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The
Andrew J. Stone Explorations
in
Arctic and Subarctic America

Published by
The American Museum of Natural History
1905

UNIV. OF
CALIFORNIA

THE ANDREW J. STONE EXPLORATIONS IN ARCTIC AND
SUBARCTIC AMERICA

*The edition of this brochure is limited to one
hundred copies, numbered, of which this is*

No. 66

Issued to

Dr. C. Hart Merriam

with the compliments of the

American Museum of

Natural History

June 1st 1905.

The
Andrew J. Stone Explorations
in
Arctic and Subarctic America

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The

Andrew J. Stone Expeditions

Arctic and Subarctic America

Vol. VII
Arctic

Published by the
Smithsonian Institution

THE AMERICAN MUSEUM OF NATURAL HISTORY, through the issue of this brochure, endeavors to acknowledge the generosity of those whose liberal contributions have made it possible for Mr. Andrew J. Stone to attack the zoölogical problems of the Northwest. It desires to make known more generally the scientific results that have attended Mr. Stone's efforts, and it hopes that the example herein set forth of achievements gained through a combination of men ready to *help*, with a man ready to *do*, may result in the organization of other expeditions to other lands.

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The Andrew J. Stone Explorations in Arctic and Subarctic America.

LESS than ten years ago very few specimens of the larger game animals of Arctic and Subarctic America were to be found in any natural history museum, and in none were any of the species satisfactorily represented. In 1896 Mr. Andrew J. Stone visited the Cassiar District of northern British Columbia on a hunting trip and among the trophies of the expedition brought to New York several specimens of a new species of Bighorn Sheep, since described as *Ovis stonei*, in honor of its discoverer. These specimens were purchased by the late James M. Constable, First Vice-President of the American Museum of Natural History, for this institution, and they formed the beginning of its present collection of the large game animals of boreal America. As some of the species were becoming rapidly extirpated, it seemed of the utmost importance that steps should immediately be taken to secure specimens not only for exhibition, but for scientific research. Accordingly, Mr. Constable, with his accustomed liberality, contributed largely to the support of a second expedition by Mr. Stone to Arctic America with this object especially in view.

With this encouragement Mr. Stone left Seattle, Washington, early in July, 1897, for Fort Wrangel, Alaska, on an expedition of more than two years' duration, and which was to prove memorable in the annals of Arctic exploration. The amount of hardship and travel involved was exceptional, but the expedition resulted in important contributions to our knowledge of the distribution of the game animals of the high North, and of the geography of the Arctic coast to the eastward of the Mackenzie Delta,¹ besides adding to the Museum's collection of mammals a considerable number of specimens, including six species new to science.

Mr. Stone's trip from Fort Wrangel was northeastward up the Stickine River, across the divide to Dease Lake, down Dease Lake and Dease River to the Liard River, down the Liard to the Mackenzie, down the Mackenzie to the Delta, then west by dog sled along the coast to Herschel Island and back to Fort McPherson, thence eastward for about 1,000 miles to beyond Cape Lyon, and back to Fort McPherson. The return journey was westward across the Rocky Mountains to Bell River, down Bell River to the Porcupine, down the Porcupine and Yukon to St. Michael, and thence by steamer to Seattle. Side trips were made from the head of the Stickine River to the Cheonnee Mountains; from the head of Dease Lake

¹ See "Some Results of a Natural History Journey to Northern British Columbia, Alaska, and the Northwest Territory, in the Interest of the American Museum of Natural History." By A. J. Stone. Bull. Amer. Mus. Nat. Hist., Vol. XIII, 1900, pp. 31-62, with sketch maps.

into the Cassiar Mountains; from the Liard River up the Black River to Walker Mountains; from a lower point on the Liard River to the Nahanna Mountains; from Fort Norman, on the Mackenzie, westward into the main chain of the Rocky Mountains; and again westward from Fort McPherson into the Rockies.

The trip to the Cassiar Mountains resulted in securing a good series of a new species of Caribou, since described as *Rangifer osborni*, the largest and finest of

Fig. 1. OVIS STONEI.

From photograph of a mounted specimen (the type, No. 12721 Am. Mus.), taken in the Cheonnee Mountains, Northern British Columbia, August 10, 1896.

the Caribous; these specimens were carried on the backs of Mr. Stone and his men for sixty miles to the nearest point of shipment at the head of Dease Lake, and did not reach the Museum for more than two years after they were captured. The trip to the Nahanna Mountains was for White Bighorns and several specimens were secured, and a much larger series of the same species was obtained later in the main Rocky Mountains (lat. 66° 30' N.), on the trip westward from Fort Norman. The trip into the Rockies from Fort McPherson was for Caribou,

but proved unsuccessful, the animals having moved too far southward from their summer range to be overtaken. The winter trip along the coast westward to Herschel Island was mainly to secure information regarding the country and the Musk-ox ranges to the eastward. The intense cold precluded the preparation of specimens, although two species of Lemming were procured.

