**Vol. VI, No. 27. Washington, D. C. April 11, 1884.**

When the Tunisian Government was about sending its collection to Philadelphia in 1875, Sir Richard Wood very liberally offered to send this mosaic, which he had originally intended to present to the British Museum. It was packed with great care, and the steamship companies were earnestly begged to give directions to have it handled with every precaution. It was, however, a trying moment when the heavily iron-bound case was opened, for it was feared that it would be found to con, tain nothing but a mass of small parti-colored stones. It was, therefore a surprise as well as gratification to find the mosaic intact.

Its dangers, however, were not yet over, for after it was put in its place in the exhibition it was subject to the attacks of greedy visitors, who made determined, and occasionally successful, attacks upon it for the purpose of obtaining mementos.

After the close of the Centennial Exhibition it remained on deposit in the "Permanent Exhibition" until Sir Richard Wood, with graceful courtesy and liberality, presented it to the National Museum at Washington, where it is to be hoped it will long remain, a unique and valuable relic of the most ancient and renowned republic in the world's history.

PISA, *February* 19, 1883.

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## ON THE SKELETON OF PHOCA (HISTRIOPHOCA) FASCIATA, ZIMMERMAN.

By **FREDERICK W. TRUE, M. S.,**

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The National Museum is at present in possession of an interesting series of specimens of the Ribbon Seal, consisting of four skins, three skulls, and a single skeleton. The two finest skins—that of a female of advanced age (13285) and that of an adult male (13284)—were obtained by Mr. William H. Dall in 1880, in Plover Bay, East Siberia. The skeleton of the female was preserved, and forms the principal basis of this paper.

In addition to this material there are also in the Museum a skin and two much broken skulls of young males, one of which (13364) was obtained by Mr. E. W. Nelson at Cape Romanzoff, Alaska, in May, 1880; the other (13363) at Cape Prince of Wales in the autumn of 1879. There is, besides, in the Ethnological Department of the Museum, a skin of the species under consideration, in the form of an Eskimo bag.

The external characteristics of the Ribbon Seal are quite well known. The sexes differ widely in color, the male being black, with a yellowish white band surrounding the fore limbs, and passing over the back, while

the female, although having the same markings, is of a light, almost silvery, hue. The whiskers are crenulate. The nails are of moderate size and of a brown tint.

The Ribbon Seal has been imperfectly known since 1781, but the first description of any considerable fullness is that of Von Schrenck, published in 1859.* This observer, however, was unable to obtain the skeleton and the characters of the latter, except so far as the teeth were concerned, have until recently remained undescribed. In a paper upon the mammals collected during the "Vega" expedition, published some months ago by Nordquist,† the skull is described somewhat at length and three imperfect figures are given.

The genus *Histriophoca* was established by Dr. Gill in1873, upon the basis of Von Schrenck's observations of the exterior and teeth.‡ His diagnosis is as follows: "The structural (and especially dental) characters of this species, according to Von Schrenck, indicate a generic distinction from all the familiar forms of the subfamily *Phocinæ*. The molars (except the first) are two-rooted as in the typical *Phocinæ*, but in external form are simply conic or have rudimentary cusps, thus resembling *Halichœrus*. The genus may be named *Histriophoca*."

In July of the present year, at which time the cleaned and mounted skeleton was received from Rochester, I published a fuller and somewhat different diagnosis of the genus.§

After more prolonged study of the skeleton, and comparison with those of other species, I am somewhat in doubt as to the relationships of this seal. The skull presents remarkably close affinities to that of *Phoca fœtida*, the representative of the subgenus *Pusa*, as defined by Professor Allen. The most absolute differences are in the shape of the alveolar border of the maxillary, which is curved ventrally and laterally in *Histriophoca*, but is practically straight in *Pusa*, and in the number of sacral vertebræ, there being four in *Pusa* and three in *Histriophoca*. There are also a number of relative differences, of which the most salient are as follows: The accessory cusps of the molars are less developed in *Histriophoca* than in *Pusa*. The tibia is less curved in the former than in the latter, the crest of the ileum is more everted and the sexes vary more in color. The rooting of the molars in *Histriophoca* is different from that which obtains in any of the subgenera of *Phoca*, in being variable. The first two, and possibly the third, would seem to be single-rooted in the majority of cases.

If the taxonomy of the Phocids proposed by Professor Allen in his recent admirable work is accepted, none of the characters which have been enumerated are sufficient to raise *Histriophoca* to generic rank. In

* Von Schrenck. Reise in Amur-Lande, I, 1859, p. 182, Pl. IX, Figs. 1–3 (Animal).

† Vega-Expeditionens Vetenskaplica Iakttagelser. Andra Bandet, 1883, pp. 107–111, Figs. 16–18.

‡ American Naturalist, vii, 1873, p. 179.

§ American Naturalist, xvii, 1883, p. 798.

*Pagophilus* there is a less number of sacral vertebræ than in the other subgenera, and the sexes are widely different in color, yet it is included by Professor Allen within the genus *Phoca*. *Histriophoca fasciata* cannot then be debarred on account of its possession of these same characters. It seems most logical to include the last-named species as a subgenus in *Phoca*, between *Pusa* and *Pagophilus*. To raise *Pagophilus* to the rank of a genus (as proposed by Dr. Gill), and to combine with it *Histriophoca*, would, in my estimation, make an isolation between them and *Pusa* which does not exist, while to make of each of the first mentioned a distinct genus would make the classification still more artificial.

DESCRIPTION OF THE CRANIUM.

