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Theodore Gill

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## THE SPERM WHALES, GIANT AND PYGMY.

BY THEODORE GILL, M.D., PH.D.

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Vastness of size is so generally, and it may almost be conceded, so naturally associated in the popular idea with the whales, that some may scarcely be able to realize at first the fact that there are species no larger than ordinary porpoises; and yet which agree so closely in all the more essential elements of structure with some of the whales, that it is impossible, in a natural system, to separate them far from their gigantic relatives. We say *some* of the whales, for it is to be observed that the animals which are designated popularly as whales do not form a natural group, as contradistinguished from other animals. As popularly applied, the word whale is a designation used in common for all the gigantic cetaceans, whether they be toothless and furnished with whalebone, as are the right-whales, or whether they be toothed, as are the sperm-whales, or cachalots.\*

The pygmies, to which we have alluded above, would not answer, then, to the popular conception. But, indeed, there are no characters which are coördinated with size, and which would enable one to give a definition other than relative to size. We have to enter upon a more profound examination before being able to ascertain the relations of the various members of the cetacean order. It is only by taking into account the sum total of characters, internal as well as external, that we are at length enabled to arrive at a correct appreciation of the true affinities of animals, and this inductive mode of study, applied to the cetaceans, teaches us that

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\* It should be added, however, that "whale" seems to be used by some whalers as a quasi-generic term for the cetaceans (see Cheever, "The Whale and his Captors," pp. 96, 97), and is also applied by other persons to some of the larger *Delphinidae*, such as *Beluga* (the white whale), *Orca* (the killer whale), *Globiocephalus* (the caing whale), etc.

in the order are two great groups, which, we may at once add, are suborders; and that these groups are distinguished from each other by numerous characteristics: the most apparent of these are, in one group, (the MYSTICETE,) the development of whalebone on the roof of the mouth, and the entire want of teeth,\* — they being reabsorbed into the gums before birth,—the development of an olfactory organ, and of nasal bones free at their distal ends; and in the other group, (the DENTICETI,) the absence of the whalebone, and the development of teeth after birth generally persistent in one or both jaws during life, but in some forms more or less early deciduous; the olfactory organ is atrophied, and the nasal bones are appressed to the frontals and overlapped by the vomer.

It is not in one alone of these groups that we find associated together, in a natural morphological combination, giants and dwarfs, although only in one do we find the contrast in the present age of our globe. It is the family of *Physeteridae* (the sperm-whales) which furnishes us with the contrast in living forms; only giants are now living to represent the *Balenidae* (the right-whales), and *Balenopteridae* (the fin-back whales), but in the miocene age, a species of a fin-back whale lived that when adult was not even as large as the *new born young* of the fin-backs now living.† It is, however, only with the pygmy sperm-whales, equally small or even smaller, compared with their gigantic relatives,‡ that we will now concern ourselves. And we will commence our study with the enquiry as to what are the essential characters of the family to which they belong. Our task is ren-

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\*Teeth are present, however, in the fœtus, but are not functionally developed.

† See Cope in Proceedings of the Academy of Natural Sciences of Philadelphia.

‡ Beale, a trustworthy observer, has recorded the capture in the "Japan Fishery" of a male cachalot eighty-four feet long; J. D. Bennett has remarked "that the largest size authentically recorded of the sperm-whale is seventy-six feet in length, by thirty-eight in girth; but whalers are well contented to consider sixty feet the average of the largest examples they commonly obtain." Professor Flower, after a critical study, concluded that the length might be about sixty feet, and "ventures to question whether the cachalot frequently, if ever, exceeds that length, *when measured in a straight line.*" The adult *Kogia* attain a length of from seven to eleven feet.

dered easy by the recent publication of a very elaborate monograph "On the Osteology of the Cachalot or Sperm-whale (*Physeter macrocephalus*)," by Professor Flower of the Royal College of Surgeons of England, and a full description and illustrations of a pygmy whale, by Professor Owen, who has been the first to clearly elucidate the details of structure of a member of the group of small species.