From information obtained at Herschel Island Mr. Stone was led to believe that the ranges of the Musk-ox could be easily reached by a trip eastward along the Arctic coast, and that the specimens when procured could be shipped by whaling vessels direct from Cape Bathurst to San Francisco. It proved, however, that these animals had retired further south than usual, and while "signs" were met with at several points, particularly south of Cape Lyon, they were not

Fig. 2. *Ovis stonell*.

Fig. 3. *Ovis cervina*.

Fig. 2, same specimen as Fig. 1; Fig. 3, Rocky Mountain Bighorn, from Montana. Both photographed to the same scale.

recent, and no animals were seen. The provisions for both the men and the dogs finally became exhausted in the long search, and further quest had to be abandoned.

Including the trips westward to the Rocky Mountains and Herschel Island, the whole long Arctic winter was given up to travel with dog sleds. In October and the early part of November, 1898, a trip of 500 miles—250 miles and return—was made westward to the most northerly reaches of the Rocky Mountains; in November and December, again westward to Herschel Island and return—a journey of 500 miles; in January and February, 1899, local trips, of between 200 and 300 miles, were made in the region of the head of the Mackenzie Delta; and finally, in March, April, May, and June, a journey across the Delta and eastward for 1000 miles along the Arctic coast to beyond Fort Lyon and return. The total

Fig. 4. SKETCH MAP INDICATING GEOGRAPHICAL CORRECTIONS AND OBSERVATIONS; ALSO SHOWING A PORTION OF MR. STONE'S ARCTIC COAST JOURNEY.

The dotted lines indicate Mr. Stone's route. See Bulletin Amer. Mus. Nat. Hist., Vol. XIII, 1900, pp. 38-41.

Fig. 5. TRANSCRIPT OF PORTION OF EMIL PETITOT'S CHART.

sledge journeys of the winter of 1898-99 aggregated about 3330 miles, and were accomplished in 180 days, including 155 days of actual travel. Among the results of these journeys was a valuable series of photographs and anthropometric measurements of representatives of two tribes of Indians, the Tahltan and Loucheux, and of two tribes of Eskimo, the Nunatagmiut and Koukpagmiut, the measurements comprising a total of 86 individuals¹; much information about the general character of the country and the ranges of the large game animals; and the correction of gross errors in the current maps of the region bordering the Arctic coast between the mouth of the Mackenzie and Cape Lyon. The area indicated on the U. S.

Fig. 6. SKETCH MAP SHOWING POSITION OF 'ESQUIMAUX LAKE' AS INDICATED ON THE U. S. HYDROGRAPHIC CHART NO. 1189.

Hydrographic Chart No. 1189 as "Esquimaux Lake" (see Fig. 6), he found to be simply low country interspersed with small lakes; he crossed this area twice and found it to be land and not water. Other charted lakes and rivers were also found to have no real existence, and others that had been overlooked were for the first time charted and named by Mr. Stone. (See the sketch maps in Mr. Stone's paper already cited, here reproduced as Figs. 4, 5, and 6.)

The natural history of the region traversed by Mr. Stone being only superficially known, it was natural that his explorations should add greatly to our knowledge of the ranges of the larger mammals in these high northern districts, not only through his own observations but by information derived from various officers of the Hudson Bay Company, and from intelligent white and Indian hunters.

¹ See "A. J. Stone's Measurements of Natives of the Northwest Territories." By Franz Boas. Bull. Amer. Mus. Nat. Hist., Vol. XIV, 1901, pp. 53-68, pll. vii-ix.

Much new and definite information was thus secured in reference to the Wood Bison and the Musk-ox, both of which are rapidly declining in numbers, and becoming each year more and more restricted in their ranges. Our exact knowledge of the ranges of both the White and the Black Bighorn Sheep was also greatly extended, and a new form of the latter was discovered which still awaits

Fig. 7. ALASKA MOOSE (*Alces gigas*).

From a mounted specimen in the Museum, collected by Mr. Stone on the Kenai Peninsula in September, 1900.

description, the White Sheep of the Nahanna Mountains and the extreme northern part of the Rockies proving to be not the true *Ovis dalli*, as, until recently, supposed. Of this new form¹ the only specimens extant in any museum are those in this Museum, collected by Mr. Stone in 1898.

