

VI.—ON THE WEST INDIAN SEAL (MONACHUS TROPICALIS, GRAY).

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In October, 1883, the National Museum received, through the kindly offices of Prof. Felipe Poey, of Havana, Cuba, the mounted skin of a seal which had been on exhibition in that city during the summer of the same year. The seal was reported to have been captured in the vicinity of Havana. Upon arrival at the Museum it proved to be, as Poey had suspected, a specimen of the seal which Gray had provisionally referred to the genus *Monachus*, under the name of *M. tropicalis*. The skin was imperfectly prepared, and it was deemed advisable, therefore, that it should be remounted. Upon examination it was found that the skull was mounted in the skin, and that the bones of the fore and hind flippers had not been removed. Owing to this fortunate accident it is possible to describe for the first time the cranial characters of the species.

The specimen is a female, and apparently adult, though not aged. Its length, measured from the end of the tail to the extremity of the muzzle, in a straight line, is fifty-three inches.

So far as external characters are concerned, the Havana specimen agrees with the description of Gosse, published in his "A Naturalist's Sojourn in Jamaica," which appeared in 1851, and with that of Gray, founded upon an imperfect specimen now or until recently in the British Museum. It presents, however, several minor differences, the more important of which we will now proceed to discuss.

The discrepancy which first meets our attention relates to the color of the whiskers. These are stated by Gosse to be of a "black hue, with transverse bars of gray." In the specimen before us the whiskers are horn-colored, with blackish tips.

The color of the body is described by Gosse in his earlier pages as "intense and uniform black"; but subsequently, when treating of a specimen captured by Wilkie, he gives a different description, and one which, with very slight modification, is applicable to the specimen before us. The fur of Wilkie's specimen is said to have been "nearly uniform dirty ash-gray; black at the base and gray at the tips of the hairs. It

is slightly mottled on the belly." In our specimen the hairs of the back and hind flippers appear light at the tip, as if faded by age; but are dark sepia-color or nearly black, except at the extremity. On the under parts and on the sides of the body, neck, and head the dark hairs are interspersed by others which are white except at the tip. The lips are bordered with white. On the upper lips the hair above the white fringe is darker than that of the surrounding surfaces. The palms are not bare, as stated by Gosse, but are equally as well clothed as the upper surfaces of the flippers. It is probable that the specimen described by Hill had worn the hair from the under surfaces of the flippers by contact with the dry surfaces of the inclosure in which it was confined.

THE SKULL.—The skull before us presents no characters which would warrant a separation of the species generically from *M. albiventer*, the type of the genus *Monachus*. The specimen agrees perfectly with the diagnosis of the genus given by Gray in the Hand-list of Seals, &c. (1874, p. 11).

In general form the skull is depressed and elongated, the breadth being exactly three-fifths the length. Compared with *Phoca vitulina*, the muzzle is much less tapering; viewed from above, its sides are approximately parallel. The intermaxillaries meet the nasals and extend along their sides for about half an inch. Nasals narrow, somewhat less than one-fourth the length of the skull, and emarginate anteriorly.

The interorbital region is broad, with parallel sides, much as in *Erigonathus*. The frontals are in contact with the temporals posteriorly, and to a greater extent on the left than on the right side. The contour of the parietals is rudely square, the posterior margin being emarginate. In the specimen under consideration the sagittal and occipito-parietal sutures are still open. The sagittal and lambdoidal crests are rudimentary.

The malar rests upon the maxillary anteriorly. A line drawn from the outer edge of the canine parallel to the median line cuts the anterior end of the malar. The maxillary supports the malar internally for more than half the length of the latter. The articulation of the malar with the squamosal presents no peculiarities.

The "palate" is strongly contracted at the juncture of the anterior and middle thirds, and acutely emarginate behind. The posterior palatine foramina lie wholly in the maxillary.

The posterior nares is small; its margin forms an equilateral triangle. The narial septum is very incomplete.

The auditory bullæ are pyriform in outline and depressed, the upper surface traversed by a distinct groove. The lateral extension of the bulla forming the wall of the meatus auditorius is incomplete in front. The anterior margin of the bulla is deeply concave. The bullæ diverge strongly posteriorly.

The foramen magnum is broader than high. The paroccipitals are well developed, short, and thick.