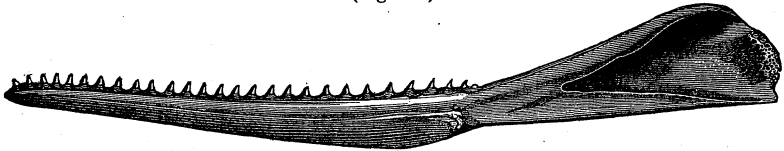
1. *Families of Toothed Cetaceans.* There are four families of toothed cetaceans: the *Physeterids*, or sperm-whales; the *Ziphiids*, nearly allied to the former, but in some respects approaching nearer to the *Delphinids*; the *Platanistids*, containing mostly fresh-water forms; and, finally, the *Delphinids*, containing by far the largest number of genera and species, and embracing the dolphins (not the fishes of that name), the porpoises, etc. It is on a comparison between the members of all those families that the following characters are shown to be peculiar, either absolutely or in combination, to the *Physeteridæ*.

2. *Common Character of Sperm-whales.* The form is variable, the head being either disproportionately large and blunt in front, with a subterminal blower, as in the giant whales, or conical, as in the dwarfs; the snout, however, always projects forwards, and the mouth is inferior. The cervical vertebræ in whole, or the atlas excepted, are ankylosed together. The hinder ribs lose their heads, and are only connected by their tubercles with the transverse processes of the vertebræ. The costal cartilages which connect the ribs with the sternum retain more or less of their original cartilaginous condition. The skull has the bones raised so as to form a more or less elevated retrorsely convex crest behind the anterior nares. The supraoccipital (*so*) and parietals combined extend forwards on the sides, and present a convex border projecting forwards high above the temporal fossa, and forwards beyond the vertex. The frontal (*f*) bones have an extended lateral surface deflected downwards and produced upwards, exposing to view

a triangular or *retrorsely* falciform wedge between the maxillaries and supraoccipital. The left nasal bone (*n*) is atrophied; the right hypertrophied and twisted to the left side. The jugal (*j*) is well developed and projects downwards or backwards. The orbit is small or of moderate size. The pterygoid (*pt*) bones are thick, produced forwards and entering largely into the bony roof of the mouth over and behind the palatine (*pal*) bones, not contiguous at the middle, with low ridges on the oral surface diverging more or less backwards and outwards, and with sides not involuted so as to form the outer wall of the postpalatine air-sinus. The lower jaw has a more or less elongated symphysis. Teeth are functionally developed only or chiefly in the lower jaw. The pectoral limb is small.

3. *Deductions.* Such are the characters possessed by all the members of the family. It will be observed that all but

(Fig. 164.)



Lower Jaw of *Physeter macrocephalus*, from Flower.

one of them which are truly distinctive are derived from the internal organization, and as some persons may complain of this and ask why external characters have not been employed, it may be added that there *are no* distinctive external features, except the inferiority of the mouth, and that only owes its importance to its coördination with others. It cannot be too often repeated that our judgment respecting the relations of animals is only reliable when based on the most complete and comprehensive examination of the entire structure, external as well as internal, and that one of the first elements of a natural classification is that the characters used shall be at least expressive of the sum of all the common characters.

In order now to exhibit the relative importance of the characters and their subordination, it may simply be stated that the chief, or at least most salient peculiarities in the form and relation of the bones are those exhibited by the supraoccipital in combination with the parietals, and also those presented by the frontals. In these respects, the sperm-whales stand alone among the cetaceans, while the Ziphiids, to which they are most nearly allied, and with which they agree in the costal cartilages, the form of the pterygoids, etc., resemble the Delphinids in the development of those bones.

4. *Differences among Physeterids.* Having now pretty carefully passed in review the common characters of the Physeterids, we may now enter on an examination of the subdivisions which are indicated by a similar course of study. After a detailed investigation of all known forms it is found that they may readily be grouped into two divisions which are separated from each other by many striking peculiarities. One of these is represented by the large species; the other by small ones; for the former, has been retained by the best naturalists the Linnæan name *Physeter*; for the latter, was first proposed the Grayan name *Kogia*, a barbarous designation which has by some been superseded by *Euphysetes*. In order to exhibit at once the contrast between the two forms, and to facilitate comparison, we append the characters in parallel columns.

## PHYSETER.

Form massive, with the head very large, oblong in profile and truncated at the front; eyes very small, very low, and near the angle of the mouth; blow-hole anterior, and at or near the edge of the truncated snout.

Dorsal fin represented by a hump.

Cervical vertebræ differentiated into an atlas and a combination of the second to seventh ankylosed and fused together.

## KOGIA.

Form delphinoid, with the head conical, the snout being attenuated and projecting beyond the mouth; eyes moderate, nearer the forehead than the angle of the mouth; blow-hole at the forehead.