The ranges of the different forms of the Caribou group were also outlined in considerable detail. He says, in speaking of these animals in his paper published

¹ Soon to be described by Mr. Wilfred H. Osgood of the U. S. Biological Survey, who has in hand a critical revision of the forms of *Ovis* inhabiting northern British Columbia, the Northwest Territory, and Alaska.

Fig. 8. ALASKA MOOSE.

An exceptionally fine specimen, taken by Mr. Stone the latter part of September, 1903, on the Kenai Peninsula, Alaska.

Fig. 9. HOME OF THE ALASKA MOOSE.

A typical Moose range on the Kenai Peninsula, Alaska. Photographed by Mr. Stone late in September.

Fig. 10. WHITE SHEEP.

A White Bighorn, taken by Mr. Stone in the Rocky Mountains, west of the Mackenzie River (lat. $66^{\circ} 30' N.$), in August, 1898. This specimen afforded the first food the party had secured for forty-eight hours after reaching the mountains.

Fig. 11. WHITE SHEEP.

One of the finest White Bighorn rams ever taken. Secured by Mr. Stone in the Rocky Mountains, west of the Mackenzie, in August, 1898.

Fig. 12. RANGIFER STONEL.

No. 16701. Am. Mus. type. About $\frac{1}{10}$ natural size. ♂ ad., Kenai Peninsula, Alaska. Andrew J. Stone Expedition.

Fig. 13. RANGIFER STONEL.

Front view of skull of the specimen shown in Fig. 12. About $\frac{1}{6}$ natural size.

in the Museum 'Bulletin' in April, 1900: "I therefore feel safe in saying, after my limited personal observations, that the Caribou are the least known of any of the more important North American mammals; and that they present a most inviting field for study, with excellent possibilities of ample reward for the labor expended; and I may further add that the time for their investigation is limited. To successfully prosecute such work would necessitate the expenditure of a con-

Fig. 14. ALASKA PENINSULA BEAR.

Ursus dalli gyas, killed near the head of Muller Bay, late in May, 1903. An old male, No. 21802, Am. Mus.

siderable sum of money, and require a vast amount of pluck, perseverance, and patience, and entail on the part of the explorer the endurance of much privation and hardship."

In the fall of 1900 a short but very successful trip was made by Mr. Stone to the Kenai Peninsula, Alaska, to secure for the Museum a good series of specimens of the Alaska Moose, up to this time wholly unrepresented in its collections. He also obtained a single specimen of a new species of Caribou (described later as

Fig. 15. ALASKA PENINSULA BEAR.

Another view of the specimen shown in Fig. 14.

Fig. 16. ALASKA PENINSULA BEAR.

Same specimen as shown in Figs. 14 and 15. Mounted at the American Museum by James L. Clark,—one of five specimens prepared for a group. The skull is shown in Figs. 18-20.

Rangifer stonei; see Figs. 12 and 13, p. 9) and several Bears, representing two species.

The extreme desirability of securing for the Museum a satisfactory representation of the mammal life of northern North America before the inroads of big game hunters, miners, and other visitors to these northern regions should render its attainment impossible, led to steps being taken, early in 1901, to raise a fund among the friends of the Museum for the systematic prosecution of this work, under the leadership of Mr. Stone. Thanks to the interest and energetic efforts of Mr. Madison Grant, Secretary of the New York Zoölogical Society, an annual

Fig. 17. HOME OF THE ALASKA PENINSULA BEAR.

Coast of Bering Sea, near head of Muller Bay, Alaska. From a photograph taken by Mr. Stone late in May, 1903.

sum sufficient for the purpose, for the period of three years, was soon pledged. That the supporters of this enterprise have reason to feel satisfied with the results due to their liberality is clearly apparent from the summary here presented of the work of Mr. Stone and his assistants during the field seasons of 1901, 1902, and 1903, in northern British Columbia and Alaska.

The expedition of 1901 outfitted from Seattle and reached Homer, Alaska, June 21, and work was continuously prosecuted till October at different points on the Kenai Peninsula. Mr. J. D. Figgins of the American Museum, and Mr. A. H. Mehner of Seattle, accompanied Mr. Stone as field assistants, their special work being the collecting of small mammals and birds, as opportunity offered, while

Fig. 18.

Fig. 19.

Fig. 20.

Figs. 18-20. *URSUS DALLI GYAS*.

No. 21802, old male, Muller Bay, Alaska Peninsula. $\frac{1}{4}$ natural size. Three views of the skull of the specimen shown in Figs. 14-16.

Fig. 21.

Fig. 22.

Fig. 23.

