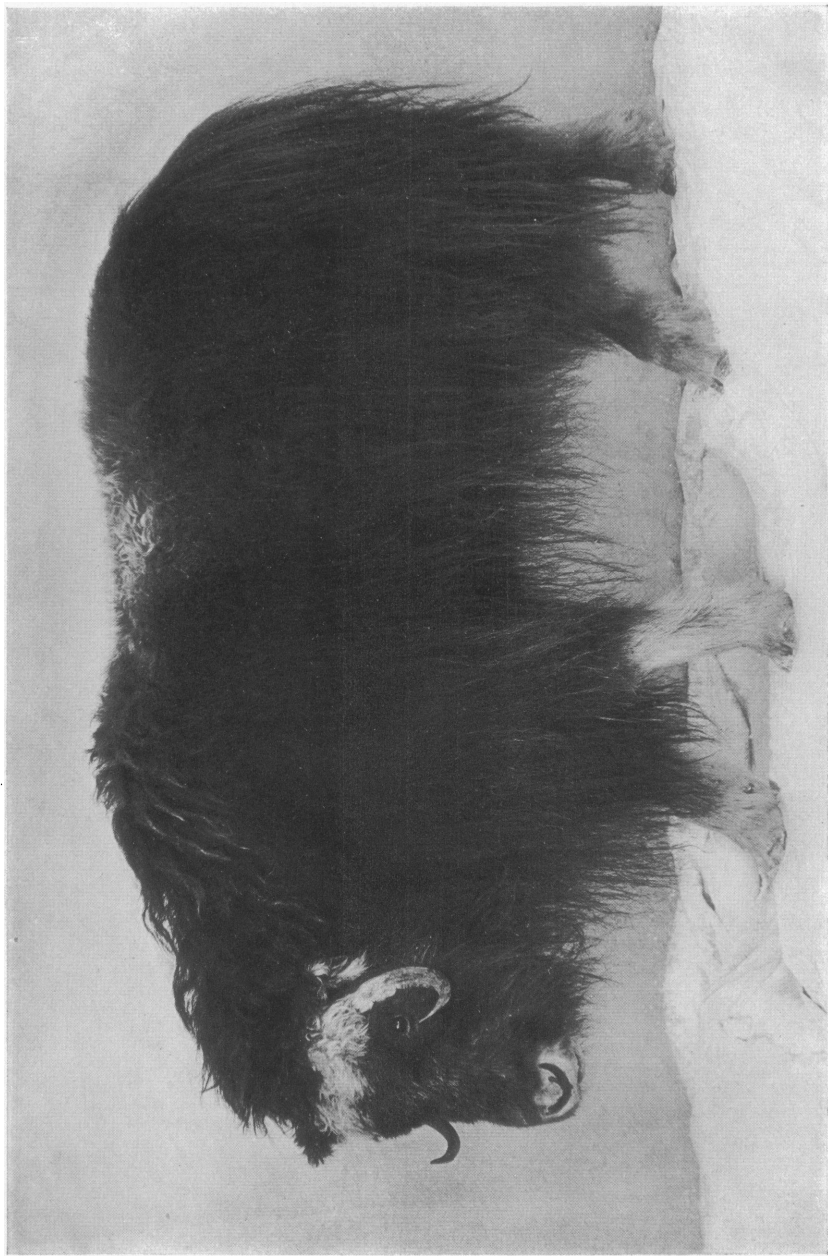
ANDREW J. STONE.



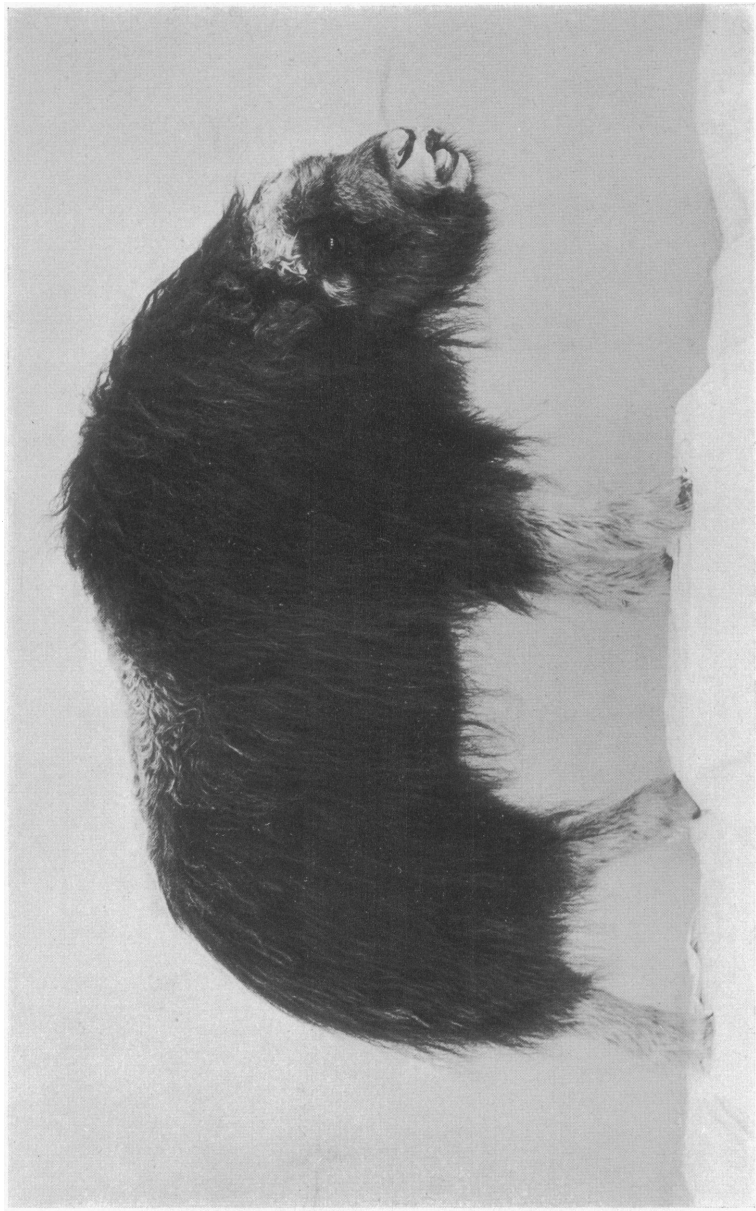
Oribos moschatus. ADULT MALE.



Oribos wardi. ADULT MALE.



OVIPOS WARDI. ADULT FEMALE.



OVBOS WARDI. YEARLING MALE.



Fig. 1. *Oribos wardi*. Calf, a few weeks old, killed at Fort Conger, May 18, 1899.



Fig. 2. *Oribos wardi*. Killed at Independence Bay, Greenland. From Peary's 'Northward over the Great Ice,' Vol. II. p. 477.



Fig. 1. *Oribos wardi*. Old male, killed at Independence Bay, Greenland. Front view of head, showing white band behind the horns, and the very light color of the whole head. From Peary's 'Northward over the Great Ice,' Vol. II, p. 472.



Fig. 2. *Oribos wardi*. Old male, killed at Independence Bay, Greenland. From Peary's 'Northward over the Great Ice,' Vol. II, p. 475.