Dorsal fin falcate.

Cervical vertebræ all united by ankylosis.

Ribs about ten or eleven pairs in number.

Skull abruptly contracted into the attenuated rostrum, which equals or exceeds three times the length of the condylo-orbital line; above, semi-circular behind; with the rostral part oblong and acute conic.

Cerebral cavity declining downwards.

Occipito-sphenoid axis angular; the basioccipital portion very declivous or almost perpendicular, and the anterior part of sphenoid portion inclining upwards.

Basisphenoid (*bs*) and palatines (*pal*) not or scarcely visible from the side, being concealed from view by the exoccipitals and squamosals.

Frontal (*f*) with the exposed surface broadly triangular above between the supraoccipital and maxillaries; curved inwards behind the postorbital process; the process is very distinct.

Squamosal (*s*) with an external oblong triangular surface, and with a zygomatic process for articulation with the jugal; contributing little surface to the floor of the temporal fossa.

Jugals (*j*) inclined backwards, and articulated with zygomatic processes of the squamosals.

Nasal (*n*) bone flat, smooth.

Ribs about thirteen or fourteen pairs in number.

Skull gradually sloping into the rostrum, which is shorter than the condylo-orbital line; above, reniform behind; with the rostrum obtusely conic.

Cerebral cavity inclining upwards.

Occipito-sphenoid axis continuous upwards from the thickened horizontal floor in front of the foramen magnum.

Basisphenoid and palatines curved downwards and outwards, and largely exposed to view from the sides.

Frontal with the exposed surface retrorsely curved above; with an angulated margin above the temporal cavity.

Squamosal with a small, external surface, but a large incurved surface, forming the largest portion of the periphery of the temporal fossa.

Jugals inclined downwards and remote from the squamosals.

Nasal bone with a thickened sigmoidally sinuous ridge continued from the nasal septum to the vertex, and with a less defined branch extending from its posterior part forwards on the right intermaxillary.

Maxillaries (*m*) continuous, the contour being simply interrupted by the anteorbital notch; the anterior portion very long, high, wide, and carinate at its proximal half; the posterior portion simply declivous on the frontals.

Maxillaries differentiated into two portions by the deep anteorbital notch; the anterior short, low, narrow, and ecarinate; the posterior portion with a thickened external contour.

Intermaxillaries (*i*) very elongate, nearly contiguous anteriorly, and projecting forwards considerably beyond the maxillaries.

Intermaxillaries very short, diverging forwards on account of the development of the vomer; not or little extending beyond the maxillaries.

Lower jaw with the symphysis nearly co-equal with the alveolar region, and more than half the length of the rami.\*

Lower jaw with the symphysis little more than half as long as the alveolar region, and less than a third the length of the rami.

5. *Deductions Respecting the Relative Value of Differences.* Thus have we in considerable detail contrasted the respective peculiarities of the two groups of *Physeterids*. We have gone into such detail, as it is only in that way that we can appreciate the great difference between the two. The question now arises, what is the value of those groups? Are they simply genera? or are they entitled to higher rank?

On account of the limited number of species, and the close relationship of the several members of the respective groups, we are compelled to judge somewhat by analogy, and comparison with allied families. As the result of such comparisons, especially among the representatives of the families *Ziphiids* and *Delphinids*, it is believed that the value of several characters above given is of more than generic value, the difference appearing to be very much greater than exists between genera in either of those families, and it is there-

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\* Our readers residing in Boston and its suburbs can verify the characters of *Physeter* by a visit to the Museum of Comparative Zoology, at Cambridge, belonging to which establishment are the skull and parts of the skeleton of an individual obtained, we believe, on the coast of New Jersey,

It may be remarked here that some fossil remains from the Miocene of the Eastern United States have been referred to the *Physeteridae*, with the names *Orycterocetus cornutidens* Leidy, *O. crocodilinus* Cope, and *Ontocetus Emmonsii* Leidy; and some from the Pliocene, as *Physeter antiquus* Leidy.



fore proposed to designate the genera *Physeter* and *Kogia* as representatives of two sub-families of PHYSETERIDÆ, to be respectively designated as PHYSETERINÆ and KOGIINÆ. If we are called upon to make a distinction between sub-family and generic characters, it is believed that the most important are the form of the head (a difference of greater moment than analagous ones among the Delphinidæ) and position of the blow-holes, the form and direction of the cerebral cavity and coördinate modification of its enclosing bones; the direction of the occipito-sphenoid axis, and the form and relations of the jugal and zygomatic processes of the squamosal bones.