Figs. 21-23. *URSUS MERRIAMI*.

No. 21807, middle-aged male, Muller Bay, Alaska Peninsula. The mounted skin of this specimen is shown in Fig. 24, p. 15.

Mr. Stone gave special attention to large game. At the end of the Kanai season Mr. Stone, accompanied by Mr. Figgins, made a special expedition to the western end of the Alaska Peninsula to procure Caribous and Bears. The season's work at both localities was eminently successful, resulting in a collection of 350 mammals and 300 birds, representing species, with few exceptions, wholly new to the

Fig. 24. *URSUS MERRIAMI*.

Taken at head of Muller Bay, Alaska Peninsula, May, 1903. An old male, No. 21804. From a specimen mounted at the Museum by James L. Clark to form part of a group of Alaska Peninsula Bears.

American Museum collections. The mammals included 5 Moose, 15 Caribou, 14 White Sheep, 11 Bears, and 8 additional Bear skulls, and about 300 small mammals, consisting mostly of Voles, Shrews, and Squirrels, but including a few Foxes, Martins, Weasels, and a Wolverine. The Caribous were all taken on the western end of the Alaska Peninsula and represented a new species since named in honor

of Mr. Madison Grant, in recognition of his interest in securing the funds for carrying on the work.

The journey from Homer to the western end of the Alaska Peninsula, of nearly a thousand miles, was made when the season was far advanced and navigation dangerous. But so strongly convinced was Mr. Stone that the form of Caribou inhabiting this remote point would prove of especial interest that he was willing, on account of his comparative nearness to the locality, to risk the chances of the trip. Unfavorable weather caused a delay of ten days in reaching the mainland

Fig. 25. NORTHERN GRIZZLY.

Adult female and male cub killed in the Sheslay Mountains, Northwest British Columbia, late in August, 1902.

from Sand Point, Popoff Island, only twelve miles distant, but the time was well improved in forming a large collection of the peculiar Shrews and Voles of this small island, then only recently described and unrepresented outside of the National Museum at Washington. The Caribou, as already noted, proved to be a strikingly distinct type. Five of the fourteen specimens have been mounted for a group, as shown in the accompanying illustration (Fig. 38, p. 24).

The season of 1902 was spent mainly in northern British Columbia, Mr. Stone's chief assistant being Mr. M. P. Anderson, a student of Leland Stanford University. Mr. Stone, however, first visited the Alaska Peninsula in quest of the big Brown

Fig. 26.

Fig. 27.

Fig. 28.

Figs. 26-28. *URSUS MIDDENDORFFI*.

No. 19766, old male, Kadiak Island, Alaska. $\frac{1}{4}$ natural size. One of the largest of a series of 39 Kadiak Bear skulls secured by Mr. Stone in 1902 and 1903.

Bear discovered there the previous season, and to obtain accessories for the group of Grant Caribou. But the hunt for Bears proved unsuccessful, and about the end of June he joined Mr. Anderson at Wrangel, where Mr. Anderson was already at work collecting small mammals. On July 8 they left Wrangel for the headwaters of the Stickine River, where work was prosecuted over a considerable range of country till the last week in October. Later about two weeks were spent at Kupreanof Island, near Sitka.

Fig. 29. HEAD OF MOUNTAIN GOAT.

Type of *Oreamnos montanus columbianus*, killed in the Sheslay Mountains, Northwest British Columbia, August, 1902. No. 19838, Am. Mus.

This season only mammals were collected, of which nearly 1100 specimens were taken, including about 45 head of large game, besides a series of 31 skulls of the Kadiak Bear, obtained at Kadiak Island. The large game comprised 9 fine specimens of the Osborn Caribou (*Rangifer osborni*; see Figs. 40-45, pp. 26-29), 6 specimens of Moose, 14 fine examples of the Sitka Deer, 9 specimens of the Stone Sheep (*Ovis stonei*), 4 specimens of Mountain Goat, and 3 Bears. These specimens are all complete (skin, skull, and leg bones), with measurements, for mounting. Among the thousand specimens of small mammals were five species new to science,

and large series of several others hitherto rare in collections. One of the Goats (see Fig. 29, p. 18) forms the type of the new subspecies recently described as *Oreamnos montanus columbianus*.

In 1903 the western end of the Alaska Peninsula was again visited, where about six weeks were spent, after which the season's work was again transferred to the

Fig. 30. NORTHERN BUSHY-TAILED RAT (*Neotoma cinerea salicamans*).

Northern British Columbia. Andrew J. Stone Expedition. Mounted at the Museum by Herbert Lang.