*The muzzle.*—The muzzle,* and indeed all of that portion of the skull which is anterior to the auditory bullæ, is remarkably short. The breadth at the canines is about the same relatively as in *P. fœtida* and *P. grœnlandica*. The "palate" is rudely triangular, shortened in the anteroposterior direction, but little compressed laterally, and not deeply emarginate behind. The alveolar border is convex laterally and ventrally, much as in *Erignathus barbatus*. The distance from the distal end of the intermaxillaries to the pterygoid hamuli is less than one-half the length of the skull, and from the same point to the anterior edge of the auditory bullæ is only 66 per cent. of the same length. The anterior nasal opening is elliptical, and corresponds closely to that of *P. fœtida*, but is higher in proportion to the breadth. The posterior nasal opening is about one-half broader than deep. The narial septum is nearly complete, the length of the whole "palate" being to the portion unoccupied as 66 to 10. The septum is, therefore, less developed than in *P. grœnlandica*, and more than in *P. fœtida*. The nasal bones are quite small, in length measuring less than one-fifth that of the skull; their breadth anteriorly is approximately one-half their length. The anterior border has the shape of the letter W with equal limbs.

*Orbital region.*—The zygomatic processes of the maxillary are broad, long, and very thin. The fossa beneath the infraorbital foramen is unusually deep, but does not involve the zygomatic process so much as in *P. fœtida*. The temporal fossæ are wide laterally. The zygomatic processes of the temporal bone are not so high as in *P. fœtida*, but resemble more closely those of *P. grœnlandica*. The interorbital "bridge" is intermediate in width between that of *P. vitulina* and *P. fœtida*. In the last-named species it is very narrow. The superorbital processes are rudimentary, but rather more developed than in other representatives of *Phoca*.

*Brain-case, superior and posterior surfaces.*—The brain-case is large, its length almost exactly equaling one-half that of the skull. Its lon-

* That portion of the skull anterior to the base of the zygomatic processes of the maxillary. This term is used with such looseness that I regard it necessary to define it.

gitudinal and transverse horizontal diameters are approximately equal. The convexity along the lines of the sagittal and coronal sutures is slight. The medial angle of the lambdoid suture is obtuse. The occipital makes an angle of about 45° with the base of the skull. The foramen magnum is an oblate ellipse.

*Brain-case, inferior surface.*—The paroccipital processes are wide apart, more so than in any other species of the subfamily, the distance between them being about the same as that between the meati auditorii. They are more strongly developed than in *P. fœtida*, and less than in *P. grœnlandica*. The auditory bullæ are larger than those of any other seal with which I am acquainted. The anterior face is approximately at right angles to the main axis of the skull, and descends less perpendicularly than in other forms of the genus. The anterior extremity is obtuse, making the general outline rather more quadrilateral than triangular. The portion forming the inferior border of the meatus auditorius is small, short, and convex, and is separated from the main portion of the bulla by a constriction, somewhat as in *P. grœnlandica* and *P. fœtida*.

*Mandible.*—The lower jaw is short and small. The rami are narrow vertically, and in the aged female are flattened internally. The coronoid process is styloid, as in *P. fœtida* and *grœnlandica*.

*The teeth.*—The dental formula was correctly given by Von Schrenck, as follows:

$$\text{I. } \frac{3-3}{2-2};\ \text{C. } \frac{1-1}{1-1};\ \text{M. } \frac{5-5}{5}.$$

The internal incisor is the smallest, the outer the largest. The canines are small. The molars, also, are small, and approximately equal in size, although the fifth, and especially the first, are a little smaller than the others. The form of the roots is subject to variation, as will appear from the subjoined table:

ROOTS OF THE UPPER MOLARS.

| | First. | Second. | Third. | Fourth. | Fifth. |
|---|---|---|---|---|---|
| Von Schrenck's Seal | Single .. | Double | Double | Double | Double. |
| No. 13285. Plover Bay | Single .. | ..... | Double . | Double | Double. |
| No. 13364 | Single .. | Single .. | Double . | Double . | Double. |
| No. 13363 | Single .. | Single .. | Single .. | Double | Double. |

ROOTS OF THE LOWER MOLARS.

| | First. | Second. | Third. | Fourth. | Fifth. |
|---|---|---|---|---|---|
| Von Schrenck's Seal | Single .. | Double . | Double . | Double . | Double. |
| No. 13285. Plover Bay | ..... | Single .. | ..... | Single .. | |
| No. 13364 | Single .. | Single .. | Single .. | Single .. | Double. |
| No. 13363 | Single .. | Single .. | Single .. | Double . | Double. |

A fourth molar, single-rooted, is present in sides of the lower jaw in this specimen.

As I have not seen Von Schrenck's original account, I do not feel satisfied that he positively intended to affirm that the roots of the second premolars are bifurcate, although he is so interpreted by Allen.*

From my examination of the skulls at hand I should be inclined to doubt that they are ever so. The form of the roots of the first true molar is such as to afford strong ground for a difference of opinion. There is invariably a longitudinal groove along the root, but the tip of the latter may or may not be sufficiently cleft to admit of the use of the term bifurcate. The posterior accessory cusps are apparent in the superior true molars, but almost or quite disappear from the premolars. The anterior accessory cusps are wanting superiorly. In the lower jaw both accessory cusps are traceable in all the grinding teeth, but are strongest in the true molars. The crowns of the premolars are considerably directed backward; the true molars less so or not at all, although they bear that appearance when worn. The molars are so placed in the majority of specimens of both *Histriophoca fasciata* and *Phoca vitulina* that they rub against each other. This results in the obliteration of the anterior accessory cusps of the superior molars when the teeth are worn.