And lest some may entertain a suspicion that some of the differences above enumerated may be the result of vegetative growth (or bulk) in *Physeter*, it is proper to add that the young of that form essentially resembles the adult, and that the characters enumerated are as applicable to the one as to the other. Nor are the characteristics of *Kogia* the expressions of arrested development; they are special modifications, and the form itself is quite as specialized a type as is *Physeter* itself. Both forms, so far as known, have equally lost the evidences of the nature of their common progenitor, and it is impossible to decide, from present facts, which is the most divergent from the common stock. If we were to be guided by consideration of size, *Kogia* would seem to be the most divergent, the typical *Physeterids* and related *Ziphiids* being all large animals, but such hint would probably be illusive *per se*, although really perhaps near the truth.

6. *Subdivisions of the Family.* While the first subdivision of the family into two subfamilies based on tangible and reliable data, is that presented in this article, a binary division had been previously proposed by Dr. J. E. Gray, in the "Additions and Corrections" of his "Catalogue of Seals and Whales in the British Museum," published in 1866; therein (p. 386), he subdivides the family as follows:

I. *Head compressed, truncated in front. Blowers in front of the upper part of the head. Skull elongate. Dorsal hump rounded. Pectoral fin short, truncated. Catodontina.*

1. CATODON. The atlas oblong, transverse, nearly twice as broad as high; the central canal subtrigonal, narrow below.

2. MEGANEURON. The atlas subcircular, rather broader than high; the central canal circular, in the middle of the body, widened above.

II. *Head depressed, rounded in front. Blowers at the back of the forehead. Mouth small, inferior. Dorsal fin compressed, falcate. Pectoral elongate, falcate. Physeterina.*

3. PHYSETER. Head large, elongate, rather depressed in front.

4. KOGIA. Head moderate, blunt and high in front. Skull short and broad. The septum that divides the crown of the skull very sinuous, folded so as to form a funnel-shaped concavity.

5. EUPHYSETES. Head moderate, blunt and high in front. Skull short and broad. The septum that divides the crown of the skull simple, longitudinal, only slightly curved."

No animal has ever been seen in recent times in which the alleged characters of frontal blow-hole and falciform dorsal have been found associated with the structural characters and size of *Physeter*, and as Dr. Gray himself remarks, "there is not a bone, nor even a fragment of a bone, nor any part that can be proved to have belonged to a specimen of this gigantic animal, to be seen in any museum in Europe." Commenting on this, Flower adds that "if the Linnæan genus *Physeter* is to be kept in abeyance until the discovery of Sibbald's *Balæna macrocephala tripinna* [the only basis for the so-called *Physeter tursio*], it is to be feared that it may ultimately disappear altogether from zoological literature." Heartily concurring in this view, and coinciding with the most judicious cetologists that the Sibbaldian animal was simply distinguished on account of a misapprehension as to its relations, and that it was, as Eschricht has observed,\* an old cachalot with worn teeth, the name *Physeter* is retained for it as that proposed by the founder of zoological taxonomy. In this case the name *Physeterinae* of course must be connected with the same form. The factitious genus

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\*Dr. Gray has, from some misunderstanding, remarked that "Eschricht seems to believe that Sibbald described a Killer or *Orca gladiator*, under the above name."

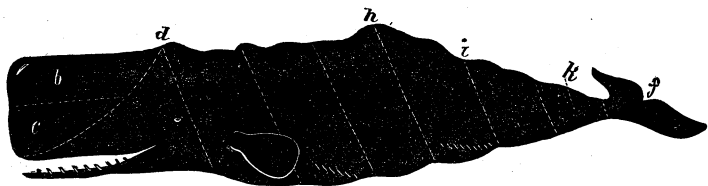
*Physeter* being eliminated, none but the small sperm-whales are left in the Grayan tribe *Physeterina*, and they form a natural group for which the name *Kogiinae* has been above proposed; while the apparently most essential characters have been first attributed to it.

The genera *Catodon* and *Meganeuron*, distinguished, so far as known, solely by differences in the osseous development of the cervical vertebræ, may better be conjoined provisionally under the single generic name *Physeter*.