Kenai Peninsula. Mr. Stone was again accompanied by Mr. M. P. Anderson, and also by Mr. B. H. Brown of Tacoma, Washington. The season's output numbered about 875 mammals and 317 birds. The trip to the Alaska Peninsula was primarily to secure a series of the big Peninsula Bears (see Figs. 14-20), of which 10 fine examples were secured, complete for mounting, including a skeleton of a

Fig. 31. LOUCHEUX MAN.

Fig. 32. LOUCHEUX WOMAN.

Figs. 31 and 32 are from photographs taken by Mr. Stone at Fort McPherson in 1898. See Bulletin Am. Mus. Nat. Hist., Vol. XIV, pp. 53-68, pll. vii-xi.

Fig. 33. KOUKPAGMIUT MEN.

Fig. 34. KOUKPAGMIUT MEN.

Figs. 33-35 (see next page) are from photographs of men and women of the Koukpagmiut tribe of Eskimo living near the Arctic Coast east of the Mackenzie River, taken by Mr. Stone in 1898.

fine old male. Here were also obtained about 140 small mammals, of species nearly all new to the Museum's collections, including a large series of specimens of *Citellus stonei*, a new species of large *Spermophile* discovered by Mr. Stone. The large mammals taken on the Kenai Peninsula included 6 Moose, 16 White Sheep, 3 Bears, and 8 additional Kadiak Bear skulls from Kadiak Island. The sheep were in good fall coat, and thus in excellent condition for mounting for a group; those previously obtained were in the short summer coat and thus less desirable for exhibition.

Fig. 35. KOUKPAKMIUT WOMEN AND CHILD.

The Bears collected on the Alaska Peninsula, near Muller Bay, appear to include two species, one of which, represented by a flat skin and one complete specimen, including skeleton as well as skin, is the *Ursus dalli gyas* (Figs. 14-20, pp. 10-13), while the other specimens (nine skins with skulls, etc., for mounting and one extra skull) are apparently not *Ursus gyas*, but a form of large Brown Bear quite different from any of the other forms, and which has been described as *Ursus merriami* (Figs. 21-24, pp. 14, 15). It differs markedly from *gyas* in cranial characters and in external features, as the color, the texture of the pelage, and the shape of the claws. The skulls and mounted specimens of both forms are

Figs. 36, 37. RANGIFER GRANTI.

Two views of a typical male skull (No. 17601, ♂) of the Grant Caribou, discovered by Mr. Stone in 1901 on the western end of the Alaska Peninsula. Fig. 36, about $\frac{1}{6}$ natural size; Fig. 37, about $\frac{1}{4}$ natural size.

Fig. 38. GROUP OF THE GRANT CARIBOU.

Five specimens of *Rangifer granti*, collected by Mr. Stone on the Alaska Peninsula, and mounted at the American Museum.

Fig. 39. HOME OF THE GRANT CARIBOU.

From a photograph taken by Mr. Stone late in October, 1901, on the Alaska Peninsula, near Muller Bay.

shown in the accompanying illustrations. In the 1901 trip to the Alaska Peninsula a skull of *U. merriami* was obtained, from which the species was originally described, and in the spring of 1903 nine of the ten skins and skulls obtained represent this animal, and include individuals of various ages.

The number of specimens obtained during the three seasons, 1901, 1902, and 1903, number 2325 mammals and 617 birds, besides many nests and eggs. The mammals comprise about 30 Bears in complete condition for mounting and 40 additional skulls, representing altogether 6 species; 17 specimens of the big Alaska Moose, in addition to the 5 specimens obtained in 1900, representing both sexes and various ages; 29 Caribou, representing four distinct species; 39 Big-horn Sheep, representing two species, in both the summer and the late fall coats; 4 Mountain Goats, representing a new subspecies; 14 specimens of the Sitka Deer; and 2180 small mammals, ranging in size from a Fox down to Shrews and Voles, and comprising about all of the species known from the regions visited. The specimens are all carefully prepared, with flesh measurements, and all are in excellent condition for mounting and in ample series for showing the adults of both sexes and the young in various stages of growth.

Fig. 40. OSBORN CARIBOU.

An old male *Rangifer osborni*, the largest specimen of Caribou of which there is any record. Taken by Mr. Stone on Level Mountain, Northwest British Columbia, late in September, 1902.

In addition to the specimens of mammals mentioned above, about 100, including 20 head of Caribou and Sheep, were collected by Mr. Stone on his earlier trips to the Northwest Territories and Alaska, making a total of over 2400 specimens, representing about 90 species and subspecies, of which 15 were first made known to science from Mr. Stone's specimens, and nearly all were entirely new to the Museum's collections at the time they were received.