*The skeleton; vertebral characters.*—The vertebral formula is as follows: C. 7; D. 15; L. 5; S. 3; Ca. 14 = 44. The atlas is low and broad, with wide transverse processes. The axis is high, with a large and long odontoid process. The superior border of its neural spine is parallel with the long axis of the centrum. In *Pusa* it forms an angle of about 45° with that axis. All the processes of the remaining cervical vertebræ are short and stout. The low neural spines of the dorsal and lumbar vertebræ are subequal in height, but increase in breadth (in the anteroposterior direction) from the first backward. They are lowest at about the middle of the series. They do not bend backward so strongly as in *Pusa*. The hypapophysis becomes apparent in the thirteenth dorsal, and increases in size posteriorly, becoming strongest in the second lumbar. The transverse processes of the lumbar vertebræ increase slightly in length posteriorly and are subequal in breadth. Only the first two caudals have complete neural arches. The last twelve decrease in size very gradually posteriorly.

*The ribs and sternum.*—The first rib is very broad and short, but less so than in *Pusa*. The first thirteen have articular facets, but that of the twelfth is rudimentary, and does not reach the centrum. Nine are connected with the sternum, the first at the base of the first of the sternebræ. In *Pusa* ten ribs reach the sternum. The sternum consists of nine sternebræ, the posterior, or ninth, nearly two and a half times the length of any of the others. The first is the smallest, somewhat conical, with the apex directed forward and compressed laterally; the others, except the ninth, are subequal.

*The scapula and pelvis.*—The scapula is falciform, being prolonged

*Allen, North American Pinnipeds, 1880, p. 675.

posteriorly, and is broader than high. The length is to the breadth as 1 to 1.37. The pre-spinous region is broad inferiorly. The spine is prominent and thin, and is abruptly truncated inferiorly.*

The coronoid process is rudimentary.

The pelvis is long and narrow, being about three times as long as broad at the widest part. The crest of the ileum is turned abruptly outward, forming a deep and large cup-shaped fossa. This is considerably larger than in *Pusa*. The obturator foramen is elliptical and small, while the region of the pubic symphysis is long and broad.

Pelvis of *Histriophoca fasciata* No. 13285.

*The fore and hind legs.*—Both great and lesser tuberosities of the humerus are very strongly developed. The olecranon of the ulna is large, hamular, and broad in the anteroposterior direction, with a large mammiform process externally. It is entirely distinct from the radius. The latter is remarkably broad and flat at the inferior extremity. The bones of the carpus are very unequal in size; the magnum is very small; the cuneiform is large, and so placed as to exclude articulation between the unciform and pisiform, while it articulates with the fifth metacarpal. The digits decrease in size gradually from the first to the fifth. The femur is short and broad, the great trochanter well developed and quadrate. The tibia and fibula are anchylosed at the proximal extremity. The proportion of the length of the femur to that of the tibia is as 1 to 2.28. All the fossæ are large and deep.

In the tarsus the meso-cuneiform is the smallest bone. The cuboid articulates about equally with the calcis and the astragalus. The digits are of unequal size; they decrease in length in the following order: First, fifth, second, fourth, third. The proportion of the length of the femur to that of the pes is as 1 to 3.06. The proportion of the length of the femur to that of the whole limb is as 1 to 6.38. The proportion of the length of the pes to that of the whole limb is as 1 to 1.92. It thus appears that the feet are large. The pelvis and tibia are of exactly equal length.

* Since the division of the inferior portions of the scapular spine into acromion and metacromion, by Mivart and other anatomists, it becomes somewhat difficult to ascertain whether one or both of the parts so called are present or absent. If the inferior termination of the scapular spine, however formed, is to be termed the acromion, then no scapulæ can be said to lack the latter except those in which its entire upper margin describes a more or less uniform curve. In my preliminary diagnosis (Amer. Nat., xvii, 1883, 798) I stated that the scapular spine is without acromion. I still believe that this is a true statement, but not as generally understood.