The diagnoses of *Kogia* and *Euphysetes* do not appear to be the expressions of actual differences.

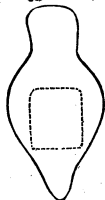
7. *The Species of Physeterins.* The sperm whales, or Cachalots, according to Flower, "unlike the right-whales, are

Fig. 165.\*

*Physeter.*

essentially inhabitants of the tropical and warmer parts of the temperate seas, and pass freely from one hemisphere into another." They have been observed in every sea, wandering northward in the Pacific to the Straits of Bering; in the Atlantic, straggling northward, at least as far as the coasts of Britain and the North Sea; and in the southern hemisphere, they have been found rounding the capes, and passing from one ocean to the other. "Between the North Atlantic and the Australian seas there is no barrier interposed to animals of such great powers of locomotion."

Fig. 166.†



\* Fig. 163. Outline of the Cachalot, copied from Beale's "Natural History of the Sperm-whale," 1839, p. 23; b, the situation of the case; c, the junk; d, the bunch of the neck; e, the hump; f, the ridge; g, the small; h, the tail or flukes. Between the oblique dotted lines are the spiral strips, or blanket pieces; the area.

† Fig. 166. Head seen from the front; the lines forming the square are intended to represent the flat anterior part of the head.

As may be supposed, animals from places so widely distant have furnished the bases for different specific names, and after various fluctuations of opinion, in the last general completed work on the cetaceans—that by Dr. Gray already referred to—three authenticated and four doubtful species of true *Physeterinae* are admitted, exclusive of the nominal *Physeter tursio*. The three considered established by him are *Catodon macrocephalus*, *Catodon australis*, and *Meganeuron Krefftii*; the four “species wanting further confirmation” are the Pacific sperm-whale (*Catodon Colneti* Gray), the South African sperm-whale (*Catodon macrocephalus* A. Smith), the Indian sperm-whale (*Catodon macrocephalus* Blyth), and the South Sea sperm-whale (*Physeter polycyphus* Quoy and Gaimard).

Professor Flower, after an elaborate comparison of skeletons of *Physeter* from the British waters and from the Tasmanian seas (the home of *P. australis*), arrived at the conclusion that the apparent differences of *P. australis*, compared with *P. macrocephalus*, were the characters of immaturity or the result of error in the identification of parts, and “putting aside these distinctive characters as valueless, there is not one other presenting any approach to a specific distinction pointed out throughout the whole memoir by Wall,” and he himself has been unable to find any specific differences between the Northern Atlantic and Southern Pacific forms; he, however, is careful to remark that he does not “deny the possibility of their being specifically distinct,” and very appropriately adds that “similarity of osteological characters does not prove unity of species.” But until such can be defined, specific names would only mislead.

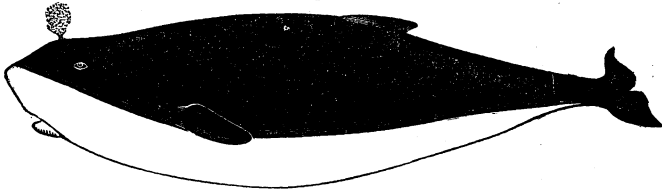
As to the “species wanting farther confirmation,” it is sufficient that Dr. Gray ranks them in that category.

One other name only needs notice, the *Meganeuron Krefftii* Gray, founded on cervical vertebræ; the atlas certainly differs considerably from those of the *Physeter macrocephalus* hitherto made known. Mr. Krefft, however, who

transmitted them to Dr. Gray, finally regarded the "mass of vertebræ as belonging to *Catodon australis*." Until the acquirement of further data, the relations of the form will be doubtful.

8. *The Species of Kogiins.* Representatives of the sub-family have been obtained at the Cape of Good Hope, near Sidney (Australia), and from the coast of the Madras Presidency, and respectively attributed to four species. To the localities already distinguished, we may now add Lower California, from which the lower jaw of a specimen, as well as a figure and notice of the animal, have recently been forwarded by Colonel Grayson. It would therefore appear probable that the group is quite generally distributed in the

Fig. 167.



*Kogia Floweri*, adapted from a colored figure by Col. Grayson.

