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XXXIX.—On the fin- whale called “Steypireyðr” by the Icelanders (*Balænoptera Sibbaldii*, Gray)

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Amphicentrum, sp. indet.

Three nearly perfect specimens have been found, and numerous mandibles exhibiting tuberculated plates.

Pleuracanthus levissimus, Ag.

Several fine, interesting spines, in a good state of preservation, have occurred.

Orthacanthus cylindricus, Ag.

Numerous large well-preserved specimens of this fish-spine have been obtained.

Ctenacanthus hybodioides, Ag.

Five specimens have occurred, in a nearly perfect state of preservation; one specimen is eight inches long.

Leptacanthus, sp. indet.

A spine or two, apparently belonging to this genus, have occurred at Newsham.

Cladodus mirabilis, Ag.

Numerous specimens of the teeth, frequently associated with patches of dermal granules, have been found in several distant localities.

Pleuroodus Rankini, Ag.

Numerous specimens of the teeth have occurred.

Pœcilodus, sp. indet.

Numerous specimens belonging to this genus have been found.

Petalodus, sp. indet.

Several teeth have been procured from the Low-main shale. Gosforth, Oct. 7, 1868.

XXXIX.—On the Fin-Whale called "Steypireyðr" by the Icelanders (*Balænoptera Sibbaldii*, Gray). By J. REINHARDT*.

SINCE the time when (some twenty years ago) Eschricht's researches on the northern whales had given an impulse to a more accurate study of these gigantic animals, a considerable number of different fin-whales have been stated to inhabit the seas of northern Europe. Hitherto, however, it is chiefly through the differences in their osteology that zoologists have

* Translated from 'Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjöbenhavn' for 1867, Nos. 8-11.

succeeded in distinguishing these species. About the exterior of the living animal very little is known in most cases, nay, absolutely nothing as far as certain species are concerned. Even the colour of the different species, though so much more easily distinguished and represented than the variations in the external conformation of such huge animals, is still far from being known with the accuracy that might be desired. It is even still undecided to what extent characters can be drawn from the colour of these cetaceans, and at present zoologists seem inclined to consider great differences in this respect to be of little or no importance. This may be shown by a few instances. Thus, when of late years the gigantic fin-whale found near Ostend, and described in the pamphlets and papers of Dubar, Van Breda, and Van der Linden, was considered (and no doubt justly) specifically distinct from *Balenoptera laticeps*, Gray, and called by some *Balenoptera gigas*, by others *Sibbaldius borealis*, the great difference in size seems to have been the principal motive for doing so; and a few years ago a learned cetologist thought himself obliged to grant that the two species just mentioned may still prove identical, without having thought it necessary in settling this question to pay any regard to the difference in their colour. Further, there has apparently been no hesitation in referring fin-whales so differently coloured as the black-and-white male observed in 1841 by Schlegel, and the two more or less grey males described by Companyo and Eschricht, to one and the same species, *Physalus antiquorum*, Gray.

Under these circumstances it happens rather fortunately that the attempts made during the last two years to establish a regular fishery of fin-whales and humpbacks in the sea round Iceland have provided us with some means of answering this question and of forming a tolerably well-grounded idea of the extent of the variations of colour in one species at least; for Mr. S. Hallas, surgeon to the whaler 'Thomas Roys,' has from his cruise of last summer (1867) brought home with him descriptions and measurements of several specimens of that fin-whale which his ship had most frequently fallen in with, viz. the one which the Icelanders call "Steypireyðr;" and his statements have a particular interest, as they furnish us with some useful information about a species hitherto only imperfectly known.

From Mr. Hallas's notes on the different individuals which he had the opportunity of examining closely, it appears that the "Steypireyðr" is a very dark-coloured whale. The upper parts have a blackish-grey colour, in which somewhat lighter stains or specks are sometimes found; down the sides the

colour becomes a little lighter, and that part of the belly which is behind the furrows is uniformly grey; in the anterior plaited region the ridges are blackish grey, but the furrows between them light grey. The caudal fin is blackish grey on both sides, in some individuals also marked with lighter spots in the dark ground-colour. Finally, the distribution of the colours on the pectoral fins is very characteristic: their external surface is blackish grey, sometimes spotted with somewhat lighter specks; the inside, on the contrary, is perfectly milk-white, forming a contrast the more striking, as no other part of the body is of this colour; only just at the base of the fin the white colour changes into a greyish white. Mr. Hallas also found in most individuals some small white linear spots irregularly scattered about the belly; they vary in number and are most probably, as he conjectures, only scars. Leaving these out of consideration, the distribution of the colours is evidently very constant in this species of fin-whale. The only variations which seem to occur are the grey stains that sometimes appear in the darkest-coloured parts of the body, as also in a few cases somewhat darker spots may be found on the grey belly; but these variations are evidently far too small to have any essential effect on the general appearance of the whale. The whalebone seems always to be uniformly black.