The 600 birds, besides a collection of nests and eggs, obtained mostly on the Kenai Peninsula in 1901 and 1903, formed also a most important addition to the Museum's collection of birds, besides adding two new to science, they forming the chief part of the ornithological material the Museum has as yet received from Alaska.

In addition to furnishing so much wholly new material for mounting, including small mammals and birds as well as large game, the Stone collections have formed the basis of numerous papers in the Museum 'Bulletin,' aggregating about 240

Fig. 41. OSBORN CARIBOU.

A female *Rangifer osborni*, killed on Level Mountain, Northwest British Columbia, late in September, 1902. This was one of nine animals secured late in the evening a long distance from camp, and which had to be left until the following morning before they could be prepared as specimens. This photograph shows the condition in which the animals were found the next morning—a common experience for the collector in such regions. The men in preparing the specimens must bare their hands and arms to skin the partly frozen animals, dragging them from beneath the snow and working on them for hours exposed to wintry blasts. At such times the men suffer extremely at their work.

pages, with 12 plates and 50 illustrations, the bibliography of which is as follows:

1897. **Allen, J. A.** Preliminary Description of a New Mountain Sheep from the British Northwest Territory. *Bull. Amer. Mus. Nat. Hist.*, Vol. IX, pp. 111-114, pll. ii and iii, April 8, 1897.
Ovis stonei, sp. nov.
1899. —. On Mammals from the Northwest Territory collected by Mr. A. J. Stone. *Ibid.*, XII, pp. 1-9, March 4, 1899.
Zapus saltator, *Phenacomys constablei*, *Microtus stonei*, *M. [mordax] vellerosus*, *M. cautus* [= *M. vellerosus*], spp. nov.
1900. —. The Mountain Caribou of Northern British Columbia. *Ibid.*, XIII, pp. 1-18, figs. 1-18, April 3, 1900.
Rangifer montanus Seton-Thompson, later distinguished as *R. osborni* sp. nov.
1900. **Stone, A. J.** Some Results of a Natural History Journey to Northern British Columbia, Alaska, and the Northwest Territory, in the Interest of the American Museum of Natural History. *Ibid.*, XIII, pp. 31-62, figs. 1-5, April 6, 1900.
Itinerary, including geographical discoveries; annotated list of the larger game animals, including extended observations on their habits and ranges.

Fig. 42. BRINGING CARIBOU TO CAMP.

In the Cassiar Mountains, Northwest British Columbia, late in September, 1897.

1901. Boas, Franz. A. J. Stone's Measurements of Natives of the Northwest Territories. *Ibid.*, XIV, pp. 53-68, pll. vi-xi, March 26, 1901.
Measurements of 86 individuals, belonging to four tribes, with many photographs, a selection from which is reproduced in pll. vi-ix.
1901. Allen, J. A. Description of a New Caribou from Kenai Peninsula. *Ibid.*, XIV, pp. 143-148, figs. 1-4, May 28, 1901.
Rangifer stonei, sp. nov.
1902. —. A New Caribou from the Alaska Peninsula. *Ibid.*, XVI, pp. 119-127, figs. 1-6, March 31, 1902.
Rangifer granti, sp. nov.
1902. —. A New Bear from the Alaska Peninsula. *Ibid.*, XVI, pp. 141-143, pll. xxx and xxxi, April 23, 1902.
Ursus merriami, sp. nov.
1902. —. A New Sheep from Kenai Peninsula. *Ibid.*, XVI, pp. 145-148, figs. 1 and 2, April 16, 1902.
Ovis dalli kenaiensis, subsp. nov.

Fig. 43. CAMP SCENE ON LEVEL MOUNTAIN.

Mr. Stone's camp on Level Mountain, British Columbia, September 15, 1902, just after bringing in nine specimens of the Osborn Caribou. The heads are not yet skinned, and the preparation of the skins will necessitate several days of hard work upon them.

1902. Allen, J. A. Description of a New Caribou from Northern British Columbia. *Ibid.*, XVI, pp. 149-158, figs. 1-6, July 1, 1902.
Rangifer osborni, sp. nov.
1902. —. List of Mammals collected in Alaska by the Andrew J. Stone Expedition of 1901. *Ibid.*, XVI, pp. 215-230, July 12, 1902.
1902. Chapman, Frank M. List of Birds collected in Alaska by the Andrew J. Stone Expedition of 1901. *Ibid.*, XVI, pp. 231-247, Aug. 18, 1902.
 Sixty-eight species and subspecies; *Lagopus luecurus peninsularis*, *Cyanocitta stelleri borealis*, subsp. nov.