*Measurements of representative species of the subfamily Phocinæ.*

| Parts measured. | *Phoca (Histriophoca) fasciata.** Millimeters. | *Phoca (Histriophoca) fasciata.** 100ths of total length. | *Phoca (Phoca) vitulina,*† 100ths of length. | *Phoca (Pusa) fœtida,*‡ 100ths of length. | *Phoca (Pagophilus) grœnlandica,*‖ 100ths of length. | *Erignathus barbatus,*§ 100ths of length. | *Halichœrus gryphus,*¶ 100ths of length. |
|---|---|---|---|---|---|---|---|
| Total length | 203 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Breadth at mastoid process | 118 | 59.0 | 57.6 | 62.7 | 55.0 | 59.1 | 49.0 |
| Greatest breadth at zygomatic arches | 131 | 65.0 | 64.0 | 61.5 | 54.0 | 57.8 | 61.0 |
| Distance from anterior edge of intermaxillæ to end of pterygoid hamuli | 93 | 46.0 | 54.7 | 50.0 | 53.3 | 54.6 | 61.0 |
| Distance from anterior edge of intermaxillæ to hinder edge of last molar | 70 | 34.0 | 35.0 | 31.0 | 31.7 | 34.2 | ..... |
| Distance from anterior edge of intermaxillæ to meatus auditorius | 135 | 66.5 | 75.0 | 70.0 | 70.0 | 73.3 | 78.5 |
| Distance from anterior edge of intermaxillæ to glenoid process | 125 | 62.0 | 70.6 | 63.3 | 65.3 | 66.9 | 74.0 |
| Distance from palato-maxillary suture to end of pterygoid hamuli | 40 | 20.0 | 24.8 | 21.5 | 20.5 | 21.5 | 24.5 |
| Length of alveolar border of maxillæ | 61 | 30.0 | 40.3 | 36.8 | 38.7 | 39.3 | 47.5 |
| Width of palatal region at posterior end of maxillæ | 52 | 26.0 | 27.9 | 27.7 | 25.2 | 28.1 | 24.5 |
| Nasal bones, length | 37 | 18.0 | 29.0 | 21.2 | 19.7 | 24.5 | ..... |
| Nasal bones, breadth anteriorly | 15 | 7.5 | 9.2 | 9.0 | 7.0 | 10.0 | ..... |
| Nasal bones, breadth at fronto-maxillary suture | 10 | 5.0 | 6.8 | 4.3 | 4.1 | 6.7 | ..... |
| Breadth of skull at canines | 30 | 15.0 | 20.0 | 15.0 | 14.7 | 20.9 | 28.0 |
| Least breadth of skull interorbitally | 15 | 7.5 | 6.1 | 3.2 | 5.5 | 11.2 | 11.0 |
| Breadth of posterior nares, vertically | 22 | 11.5 | 9.3 | 7.1 | 6.0 | 10.3 | 12.0 |
| Breadth of posterior nares, transversely | 36 | 18.0 | 11.9 | 14.8 | 17.0 | 15.0 | 11.5 |
| Breadth of anterior nares, vertically | 30 | 15.0 | 13.3 | 12.8 | 14.5 | 16.1 | ..... |
| Breadth of anterior nares, transversely | 27 | 13.5 | 14.0 | 13.8 | 12.7 | 14.0 | ..... |
| Greatest height of skull at auditory bullæ | 86 | 42.5 | 36.6 | 41.1 | 37.3 | 38.5 | 30.0 |
| Length of brain case | 100 | 49.0 | 38.0 | 40.3 | 39.3 | 41.5 | 30.5 |
| Greatest width of brain-case | 96 | 47.5 | 41.2 | 51.0 | 46.0 | 49.2 | 31.5 |
| Length of lower jaw | 127 | 63.0 | 63.8 | 62.0 | 61.3 | 65.0 | 67.0 |
| Front edge of ramus to last molar | 54 | 26.5 | ..... | 27.0 | 25.3 | 27.7 | ..... |

*No. 13285 ♀, old.
†No. 4713, very old. Sable Island, Nova Scotia (Allen, p. 574).
‡Average of { No. 16138 ♀, middle age. Cumberland Gulf. / No. 6295 ♀. Cumberland Gulf. / No. 6297 ♀. Cumberland Gulf (Allen, p. 606).
‖Average of { No. 3514, old. Greenland. / No. 3515, old. Greenland (Allen, p. 638).
§Average of { No. 16116 ♀, old. Cumberland Gulf. / No. 6229 ♀, adult. Cumberland Gulf (Allen, p. 694).
¶No. 4717, very old. Sable Island, Nova Scotia (Allen, p. 694).

*Actual measurements in millimeters of a mounted skeleton of Phoca (Histriophoca) fasciata (No. 13285).*

| | Millimeters. |
|---|---|
| Length of skull | 203 |
| Length of cervical vertebræ | 247.5 |
| Length of dorsal vertebræ | 547 |
| Length of lumbar vertebræ | 240 |
| Length of sacral vertebræ | 91 |
| Length of caudal vertebræ | 353 |
| Length of scapula | 141 |
| Length of humerus | 121 |
| Length of radius | 125 |
| Length of manus | 180 |
| Length of pelvis | 241 |
| Length of femur | 95 |
| Length of tibia | 240 |
| Length of pes | 345 |
| Length of whole skeleton | 1681.5 |
| Length of fore-limb (exclusive of scapula) | 430 |
| Length of hind-limbs | 666 |

*Actual measurements of the vertebræ of Histriophoca fasciata (No. 13285) in millimeters.*