Mr. Hallas's notes contain little more than the description of the colour and some measurements. But the latter show that the "*Steypireyðr*" is one of the largest of the fin-whales. The length of the largest of the six specimens measured is stated to have been 80 Danish feet; the smallest was as much as 70 feet; and though, no doubt, some few feet must be subtracted from each of these figures, Mr. Hallas having measured the distance between the tip of the beak and the notch in the tail not in a straight line, but along the curvature of the back, yet, on the other hand, none of these whales appear to have been quite full-grown, as the coalescence of the epiphyses with the bodies of the vertebræ, Mr. Hallas informs me, was not completed in any of them. It would also appear that the Icelanders are right in supposing that the form of the dorsal fin is a characteristic of this whale, though perhaps they do not give the peculiarities of the fin with perfect correctness when they say that one of the two kinds of *large* fin-whales distinguished by them has a shorter as well as a lower dorsal fin than the other; for the dorsal fin of the "*Steypireyðr*" seems not to be particularly short; but it is remarkably low, so that its height is contained three times and a half in its length. It was not, in any of the individuals in which it was measured by Mr. Hallas, more than 7 inches high. So incon-

siderable a height of this fin in such an exceedingly large whale is indeed surprising, and affords a useful mark of distinction between the "Steypireyðr" and certain other northern fin-whales, as will appear from the table below, showing the height of the dorsal fin in several of the latter :—

In <i>B. antiquorum</i> ,	♂,	40½'	measured by Schlegel (1841),	12''*
" "	♀,	37¼'	" "	(1826), 10¾''
" "	♂,	58'	" "	J. Murie (1859), 14½''
" "	♂,	40⅔'	" "	O. Sars (1865), 13''
<i>B. Duguidii</i> †,	♀,	c. 48'	" "	R. Heddle (1856), 20½''
<i>B. laticeps</i> ,	♀,	31'	" "	Rudolphi (1819), 16''
<i>B. rostrata</i> ,	♀,	25'	" "	Eschricht 14½''

But, on the other hand, there are also some species, and just those most resembling the "Steypireyðr" in colour, which have a similar low but elongated dorsal fin; and though perhaps, in some of these, differences may yet be found in the shape of the fin, they can scarcely be pointed out from the descriptions at hand. This uncommonly low dorsal fin is also placed unusually far backwards, viz. about the beginning of the last fourth of the body. The pectoral fins seem to present nothing very remarkable in their shape; and their length is contained from seven times and one-fifth to seven times and two-thirds in the total length (measured along the curvature of the back).

The information for which we are indebted to Mr. Hallas thus enables us to form an idea about the "Steypireyðr" satisfactory in certain respects; but, in the present state of our knowledge of the northern fin-whales, it is not sufficient to show quite clearly whether this animal may be referred to any of the earlier observed species or not. It is true that two fin-whales are recorded in cetological literature to which our thoughts will be immediately directed by the description given above, viz. the Greenlandic "Tunnolik," briefly described by Eschricht and H. P. C. Möller †, and usually considered identical with the Ostend Whale, and the species recently described by Malm under the name of *Balenoptera Carolinæ* §. But these two whales seem to resemble each other, and either of them, again, the "Steypireyðr" so much, as far as the colour is concerned, that, even if it were quite certain that the

* All the measurements of this table are in Danish feet and inches.

† I mention this whale here by the name under which it has been described, without expressing any opinion as to the validity of the species.

‡ K. D. Vidensk. Selsk. Skrifter, ser. 4. vol. xii. pp. 375–380.