The mandible presents some remarkable peculiarities. The condyle is very low, being on a level with the alveolar border of the jaw. The coronoid process is well developed and is strongly reflected. The lower border of the horizontal ramus is straight. The length of the symphysis is contained three and a half times in that of the jaw; the symphysis itself is very thick. The furrow below the condyle, in which the external pterygoid muscle is inserted, and which is so strongly marked in most seals, is scarcely apparent in the specimen under consideration.

Dental formula as follows: I. $\frac{2}{2}$; C. $\frac{1}{1}$; M. $\frac{5}{5} \times 2 = 32$. The line of the upper incisors is straight. The outer incisors are much larger than the inner ones. Both pairs are unicuspidate. The inner pair has a slightly marked cingulum internally, while the cingulum is strongly developed in the outer pair. The superior canines are short, stout, and rugose, and bear a rounded ridge posteriorly. The second and third molars are set very obliquely, the anterior end being turned inward. The first and fourth molars are less oblique, the fifth not at all. The second, third, and fourth molars are approximately equal in size, the first somewhat and the fifth decidedly smaller. All the molars are very rugose, and, except the fifth, are furnished with an obtuse central cusp, supported before and behind by a smaller accessory cusp. The fifth molar has no accessory cusps. The cingulum is strongly developed in all the molars, and, except in the first, ends anteriorly and posteriorly in a small denticle. Only the posterior denticle is present in the first molar. Except between the first and second molars interspaces are wanting. The first molar rests against and is half internal to the canine. The molars are two-rooted, except the first.

The lower incisors are smaller and more obtuse than the upper incisors; the inner pair smaller than the outer, internal to the latter, and decumbent. The short canines have a posterior and two internal vertical ridges. The description of the superior molars applies equally to the inferior series, except that the fifth is larger than the first and somewhat oblique, and that there is no interspace between the first and second. The line of the inferior molars is straighter than that of the superior molars.

Comparison of M. tropicalis and M. albiventer.

If the specimen before us is adult (and the condition of the skull would seem to indicate that it is), the West Indian seal must be considerably smaller than *M. albiventer*. The female of the latter species described by F. Cuvier (Ann. Mém. d'Hist. Nat., xx, 1813, p. 387) measured 7 to 8 feet* from the extremity of the muzzle to the end of the hind flipper. In the Havana specimen the total length is but 4 feet and 10 inches.

The male monk seal described by Hermann in 1779 differed widely from the animal before us, in that the under parts were very light and

*French measure.

that there was a large square area of soiled white on the abdomen and numerous gray spots on the head. The coloration of the female monk seal described by Cuvier (*l. c.*) approximates more closely to the specimen before us. The under surfaces of the former were yellowish light gray, while our specimen is of a yellowish number-brown color in the same region.

Much more important differences are found in the skull. In the *Ossemens fossiles* (vol. viii, 1836, p. 442-443), Cuvier gives a table of measurements of the head and other parts of the skeleton of a specimen of *M. albiventer*. Although Cuvier's specimen was larger than that under consideration, the differences are such as, in our opinion, could not be entirely due to disparity of age or difference of sex. The width of the zygomatic arch in the former is much the greater, being about three-fourths the length of the skull; in *M. tropicalis* its width is only three-fifths the same length. This character is shown also in the close approximation of the coronoid processes and condyles in *M. tropicalis*. While the length of the muzzle compared with that of the brain-case is practically equal in the two species, its width is considerably less in *M. tropicalis* than in *M. albiventer*. Both the measurements and figures of the latter species show that it has the forehead much more elevated, and consequently the anterior nasal opening more nearly vertical, than is the case in *M. tropicalis*. The foramen magnum would appear to be twice as large relatively in *M. tropicalis* as in *M. albiventer*. This character is perhaps of little value, on account of the great variability observable among different individuals.

A character which is apparently of great importance is the difference in the relative length of the molar series. In *M. tropicalis* the length of the molar series of each jaw is very nearly one-third that of the skull, while in the Mediterranean seal it is less than a fourth. The condyle of the mandible in *M. tropicalis* is noticeably low, being on a level with the alveolar border of the jaw. On account of this disposition of parts the lower edge of the occipital condyles is in the same plane with the lower margin of the mandible when the mouth is closed. There appears to be no approach to this arrangement of parts in any other earless seal.

It is stated both by F. Cuvier and by Keyserling and Blasius (*Fauna Deutschland*, 1857, p. 245) that in *M. albiventer* the first upper molar is the smallest of the series. In *M. tropicalis* this tooth is considerably larger than the fifth.