Pacific Ocean, and probably in the South Atlantic. The four forms previously distinguished as species have been referred by Dr. Gray, as already indicated, to two genera, *Kogia* and *Euphysetes*; the latter name having been restricted to the form on which it was primitively based, while the three others have been referred to *Kogia*. As above remarked, the pertinence of the new diagnosis of *Euphysetes* to its type is not apparent, and is at variance with the original description as well as figure of the species. Of the species mentioned, the Indian form is by far the best known, thanks to Sir Walter Elliot, the collector, and Professor Owen, the describer; two Australian forms have been specifically distinguished by Mr. Krefft, after an examination of the skeletons of both; the species of the Cape of Good Hope is only known from a skull, and the Californian species

only from the lower jaw and the accompanying figure; but those combined will be sufficient to readily distinguish the last species from its congeners, although we must await with impatience the collection of better material, and we may be allowed to hope that this article may incite our Californian friends to seek for and procure specimens.

Our present knowledge of the species of this sub-family seems to indicate that there are two well-marked divisions, one of which is represented by the species (*Physeter breviceps* Bl.), on which the genus *Kogia* was originally based by Dr. Gray, and to which the *Euphysetes Grayi* Wall, the *Euphysetes Macleayi* Krefft, and the Mazatlan individual also belong; and the other division is represented by the *Euphysetes simus* Owen. These are very decidedly distinguished by the difference in the form of the lower jaw, and the form as well as development of the teeth.

In all the typical *Kogiæ*, the lower jaw, for each ramus, has a more or less truncated oar-shaped posterior margin, and from its upper and lower angles, the respective margins converge, describing nearly straight or little convex outlines, to the alveolar area, the lower margin ascending upwards to the symphysis, where the rami are parallel or nearly so, and which there project downwards into a longitudinally convex carina. There are from thirteen to fifteen teeth in each ramus; they are very long, much curved, and acutely pointed.

In *Euphysetes simus* "each ramus has a convex, almost semicircular posterior margin, curving upward and backward from below where the angle normally exists in other mammals, and then forward to the seat of the coronoid process [etc.]. In the alveolar groove are partially excavated sockets for nine teeth [etc.]; the teeth are small, straight, conical, obtuse, not exceeding eight lines in length, of which the cylindrical base has a diameter of two lines, that of the crown a diameter of one and one-half lines, with a length of two and one-half lines, diminishing to a sub-recurved apex"

(Owen, l. c., p. 41). A pair of teeth are also developed near the front of the upper jaw. With these mandibular and dental characters seem also to be coördinated a less developed dorsal fin, comparatively longer temporal fossæ, the deep fissure limiting the front part of the supraorbital ridge; the more deflected jugals, and the more rounded lateral ridges of the hinder portions of the maxillaries. As it is certain that a generic name will sooner or later be desired for the form so distinguished, it may be called on account of the symmetrically rounded lower jaw *Callignathus*. The known species are as follows:

1. *KOGIA BREVICEPS* Gray ex Blainv. Habitat, Cape of Good Hope.
2. *KOGIA GRAYI* Gray ex Wall. Habitat, Australia, near Sydney.
3. *KOGIA MACLEAYI* Gray ex Krefft. Habitat, Australia, near Sydney.
4. *KOGIA FLOWERI* Gill. The form is robust; the dorsal very low, "posterior to which is a sharp ridge as if belonging to the fin, extending towards the tail;" the color black or blackish above, whitish or yellowish-white below, and upwards and forwards, including the end of the snout.

The lower jaw at its symphysis below is very compressed, has concave sides, and its greatest depth is at about the posterior third of the symphysis; the dentigerous area extends backwards nearly to the anterior point of the deltoid sinus of the inner wall of the dental canal, and is much incurved: behind the area, the margin is nearly straight and horizontal.

The teeth are very long and slender, very much curved outwards and backwards, and acutely pointed; there are about fourteen or fifteen in number on each side.

The animal on whose jaw and portrait the species has been based, was obtained a short distance from Mazatlan, in 1868, and measured nine feet in length; its blubber yielded seventy-five pounds of oil. No details as to its mode of capture were sent by Colonel Grayson, but it was remarked that "it is said to be a strange fish in those waters."

5. *CALLIGNATHUS SIMUS*. Habitat, India, coast of Vigigapataw, Madras Presidency.

9. *On the Nomenclature of Kogia.* A few words concerning the nomenclature of the genus seem to be demanded.