§ Malm, A. W., Några Blad om Hvaldjur i allmänhet och *Balenoptera Carolinæ* i synnerhet. Göteborg, 1867. Monographie illustrée du Baleinoptère trouvé le 29 Oct. 1865 sur la côte occidentale de la Suède. Stockholm, 1867.

latter were really identical with one of them, it could hardly be said with which, as long as we had only the description communicated above to go by. To this it must be added that, in spite of the perfect resemblance as to colour, it can at most be probable, but far from certain, that the "Steypireyðr" is really identical with either of the above-mentioned whales, if two cetaceans can exist which, with a striking resemblance in colour, combine such essential differences in their osteology that they must not only be considered as different species, but must even be referred to different sections of the great genus *Balænoptera*,—one, the "Tunnolik," or Ostend whale, to the section of which Dr. J. E. Gray has made his genus *Sibbaldius**, the other, *Balænoptera Carolineæ*, to the genus *Physalus*. There

* In a recently published essay on two subfossil whales discovered in Sweden (Upsala, 1867), my excellent friend Prof. Lilljeborg has established a new genus (*Flowerius*) for the Ostend Whale. Among the characteristics, however, pointed out, the one taken from the position of the dorsal fin is not very well chosen; for when, in the generic character, he writes of the place of this fin as "somewhat in front of the posterior fifth of the entire body's length," this statement may indeed be tolerably correct (provided the measurements given are accurate) as far as the "Tunnolik" stranded at Godhavn (the identity of which with the Ostend whale is by no means proved) is concerned; but it cannot be applied to the specimen which is considered the type of the genus. Nor do I believe that it can be regarded as a certain characteristic, that the atlas "has the lateral processes above the middle and of a conical form," while these processes are "compressed and situated in about the middle of the sides" in *Sibbaldius*. As detailed descriptions of the atlas of the Ostend whale do not exist, and as Lilljeborg has not seen the bone himself, he can only have taken this character from Dubar's figure of the vertebra in his 'Ostéographie' of the said whale; but these figures are too rough to be trusted in this way, more especially as, in the figure of the atlas, the transverse processes are not even represented alike on both sides. Perhaps the left one may arise in the way stated by Lilljeborg; but the right one seems to arise as in *Sibbaldius*, and I do not see how it may safely be inferred from the drawing whether they are conical or compressed. Finally, it is scarcely correct, in the generic diagnosis, to indicate as a character for *Flowerius* that only the second cervical vertebra has annular transverse processes: Dubar, indeed, says so; but it has escaped Lilljeborg that it is stated expressly by Van der Linden, whose essay on the Ostend whale was published later than Dubar's, and is evidently a more trustworthy work, that the third cervical vertebra is provided with annular transverse processes as well as the second. Thus the differences between the genera *Flowerius* and *Sibbaldius* are not even so great as imagined by Lilljeborg, though, if they were, they would not, in my opinion, be sufficient to justify the establishment of a new genus. But, however this may be, there is no need of the name *Flowerius*; for Gray has already, in his 'Catalogue of Seals and Whales in the British Museum' (published in 1866) subdivided his genus *Sibbaldius* into two sections, which he does not, indeed, call genera, but of which the one constituted for *Sibbaldius laticeps* has a special name, *Rudolphius*. If accordingly the genus *Sibbaldius* must be broken up into two, I suppose *Rudolphius* must be adopted for the genus in which the *S. laticeps* is to

might possibly be a third similar species; but even then it would not be certain that the Icelandic whale is a new species; for there is a fin-whale (the *Balænoptera Sibbaldii*, Gray) different from the Ostend whale, and which Malm supposes to be also different from the species described by him, of the *external* characters of which we know nothing, and it is possible that the "Steypireyðr" may be this very species.

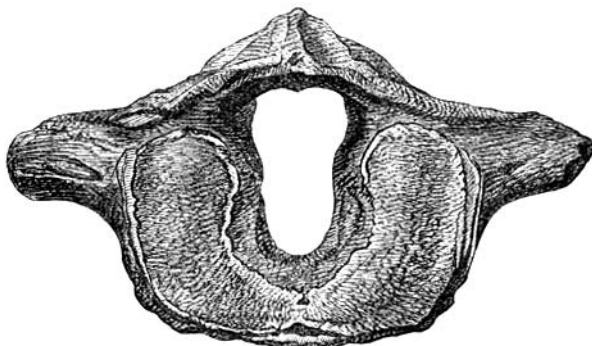
Fortunately, however, we know more than the mere external characters of the "Steypireyðr"; for Mr. Hallas has presented the Zoological Museum of Copenhagen with the hyoid bone and the first cervical vertebra of a male "Steypireyðr" nearly 74 Danish feet long; the Museum has, further, purchased of the Danish Fishing Company the skull of the same individual, wanting only the lower jaw; finally, we have from a third source received trustworthy information about the number of the ribs and the vertebræ: and thus we are in possession of most of the data required to clear away that uncertainty and doubt which could not be removed while we had only the description of the colour and the measurements.

have its place, and the name *Sibbaldius* must be retained for that one the type of which is the Ostend whale.