Cuvier has figured the skull of *M. albiventer* with a prominent supra-orbital tubercle, a process which is entirely rudimentary in our specimen of *M. tropicalis*.

In our opinion the differences pointed out are quite sufficient to warrant the separation specifically of the subtropical seals of the Eastern and Western Atlantic. It is decidedly probable that fresh specimens of equal size and age from the two regions would show dif-

ferences of external proportions which cannot be determined from the scanty material now at our command.

Specific diagnosis.

MONACHUS TROPICALIS, Gray.

Phoca tropicalis, Gray, Cat. Mam. Brit. Mus., pt. ii, Seals, 1850, p. 28.

Phoca Wilkianus, Gosse, Naturalist's Sojourn in Jamaica, 1857, p. 308, foot-note.

Monachus tropicalis, Gray, Cat. Seals and Whales Brit. Mus., 1866, p. 20.

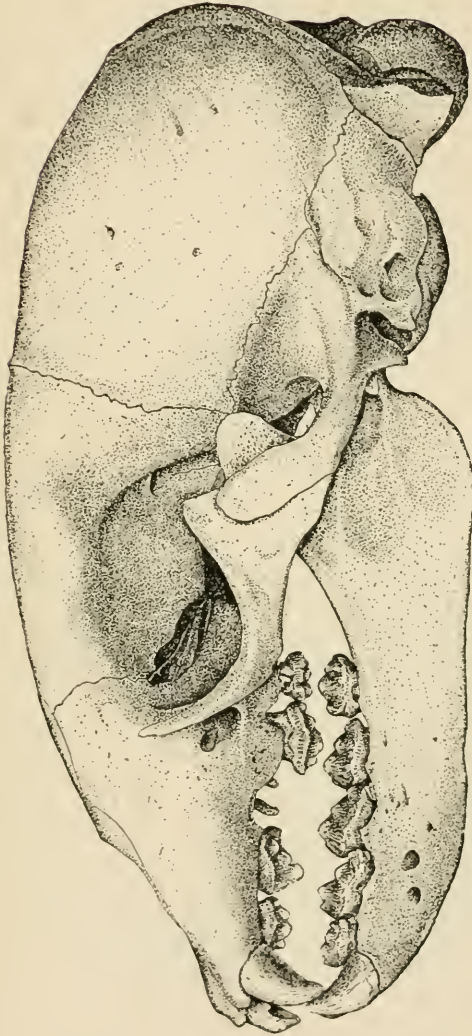
"*Monachus ? tropicalis*, Gray," Allen, Monogr. N. A. Pinnipeds, 1880, p. 708.

Color above umber-brown. Below slightly lighter and tinged with yellow. Flippers of the color of the back. Lips bordered with white. Soles and palms clothed with short hair.

