Notes on the skulls of two undescribed species of sea-lions (Otaria)

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To cite this article: Dr. J.E. Gray F.R.S. (1874) Notes on the skulls of two undescribed species of sea-lions (Otaria), Annals and Magazine of Natural History, 13:76, 325-326, DOI: [10.1080/00222937408680871](https://doi.org/10.1080/00222937408680871)

To link to this article: <http://dx.doi.org/10.1080/00222937408680871>

Published online: 13 Oct 2009.

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thought it important to make a fresh examination of admitted original specimens. Such a specimen, transmitted directly by Dawson, was placed at his disposal by Professors Schimper and Benecke, on the occasion of his visiting the museum at Strasburg. From his investigation of this specimen and of some received from Carpenter, the author confirmed, and showed in numerous drawings, the presence of a highly developed canal-system in many of the calcareous bands, especially the broader ones. The form and arrangement of these canals is often beautifully preserved, even though their interior is filled with a crystalline silicate. Here and there the structure has the greatest resemblance to that of the dentine of the teeth, which is also traversed by canals. But for many reasons there can be no question of dentine in this case. The application of stronger powers shows that in the finer structure of the canals there is so great an agreement with that of *Polytrema* among the living *Acervulinæ*, that, weighing all the other conditions of structure which come into consideration, there can be no serious doubt as to the foraminiferous nature of *Eozoon canadense*.—*From a report of the Meeting of the Niederrheinische Gesellschaft für Natur- und Heilkunde at Bonn, July 7, 1873, in the 'Kölnen Zeitung,' August 14, 1873.*

Notes on the Skulls of two undescribed Species of Sea-lions (Otaria).
By Dr. J. E. GRAY, F.R.S. &c.

The British Museum has a series of fourteen skulls of the common sea-lion, from the largest size (16 inches long) to that of the pups, and of both sexes.

They are all characterized by their short, broad lower jaws, the space between the under part of the two sides being bowed out, and the lower margin, from the gonyx to the angle of the jaw, being of the same length as the space between the two jaws at the angle.

The lower jaws are swollen on the sides and broad in front. The scar of the temporal muscle on the hinder part of the lower jaw is broad, rounded in front. There are specimens in the Museum from various parts of South America, as Peru, Chili, the Falkland Islands, and the Coast of Patagonia.

The skulls of the young and of some of the older ones have the sixth upper grinder behind the back edge of the front of the zygomatic arch; but in the skulls of the aged animals the zygoma is dilated, and the tooth comes to be partially or entirely before the hinder edge of the zygoma, sometimes differing on the two sides of the same skull.

In the British Museum there are two skulls of adult animals which differ in having the lower jaws straight, not bowed on the side, and elongate, the lower margin from the angle to the gonyx being considerably longer than the space between the two sides of the jaw at the angle, and the front of the lower jaw flattened on the sides, and the scar of the temporal muscle is elongate, narrow in front. I propose to name them

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Otaria minor. The Smaller Sea-lion.

Skull of an adult male $11\frac{1}{2}$ inches long, and $6\frac{1}{2}$ inches wide at the condyles; the nose dilated in front; the palate very deep, wide, broad in front, contracted behind, with the lateral processes rather contracted, the sixth upper grinder behind the edge of the front of the zygomatic arch; the lower jaw $8\frac{1}{2}$ inches long, wide and strong, contracted and flat on the sides in front, and with an elongated scar behind left by the temporal muscle.

Hab. Unknown. Received from Mr. E. Cross, 1854.

This skull may be the same as *Otaria Godeffroyi*, Peters, described and figured from a specimen in the museum at Hamburg, which is about the same size; but the lower jaw is not of the same shape as the lower jaw of the skull in the Museum, the scar of the large temporal muscle is broad and rounded at the end, as in the jaws of the common sea-lion, and the sixth upper grinder is before the back edge of the front of the zygoma; so that I am inclined to think that the Hamburg skull belongs to a small species allied to, or is a small variety of, the common sea-lion (*Otaria jubata*).

Otaria pygmæa. The Pigmy Sea-lion.

The skull of an adult (female) $9\frac{1}{4}$ inches long, and $5\frac{1}{4}$ broad at the condyles.

The palate is very narrow, deep, scarcely wider behind; the sixth upper grinder is behind the hinder edge of the front of the zygomatic arch. The lower jaw is comparatively slender, $6\frac{1}{2}$ inches long, compressed and flat in front.

Hab. Unknown. The specimen was received from the Zoological Society in 1858.

This skull is partly broken behind, and wants all the grinders and the greater part of the cutting-teeth. The canines are comparatively small, which makes me think that it belongs to a female; indeed I might regard it as the female belonging to the same species as the skull before described, but for the peculiar form and narrowness of the palate.

The palates of the two sexes of the common sea-lion are of the same form, though they become deep with age and those of the males more contracted behind; so that they give no authority for believing that the palates of the two sexes of an allied species are so different.

The Succession of Life in North America. By EDWARD D. COPE.

The United States east of the Missouri river and the plains have been free from changes of level for a much longer period than that portion which lies to the west of such an imaginary line. It was alternately dry and submerged during a long period in the infancy of geological time, but became finally so established as to permit of no further descent of level, or, at most, of slight ones only. The last stages of this process of creation were witnessed at the close of the Carboniferous period, when the elevations of land were widespread, inclosing tracts of water within bars or in depressions.