But, as I before said, these two genera seem to me to be rather superfluous; indeed I should prefer to consider even the best-characterized of the various genera of fin-whales that have been proposed of late only as sections of the genus *Balænoptera* (*Pterobalæna*, Eschr.). Cetologists have gradually gone so far as to make a genus of every well-founded species of fin-whale in our northern seas. Accordingly the generic characters coincide to a great extent with the specific ones; and it is hardly to be expected that those characters the presence of one of which seems now to imply the presence of the other, will also prove to be always connected with each other when we obtain a more accurate knowledge of the fin-whales of the other great seas. In some cases generic characters have also been taken from parts of the organization the value of which as such are at least very doubtful. I mention, as an instance, that one of the generic characters for the genus *Physalus* is taken from the sternum, though, from the observations now before us, it would only seem possible to infer that the shape of this bone varies so much in different individuals belonging to this genus, that it is even doubtful whether it can furnish us with certain specific characters. Even the character taken from the shape of the first rib (whether it is double-headed or not) cannot perhaps in all cases be so thoroughly depended upon as is usually supposed; and it would not be amiss to recall the fact that Eschricht pointed out, more than twenty years ago, that he had found a slight indication of a bifurcation in the upper end of the first rib of a whale which he and, more recently, my distinguished friend Mr. W. H. Flower without any hesitation have referred to *Balænoptera antiquorum*, viz. the whale stranded at Katwijk aan Zee in December 1841, and that he also found the first rib on the left side of an *Orca*-skeleton from Greenland perfectly distinctly forked. Thus the modern genera can hardly be said to be well founded as yet; and as the fin-whales hitherto known are not so numerous that there is any fear of losing a general view of them when they are kept together, there seems at present to be no practical necessity for them.

If we first examine the atlas, it will appear, from the figure given below (fig. 1), that this vertebra presents all the characteristics peculiar to it in the *Physalus* section*, which Mr. Flower first pointed out. Thus the rather long transverse processes evidently enough arise from the upper half

Fig. 1.



Atlas, seen from behind, one-tenth of the natural size.

of the sides of the vertebra; they are somewhat compressed at their base from before backwards, somewhat tapering towards the end, and point straight outwards, except near the very end, which is bent a little forwards. Further, we find, on the posterior surface of the body of the vertebra, not two separate, but only one single, horseshoe-shaped articular surface for articulation with the axis; and, finally, the vertebra wants that median backward-directed triangular process which in the *Sibbaldius* section projects from the under surface of its body, and articulates with a special surface on the second vertebra. The most important dimensions of the vertebra are the following:—

Distance between the extremities of the transverse processes †	30'' 2'''
Greatest height of the vertebra	15'' 10'''
Height of the neural canal	8'' 4'''
Greatest width between the outer edges of the articular cavities for the occipital condyles	15'' 6'''
Greatest diameter of each of these articular cavities	11'' 9'''
Greatest breadth of the horseshoe-shaped articular surface for the axis	18'' 2'''

* Or to the genus *Physalus*, Gray, of 1864, not 1866.

† This measurement is not quite accurate, as the ends of both transverse processes are a little damaged; but the pieces broken off have probably not amounted to more than an inch on either side.

In the skull (see fig. 2) the characters distinguishing the
Fig. 2.