| Vertebræ. | Greatest width between extreme points of transverse processes. | Greatest height of body and neural spine. | Greatest width of body. | Greatest height of body (in median line). | Greatest length of body (antero-posterior). | Breadth of transverse processes near tip (antero-posterior). | Breadth of neural spine near tip (antero-posterior). | Greatest width across posterior zygapophyses. |
|---|---|---|---|---|---|---|---|---|
| | *mm.* | *mm.* | *mm.* | *mm.* | *mm.* | *mm.* | *mm.* | *mm.* |
| Cervicals: | | | | | | | | |
| First | 89 | ..... | ..... | ..... | ..... | 24 | ..... | ..... |
| Second | 41 | 55 | 30 | 21.5 | *51 | ..... | 39.5 | 47 |
| Third | 58 | 42.5 | 24 | 22 | 31 | 7 | ..... | 53 |
| Fourth | *62.5 | 45 | 24 | 22 | 33 | 12 | ..... | 54 |
| Fifth | 64.5 | 48 | 27 | 23 | 34 | 12 | ..... | 55 |
| Sixth | 67 | 52 | 24 | 23 | 36 | 16 | ..... | 57 |
| Seventh | 78 | 55 | 31 | 26 | 33 | 19 | 13 | 65 |
| Dorsals: | | | | | | | | |
| First | 90 | 66 | 29 | 29 | 30 | 24 | 12 | 59 |
| Second | 86 | 72 | 44 | 32 | 28 | 20 | 12 | 45 |
| Third | 81 | 77 | 43 | 31 | 27 | 21 | 12.5 | 38 |
| Fourth | 78 | 74 | 44 | 40 | 22 | 20 | 15 | 36 |
| Fifth | 76 | 73 | 44 | 30 | 29 | 17 | 18 | 34.5 |
| Sixth | 74 | 62 | 44 | 25 | 26 | 18 | 20 | 34 |
| Seventh | 71 | 62 | 46 | 21 | 27 | 17 | 21 | 34 |
| Tenth | 65 | 64 | 46 | 25 | 30 | 16 | 17 | 40 |
| Thirteenth | 51 | 68 | 39 | 25 | 37 | ..... | 18 | 42 |
| Fifteenth | 52 | 80 | 35 | 36 | 41 | ..... | 22 | 45 |
| Lumbars: | | | | | | | | |
| First | 85 | 80 | 37 | 36 | 42 | 16 | 18 | 46 |
| Third | 89 | 83 | 35 | 41 | 43 | 23 | 19 | 55 |
| Fifth | 81 | 72 | 39 | 31 | 38 | 17 | 18 | 62 |
| Sacrals: | | | | | | | | |
| First | } | | | | | | | |
| Second | } 99 | 67 | ..... | 28 | 86 | 46 | ..... | ..... |
| Third | } | | | | | | | |
| Caudals: | | | | | | | | |
| First | 48 | 37 | 24 | 21 | 29 | ..... | 19 | 17 |
| Fourth | ..... | ..... | 22 | 19 | 30 | ..... | ..... | ..... |
| Sixth | 25 | ..... | 19 | 16 | 30 | ..... | ..... | ..... |
| Eighth | 18 | ..... | 17 | 13 | 24 | ..... | ..... | ..... |
| Tenth | ..... | ..... | ..... | 9 | 21 | ..... | ..... | ..... |
| Twelfth | ..... | ..... | ..... | 5 | 12 | ..... | ..... | ..... |
| Fourteenth | ..... | ..... | ..... | 3 | 7 | ..... | ..... | ..... |

* With odontoid process.

*Measurements of the sternum of Histriophoca fasciata, No. 13285, in millimeters.*

| | Greatest length. | Greatest width. | Greatest depth. |
|---|---|---|---|
| | *mm.* | *mm.* | *mm.* |
| First segment (manubrium) | 25 | 20 | 20 |
| Second segment | 26 | 22 | 20 |
| Third segment | 29 | 23 | 20 |
| Fourth segment | 29 | 26 | 23 |
| Fifth segment | 30 | 30 | 22 |
| Sixth segment | 30 | 29 | 23 |
| Seventh segment | 32 | 28 | 24 |
| Eighth segment | 35 | 27 | 23 |
| Ninth segment | 75 | 23 | 19 |

*Actual measurements of the ribs of Histriophoca fasciata, No. 13285, in millimeters.*

| | Length straight. | Angle to head. | Greatest width inferiorly. |
|---|---|---|---|
| | *mm.* | *mm.* | *mm.* |
| First rib | 66 | 35 | 13 |
| Second rib | 83 | 36 | 11 |
| Third rib | 110 | 35 | 12 |
| Fourth rib | 147 | 35 | 15 |
| Fifth rib | 170 | 38 | 18 |
| Sixth rib | 192 | 35 | 18 |
| Seventh rib | 200 | 35 | 21 |
| Eighth rib | 205 | 35 | 22 |
| Ninth rib | 212 | 35 | 24 |
| Tenth rib | 215 | 37 | 25 |
| Eleventh rib | 230 | 34 | 21.5 |
| Twelfth rib | 220 | 30 | 18 |
| Thirteenth rib | 212 | ..... | 16 |
| Fourteenth rib | 205 | ..... | 14 |
| Fifteenth rib | 288 | ..... | 9 |

*Actual measurements of the limbs of Histriophoca fasciata (No. 13285) in millimeters.*

| | Millimeters. |
|---|---|
| SCAPULA | |
| Greatest width | 181 |
| Greatest depth | 137 |
| Diameter of articular fossa | 40 |
| Length of spine | 111 |
| Greatest height of spine | 20 |
| HUMERUS: | |
| Length in a straight line between articular facets | 121 |
| RADIUS: | |
| Greatest length | 125 |
| Width at the head | 23 |
| Width at the epiphysis | 41 |
| ULNA: | |
| Greatest length | 166 |
| Width of olecranon | 63 |
| Width at the epiphysis | 20 |
| METACARPALS: | |
| Greatest length | |
| First | 58 |
| Second | 51 |
| Third | 40 |
| Fourth | 31 |
| Fifth | 34 |
| MANUS: | |
| Greatest length of first phalange (proximal) of first digit | 71 |
| Greatest length of second phalange of first digit | 36 |
| Greatest length of first phalange of second digit | 45 |
| Greatest length of second phalange of second digit | 30 |
| Greatest length of third phalange of second digit | 30 |
| Greatest length of first phalange of third digit | 38 |
| Greatest length of second phalange of third digit | 31 |
| Greatest length of third phalange of third digit | 30 |
| Greatest length of first phalange of fourth digit | 33 |
| Greatest length of second phalange of fourth digit | 28 |
| Greatest length of third phalange of fourth digit | 26 |
| Greatest length of first phalange of fifth digit | 34 |
| Greatest length of second phalange of fifth digit | 24 |
| Greatest length of third phalange of fifth digit | 21 |