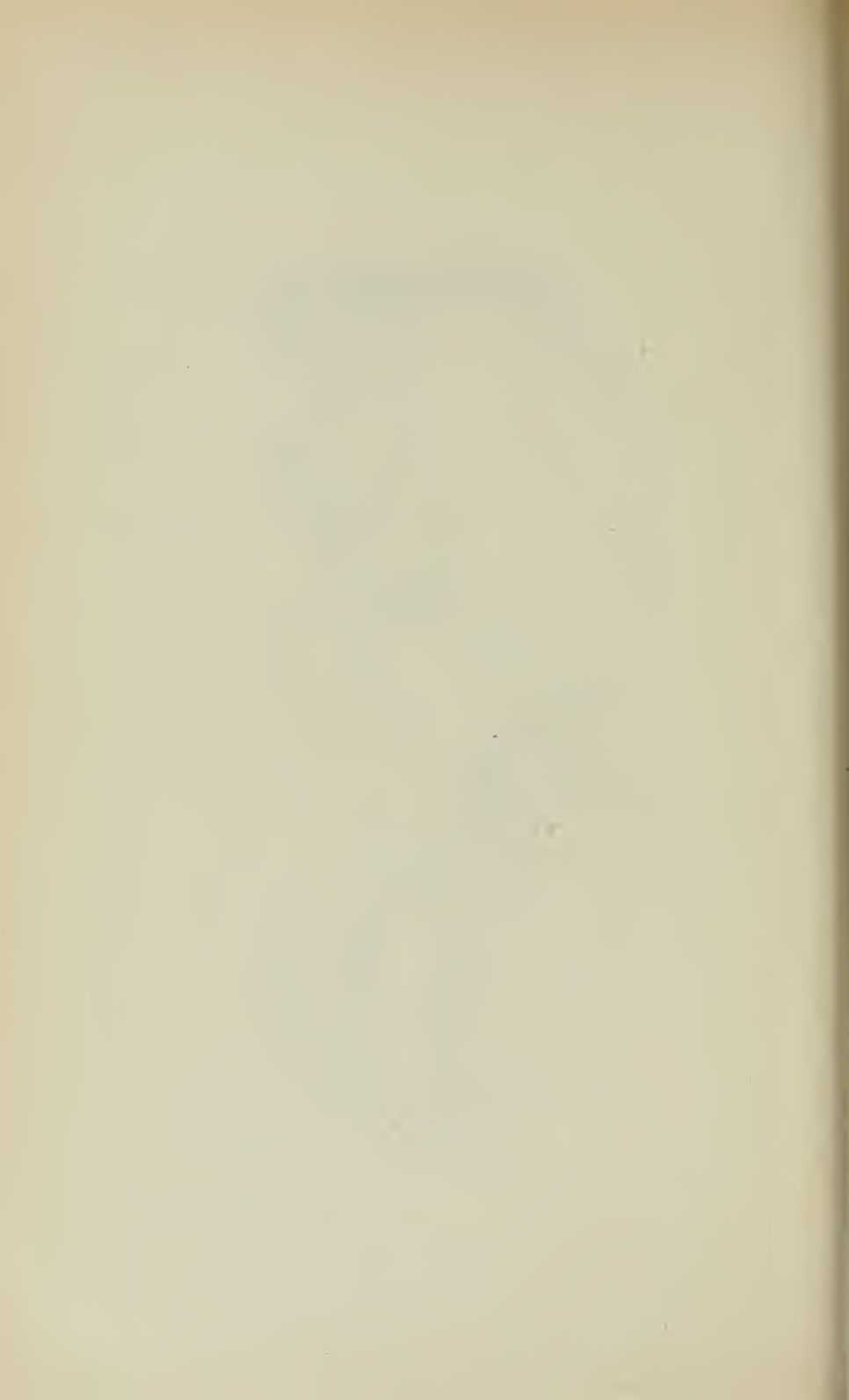
Skull.—Forehead depressed. Condyles of mandible on a level with the alveolar border of the jaw. Length of the molar series one-third that of the skull. Last upper molar smallest.

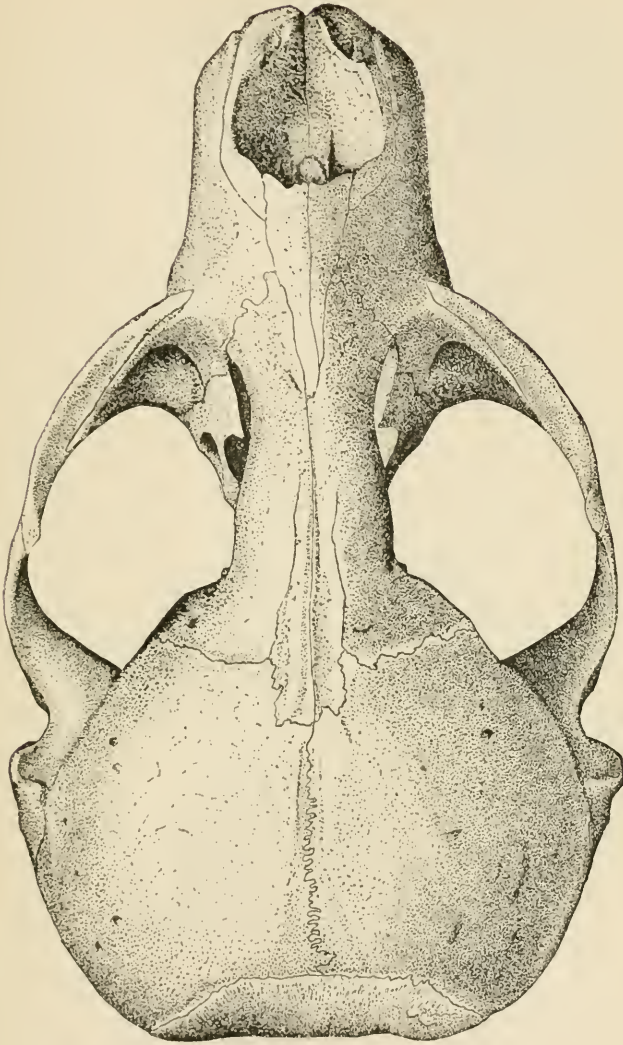
Measurements of the skulls of Monachus albiventer (from Cuvier, Oss. Foss., viii, 1836, 442) and Monachus tropicalis.