Fig. 44. DRYING THE SKINS.

Camp scene in the Sheslay Mountains, B. C., showing the manner of caring for the skins in camp.

A rude drying rack is improvised on which the skins are hung to dry. When the skins are first removed from the animals, which must be done as soon as possible after they are killed, all the blood is thoroughly removed from them. They are then taken to camp, fleshed, and salted, the best quality of fine salt being thoroughly rubbed in with the hand into all parts of the skin, great care being taken that every part of the skin is reached by the salt. The skin is then carefully folded and left for twenty-four hours, being turned during the time to insure that every part of it is saturated. After this treatment it is hung on the rack as here shown. The skins while thus hanging are protected by a canvas covering to prevent injury by damp weather or hot sunshine. During favorable weather the cover is removed to facilitate the drying of the skins, which, however, should proceed slowly. When dry the skins are carefully folded, the fur side in, and made into packages for transportation.

1903. **Allen, J. A.** Mammals collected in Alaska and Northern British Columbia by the Andrew J. Stone Expedition of 1902. *Ibid.*, XIX, pp. 521-567, October 10, 1903.
Citellus stonei, *Synaptomys andersoni*, *Erethizon epizanthus nigrescens*, *Putorius microtis*, spp. et subsp. nov.
1904. —. New Forms of the Mountain Goat (*Oreamnos*). *Ibid.*, XX, pp. 19-21, February 10, 1904.
Oreamnos montanus columbianus, subsp. nov.—type from Sheslay Mountains, collected by A. J. Stone.
1904. —. Mammals collected in Alaska by the Andrew J. Stone Expedition of 1903. *Ibid.*, XX, pp. 273-292, figs. 1-9, September 8, 1904.
1904. **Chapman, Frank M.** Birds collected in Alaska by the Andrew J. Stone Expedition of 1903. *Ibid.*, XX, pp. 399-406, September 8, 1904.

The specimens already mounted from the Stone collections include a group of five Grant Caribou, consisting of individuals of both sexes and various ages, with natural accessories brought from the Alaska Peninsula; a group of the big Peninsula Brown Bear, consisting of two old specimens and two yearlings; three Sitka Deer, one Osborn Caribou, one fine old male Alaska Moose, and five Stone Sheep. The additional groups planned for construction are a Black Bear group,

Fig. 45. HOME OF THE OSBORN CARIBOU.

Typical Caribou range in the Cassiar Mountains, Northwest British Columbia (60° north lat.). From a photograph taken by Mr. Stone during the latter part of September, 1897.

Fig. 47. DIAGRAM OF AN IDEAL ESKIMO TRAP FOR THE CAPTURE OF CARIBOU, USED PREVIOUS TO THE ADVENT OF THE RIFLE.

Fig. 46. METHOD OF CAPTURING CARIBOU FORMERLY EMPLOYED BY THE LOUCHEUX INDIANS

a Moose group, and a White Sheep group. A number of the more interesting of the smaller mammals have also been mounted, and the skulls of the Moose, Caribou, Deer, and Sheep have been prepared for exhibition and hung on the walls of the exhibition hall of mammals.

While so much northern mammal material has been added to the collection of the American Museum through the Stone Expeditions, especially those of 1901, 1902, and 1903, only a comparatively small area was explored, namely, the extreme western end of the Alaska Peninsula, the Kenai Peninsula, the interior of northern British Columbia, and the immediate vicinity of Wrangel and Kupreanof Island, southern Alaska. The large game animals, as well as the small animals, of these limited districts are well represented, and the Museum has thus made an excellent beginning toward an adequate collection of the mammals of northern North America. At present it has the finest collection of Caribous

Fig. 48. CACHE OF SPECIMENS.

Cache in which Mr. Stone's collection, made in August, 1898, in the Rocky Mountains west of the Mackenzie, was stored, after being brought out from the mountains, to await transportation by dog sled. The Hudson Bay Company agents at Fort Norman sent Indians and sleds to bring this collection in to the Fort the following winter. The specimens were there crated and forwarded to the American Museum of Natural History, reaching New York two years after they were taken.

extant in any museum in the world, and perhaps larger than all combined, but it represents satisfactorily only a few of the many forms of this polymorphic group.