| | |
|---|---|
| PELVIS: | |
| Greatest length | 241 |
| Depth of the crest | 74 |
| FEMUR: | |
| Length in straight line between articular facets | 95 |
| Greatest width inferiorly | 61 |
| FIBULA: | |
| Greatest length | 240 |
| TIBIA: | |
| Greatest length | 240 |
| FIBULA AND TIBIA: | |
| Greatest width | 68 |
| METATARSALS: | |
| Greatest length of first metatarsal | 107 |
| Greatest length of second metatarsal | 79 |
| Greatest length of third metatarsal | 63 |
| Greatest length of fourth metatarsal | 69 |
| Greatest length of fifth metatarsal | 90 |
| PES: | |
| Greatest length of first phalange of first digit | 98 |
| Greatest length of second phalange of first digit | 62 |
| Greatest length of first phalange of second digit | 72 |
| Greatest length of second phalange of second digit | 53 |
| Greatest length of third phalange of second digit | 25 |
| Greatest length of first phalange of third digit | 67 |
| Greatest length of second phalange of third digit | 49 |
| Greatest length of third phalange of third digit | 19 |
| Greatest length of first phalange of fourth digit | 70 |
| Greatest length of second phalange of fourth digit | 49 |
| Greatest length of third phalange of fourth digit | 26 |
| Greatest length of first phalange of fifth digit | 78 |
| Greatest length of second phalange of fifth digit | 56 |
| Greatest length of third phalange of fifth digit | 36 |

*EXPLANATION OF PLATES.*

PLATE XI.—Skull of *Phoca* (*Histriophoca*) *fasciata*. Side view. Museum No. 13285.
PLATE XII.—Same. View from below.
PLATE XIII.—Same. View from above.
PLATE XIV.—Skeleton of *Phoca* (*Histriophoca*) *fasciata*. Side view.

## ON THE SOURCE OF THE JADEITE IMPLEMENTS OF THE ALASKAN INNUITS.

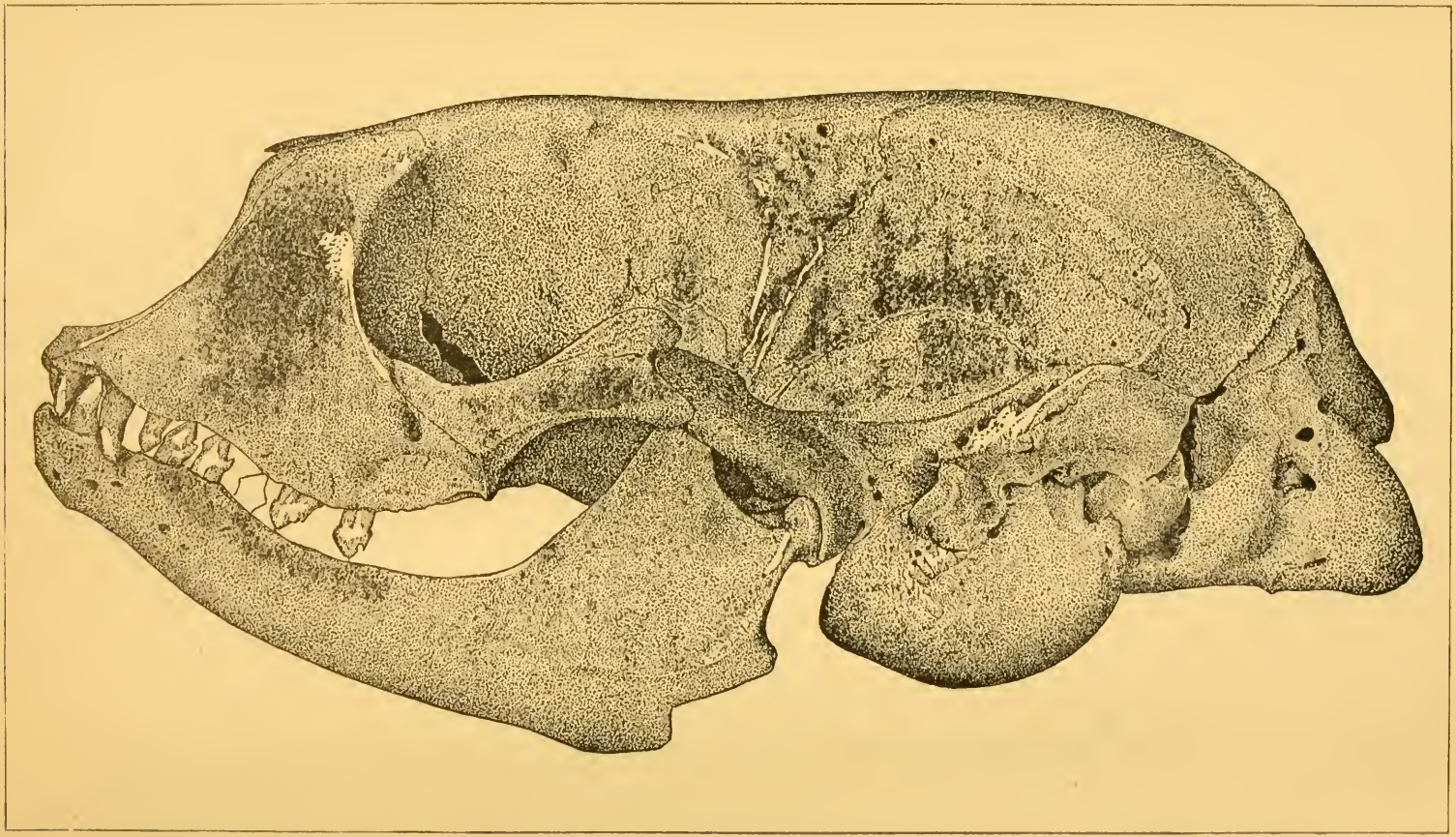
By E. W. NELSON.