Dr. J. E. Gray, perceiving certain discrepancies between the figure and descriptive notice by Blainville of a skull from the Cape of Good Hope, referred by the latter author to the genus *Physeter*, and named *P. breviceps*, conferred

upon it in 1846 the barbarous generic name *Kogia*, with the following diagnosis :

"Head moderate, broad, triangular. Lower jaw wide beneath, slender, united by a short symphysis in front. Jaw-bone\* of the skull broad, triangular, as broad as long."

In 1854, Mr. W. S. Wall, † in a "History and Description of the Skeleton of a New Sperm-whale [etc.]", described in addition a new pygmy species, to which he gave the name *Euphysetes Grayi*, evidently inclining to the opinion that it would prove to be congeneric with *Kogia breviceps*, but on account of the inapplicability of Gray's generic diagnosis, refusing to identify it with that form; he "regretted that a barbarous and unmeaning name like *Kogia* should have been admitted into the nomenclature of so classical a group as the cetacea."

The name *Kogia* has also been repudiated, and *Euphysetes* adopted by Professor Owen, who has acknowledged the generic identity of the species on which they were respectively based; in reference to it, that profound naturalist has remarked that he has "that confidence in the common sense and good judgment of [his] fellow countrymen and labourers in philosophical zoology which leads [him] to anticipate a tacit burial and oblivion of the barbarous and undefined generic names with which the fair edifice begun by Linnæus has been defaced."‡

Dr. Gray, defending his name, has observed that "Mr. MacLeay objects to the barbarous name of *Kogia*;" and the learned doctor of philosophy, with charming naïvete, adds: "I have been asked, what does *Euphysetes* mean? should it

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\* Lest this character might be inexplicable, it is proper to state the author meant the rostral portion of the skull.

† The work quoted has been lately attributed to Mr. W. S. MacLeay, but as Mr. Wall has assumed the responsibility of authorship with the evident consent of Mr. MacLeay, there seems to be no good reason for accepting *ex parte* evidence in the case, or even for inquiring into the relations of the parties with regard to the contribution of scientific knowledge and literary skill; in this opinion, I simply concur with Professor Flower.

‡ Owen, Mon. Brit. Foss. Cetacea Red Crag, No. 1, 1870, p. 27; (Ray Society).



not have been written *Euphycetes*, with a *c*?" The suggestion of Dr. Gray's questioner can scarcely fail to elicit a smile at the ignorance displayed in the question, or perhaps a laugh at the execrably complicated pun that may have been intended, and which appealed to evidently unappreciative ears. The name is a *literal* rendition of the Greek (*Ev*, augmentative, and *Φορητής*, blower), and, as explained by the framer, simply means "*a good or easy blower*."

Notwithstanding, however, the objections to the name *Kogia*, we adopt it, as Professor Flower has also done, because of its priority, while we recognize the justness of the criticisms upon it. But if we were to pursue the course recommended in repudiation of it, hosts of generally admitted generic names would have to be superseded, among which would be most of those of the author of the name in question. Linné himself furnished a precedent for the adoption of names other than those derived from the classical languages, although *he* admitted such with cautiousness and a due regard for sense and euphony. Analogous names, proposed though they may be without like reserve, must in the judgment of the great majority of systematists be retained, lasting monuments to the discredit of their authors, and an opprobrium to zoology.

#### EXPLANATION TO CUTS.

168. Skull of *Callignathus simus*, seen from the side.  
 169. " " " " " above.  
 170. " " " " " below.  
 171. " " " " " longitudinally bisected.  
 172. Lower Jaw of *Kogia Floweri*; the dotted lines indicate the approximate form of the hinder portion of the ramus.  
 173. Skull of adult *Physeter macrocephalus*, seen from the side.  
 174. " " " " " above.  
 175. " " " " " below.  
 176. " " " " " longitudinally bisected, to show the relative size and the form of the cranial cavity.

*bo*, basioccipital; *eo*, exoccipital; *so*, supraoccipital; *p*, parietal?; *s*, squamosal; *f*, frontal; *pl*, palatine; *j*, jugal; *sh*, stylohyoid; *bh*, basihyoid; *th*, thyrohyoid.

NOTE.—All the figures of the ten illustrations of Cachalot (*Physeter macrocephalus*) are copied from Professor Flower's monograph "On the Osteology of the Cachalot or Sperm-whale (*Physeter macrocephalus*)," in Trans. Zool. Soc., London, Vol. vi, pp. 309-372, 1868, and those of *Callignathus simus*, from Professor Owen's memoir "On some Indian Cetacea collected by Walter Elliot, Esq.," in Trans. Zool. Soc., London, Vol. vi, pp. 87-116, 1866. The lower jaw of *Kogia Floweri* is from nature.