Measurements.	M. tropicalis.		M. albiventer.	
	mm.	100ths.	mm.	100ths.
Summit of occipital crest to anterior borders of premaxillaries . . .	193	100.0	282	100.0
Ditto to anterior extremity of nasals	152	78.9	219	77.7
Greatest breadth between zygomatic arches	122	63.1	215	76.2
Least breadth of interorbital ridge	25	13.1	32	11.3
Breadth of muzzle on a line with the incisors	45	23.6	78	27.7
Height from lower border of occipital condyles to summit of occipital crest	70	36.8	96	34.0
From the alveolar border of the maxillary to the anterior extremity of the frontals	45	23.6	91	32.3
Height of foramen magnum	27	14.4	23	8.2
Width of foramen magnum	33	17.0	27	9.6
Length of superior molar series	60	31.5	65	23.1
Distance between outer borders of last molars	63	32.8	84	29.8
Ditto of first molars	35	18.4	48	17.0
Total length of lower jaw	134	69.7	210	74.5
Angle of mandible to upper surface of condyle	27	14.4	63	22.3
Angle of mandible to extremity of coronoid process	45	26.3	102	36.3
Distance between outer borders of coronoid processes	89	46.0	161	57.1
Distance between external extremities of condyles	112	57.8	190	67.4
Length of the symphysis mandibuli	37	19.7	58	20.6
Length of the lower molar series	60	31.5	54	19.2
Distance between outer surface of canines	27	14.4	51	18.0



Skull of *Monachus tropicalis*, Gray. Lateral view. Two-thirds natural size.
(Drawn by F. A. Lucas.)

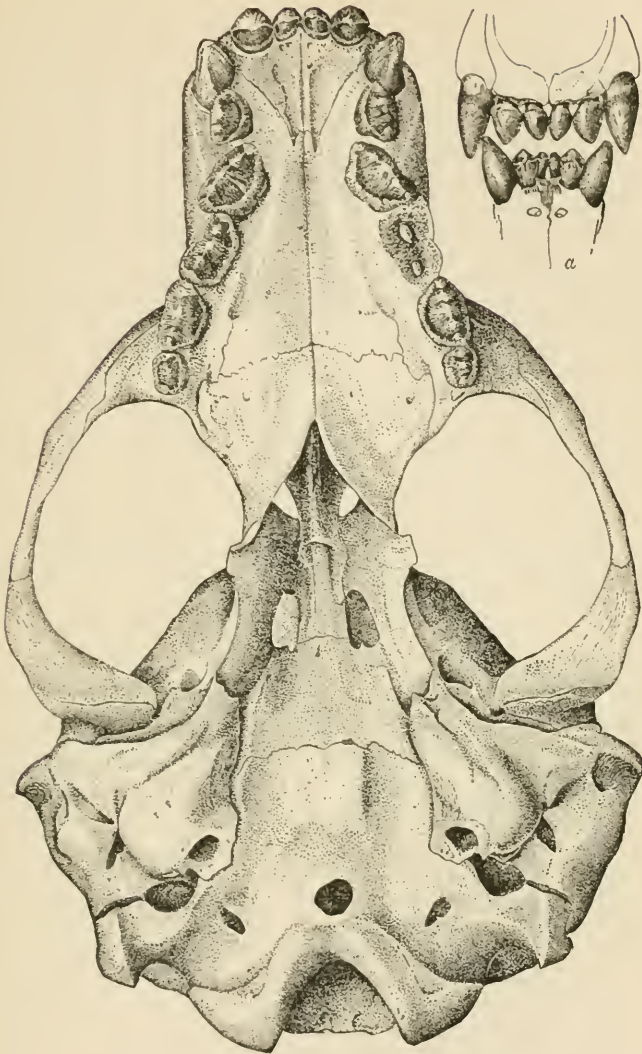




Skull of *Monachus tropicalis*, Gray. View from above. Two-thirds natural size.

(Drawn by F. A. Lucas.)





Skull of *Monachus tropicalis*, Gray. View from below. Two-thirds natural size.

a. Teeth, seen from in front.

(Drawn by F. A. Lucas.)