[Letter to Prof. Spencer F. Baird.]

The numerous specimens of jade or jadeite implements obtained by myself and others from the Alaskan Innuits have been secured mainly between the head of Norton Sound, in Bering Sea, and Point Barrow, on the Arctic coast. They are found most abundantly among the people inhabiting the lower courses of the large streams flowing into Kotzebue Sound. Owing to the hostile character of the natives and for other reasons I never penetrated this region, but met and interrogated num-

## Plate XI.

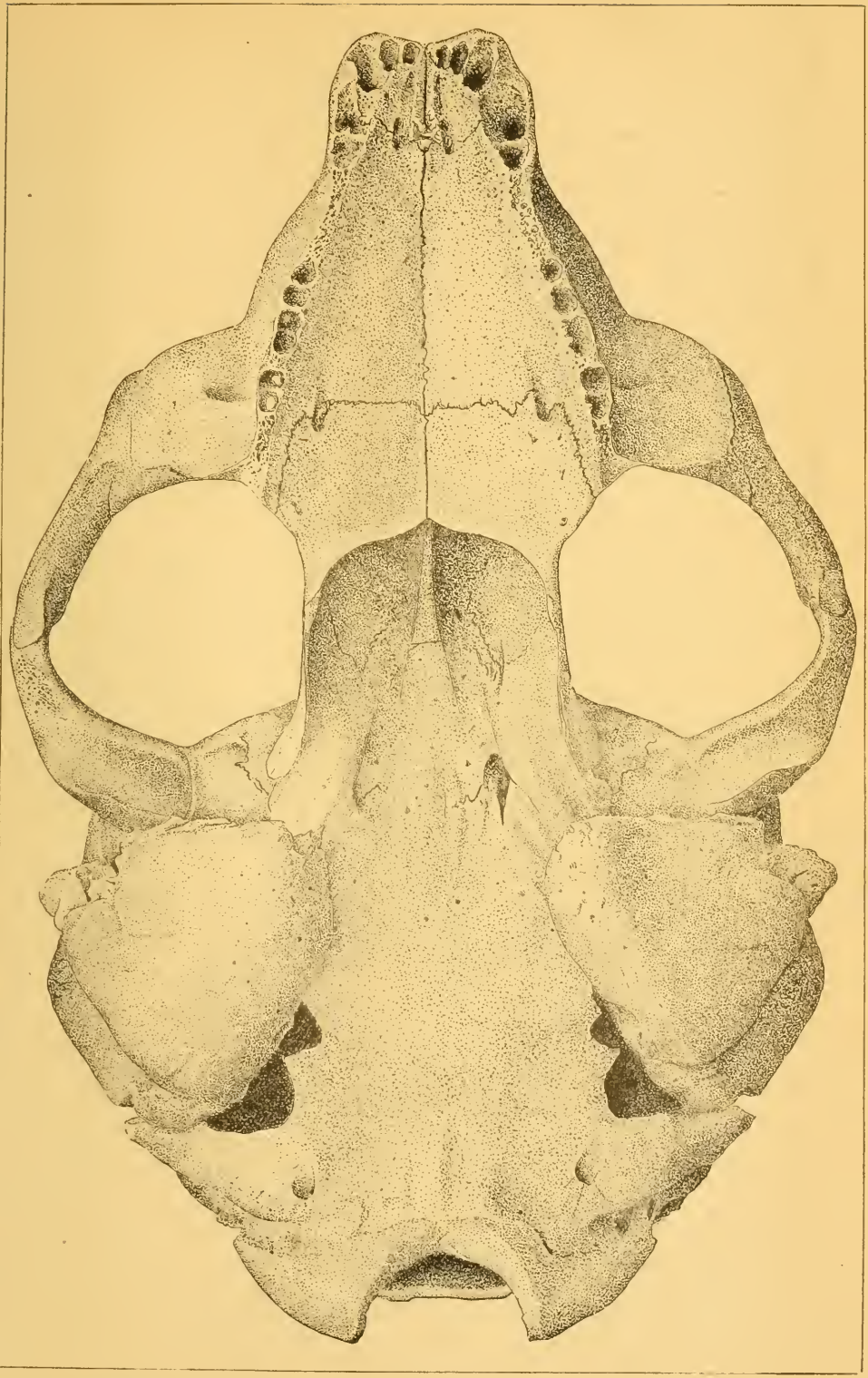
Skull of *Phoca* (*Histriophoca*) *fasciata*. Side view. (Text, 419–421.)



SKULL OF PHOCA (HISTRIOPHOCA) FASCIATA. Museum No. 13285. Natural size.