Fig. 172.

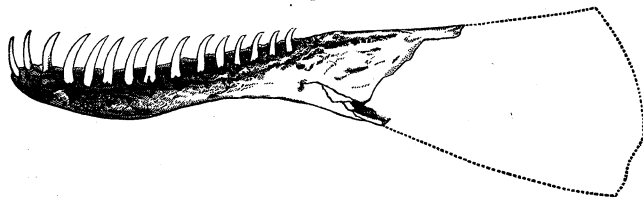


Fig. 169.

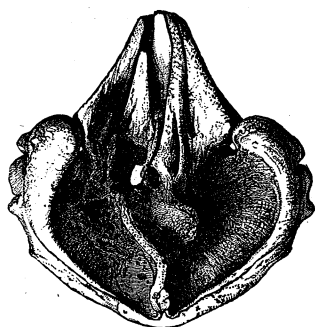


Fig. 171.

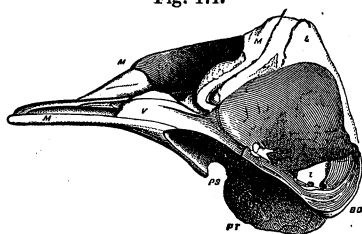


Fig. 170.

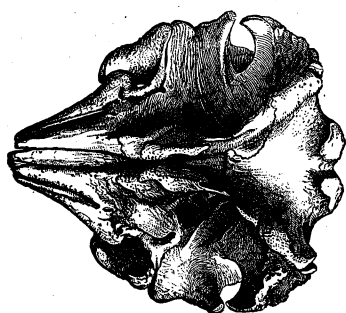
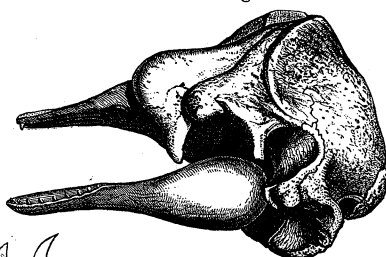


Fig. 168.



**Fig. 174.**



**Fig. 173.**

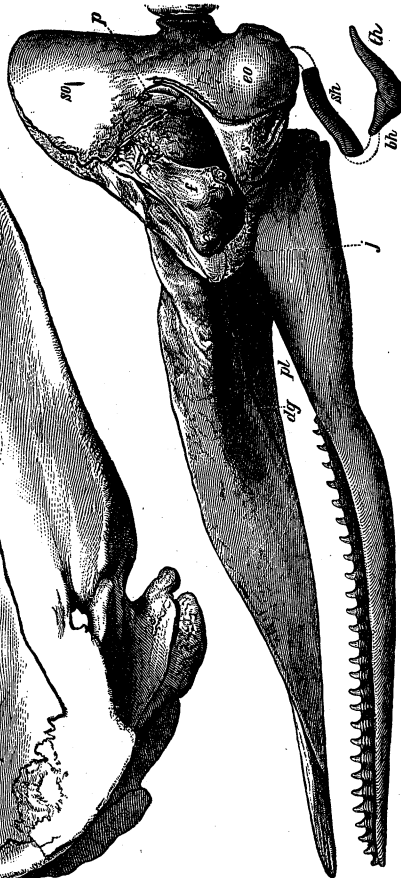


Fig. 176.

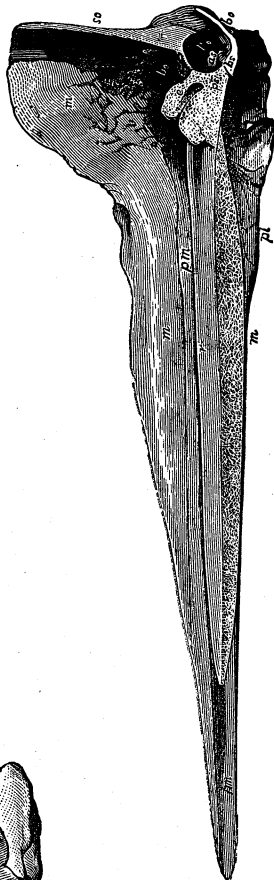


Fig. 175.