The Caribou group ranges across the continent from Newfoundland and Greenland to the extreme western limit of the Peninsula of Alaska, and from about the northern border of the United States to the Arctic coast; they haunt not only the northern woodlands and the open tundras, but ascend to the treeless summits of all the principal mountain ranges. Their distribution, however, is not continuous but is broken up into numerous disconnected areas. They are highly plastic, yielding readily to the varied conditions of environment, often supplemented by isolation, to which they are subjected. They are also everywhere the prey of man, being the main dependence of the Indians and Eskimo for food and clothing, of the whalers along the Arctic coast for fresh provisions, and of the miners and settlers in the newly developed mining fields of the north, and they are also favorite quarry of the big game globe-trotter. For this reason their early practical extermination is certain, since every year witnesses, at many points, a marked restriction of their ranges and a lamentable diminution of their numbers. In order to determine the number and relationship of the numerous geographical

Fig. 49. MR. STONE'S CAMP IN THE NORTHERN ROCKIES.

From a photograph of the camp occupied by Mr. Stone's party during seven weeks' stay in the Rocky Mountains, in latitude about $66^{\circ} 30' N.$, from which they hunted an area nearly 50 miles square.

forms of this interesting group, it will be necessary to bring together much more material than is at present available for examination, and there is no time to lose in prosecuting the work, in view of their rapid decrease.

The Museum fully appreciates its indebtedness to the contributors to the Stone Expedition Fund, and takes pleasure in setting forth in this public acknowledgment some account of the important results of Mr. Stone's persistent and well-planned efforts in securing for the Museum such a large amount of well-prepared material, often at the cost of much personal risk and hardship. At the same time it seems proper to make known to the friends of the Museum that this is only a most successful beginning of a work that should be continued.

Fig. 50. ON THE CARCAJOU RIVER.

Bringing specimens of White Bighorns to camp, on the Carcajou River, in the Rocky Mountains, near the Arctic Circle. Two men are just arriving from a carry of fifteen miles in the mountains, each with a pack of 250 pounds, consisting of skins, with the limb bones and skulls. On this occasion (in August, 1898) Mr. Stone and his party brought 14 complete specimens of the White Bighorn, their camp equipage and hunting outfit at one trip.

Mr. Stone and his Indians lived in these mountains 150 miles from his base of supplies, subsisting entirely on the flesh of the wild sheep they killed for specimens. They had with them only a single piece of canvas for shelter, and when they left the main camp this was left behind for the protection of the specimens already taken, the whole party at such times sleeping where night overtook them, with only the same protection as that of the wild animals they were hunting.

Fig. 51. BRINGING BEAR SKINS TO CAMP.

Fig. 52. BRINGING BEAR SKINS TO CAMP.

Figs. 51 and 52 illustrate the method of 'packing' skins of the Alaska Peninsula Bear, during Mr. Stone's bear hunt, in May, 1903, near Muller Bay, Alaska Peninsula.

Fig. 53. BUILDING A BOAT.

In the region of Hell-Gate Cañon, on the Liard River, in the spring of 1898, Mr. Stone's men became afraid to venture further into the great northern wilderness and abandoned him to return to the Pacific coast, leaving him surrounded by a lot of renegades known as the Hell-Gate Indians, notorious for the murders they have committed, but who, owing to their obscurity and great distance from Government officials, have escaped punishment for their crimes. Mr. Stone had with him a ton of supplies, the things absolutely necessary to his further progress and work. After much difficulty he managed to rid himself of the presence of these renegade neighbors without serious results, and then immediately set to work to plan and construct a boat for the transportation of his supplies down the Liard River to the nearest Hudson Bay post. After careful calculation he decided to build a boat 24 feet long, 7 feet beam, and 21 inches deep. He first bent the frame from wood hewed from the forest, covering the frame with bark from spruce trees, and this with canvas pieced together from scraps contained in his outfit. Over this was spread a pitch made of spruce gum and bacon grease, making it waterproof. The boat when completed weighed a thousand pounds, which with great difficulty he succeeded in launching.

Putting aboard his supplies he descended what was to him an unknown river, following the last of the ice, finally reaching a Hudson Bay post 150 miles below, without the loss of any of his supplies.

Fig. 54. ON THE LIARD RIVER.

The boat with its load on the way down the Liard River, tied to the shore while Mr. Stone prepares his lunch. The irregular white blocks to the right are cakes of ice stranded during the breaking up of the river.

Fig. 55. CAMPING ON THE ARCTIC COAST.

From a photograph of Mr. Stone's camp among the Eskimo on Allen Channel, on the Arctic coast, about 100 miles east of the mouth of the Mackenzie. At this camp ended Mr. Stone's long sledge journey, on the 24th day of May, 1899. This trip of 2000 miles was made with two assistants, one of whom, an Indian, fell sick of scurvy, and when this camp was reached had been carried on the top of the dog sled for 650 miles. He was taken from this point to the head of the Mackenzie Delta, distant 250 miles, in an open boat and restored to his people.

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