## Plate XII.

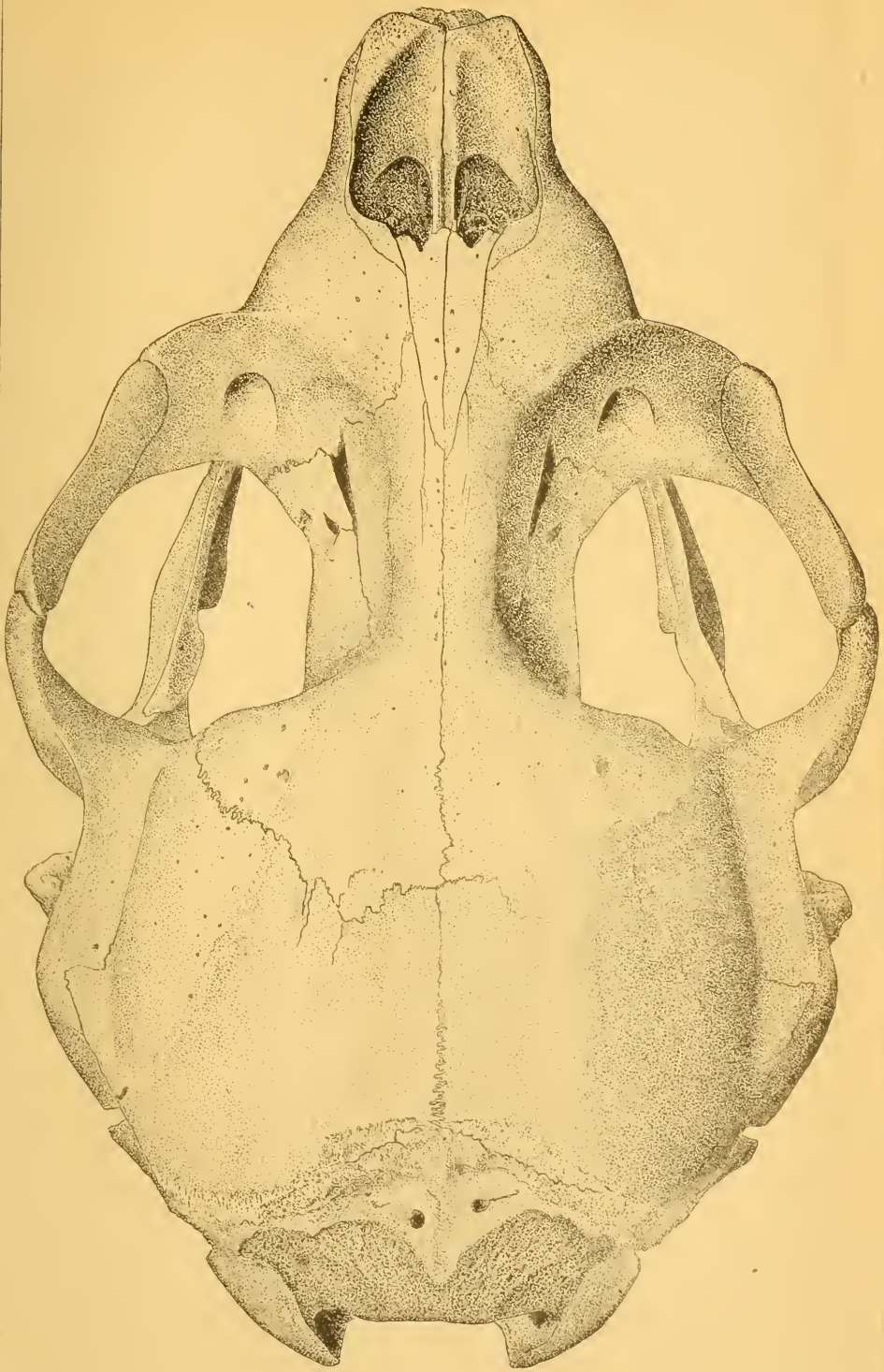
Skull of *Phoca* (*Histriophoca*) *fasciata*. View from below. (Text, 419–421.)



SKULL OF PHOCA (HISTRIOPHOCA) FASCIATA. No. 13235. From below.

## Plate XIII.

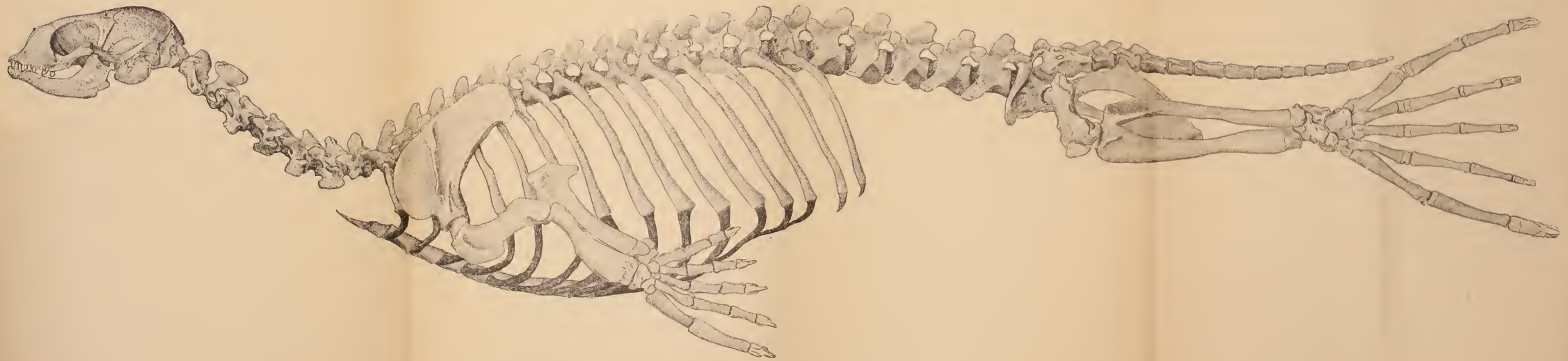
Skull of *Phoca* (*Histriophoca*) *fasciata*. View from above. (Text, 419–421.)



SKULL OF PHOCA (HISTRIOPHOCA) FASCIATA. No. 13285. From above.

## Plate XIV.

Skeleton of *Phoca* (*Histriophoca*) *fasciata*. Side view. (Text, 421–422.)



PHOCA (HISTRIOPHOCA) FASCIATA. Museum No. $\frac{16484}{19285}$. About one-fourth natural size.