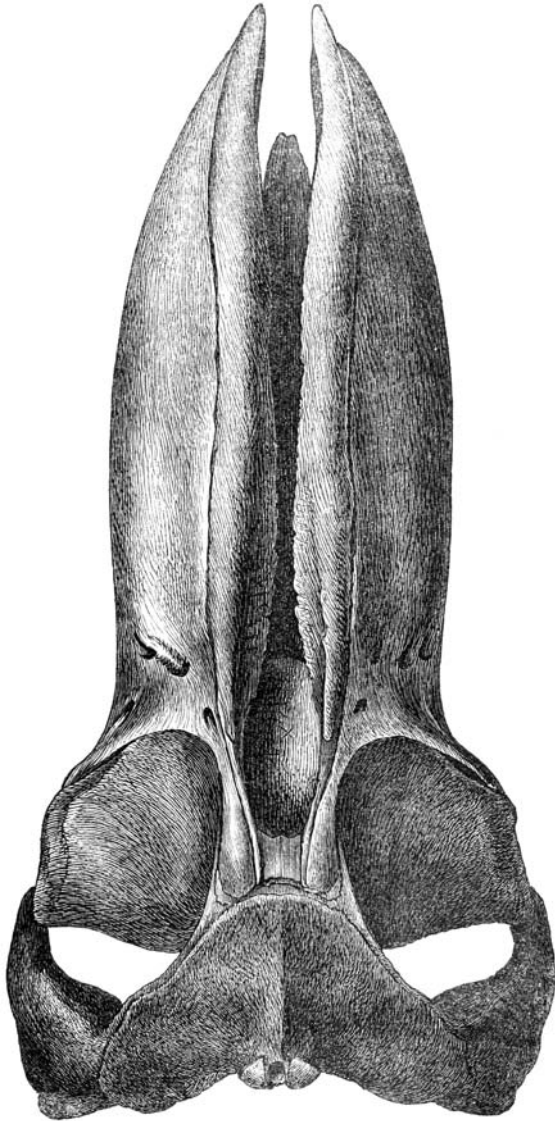
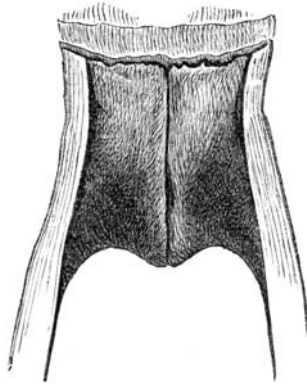


Figure of the Skull, one thirty-sixth of the natural size.
At \times a piece of the great cartilage which originally filled the whole
cavity of the vomer is still seen.

Physalus section are no less strikingly developed. Especially the orbital process of the frontal presents exactly the form peculiar to this section, being not only very short in the transverse direction of the head, but also nearly twice as broad near its base as along its external border, tapering therefore very much in an outward direction. The same is the case with the nasal bones, of which a figure nine times diminished is given beneath (fig. 3), though, indeed, in a point of minor importance they

Fig. 3.

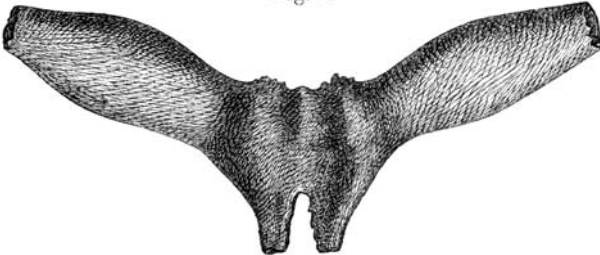


Nasals.

appear to deviate a little from those of *Balaenoptera antiquorum*, the only species of this section in which they have hitherto been described and figured with accuracy. They are rather short, and deeply hollowed on the anterior edge and anterior part of their superior surface, so that an obtuse ridge is formed along the middle line, projecting forwards in a roundish point, as in the species just mentioned; but at the same time there is less difference in their breadth before and behind than in the latter.

The hyoid, finally, indicates the same section, as will be seen

Fig. 4.



Hyoid.

from the figure representing this bone (fig. 4) seen from the concave upper surface, one-eighteenth of the natural size. Unfortunately the stylo-hyals, which sometimes seem to afford valuable specific characters, are wanting.

The results to which we are led by examining the skull, the atlas, and the hyoid are moreover corroborated by the information received from Capt. Bottemann about the number of the ribs and of the vertebræ; for this gentleman, who last summer (1867) was occupied at the fishing-establishment at Seidisfjord, on the east coast of Iceland, counted sixty-four vertebræ in the skeleton of a full-grown "Steypireyðr." He found, further, fifteen pairs of ribs in a foetus about 18 feet long, which he had an opportunity of examining more minutely on the 2nd of September, and of which he has been kind enough to send a sketch, accompanied with numerous measurements. Accordingly, though important diagnostic parts of the skeleton (viz. the lower jaw, the first rib, and the sternum) have not been examined, yet it may be considered certain that the "Steypireyðr" belongs to that section of fin-whales for which the *Balænoptera antiquorum* may be taken as the type, or, in other words, to the genus *Physalus*, Gray, 1864 (not 1866).

But it is equally certain that it is a species not less distinct from the typical one as to its osteology, and especially as to its skull, than we know it to be as to its external characters. When we compare one or another of the better figures of the skull of the type with that of the "Steypireyðr" (fig. 2), it will immediately be seen that the principal difference is that the beak (or, in other words, that part of the face which is situated before the orbital or zygomatic processes of the maxillaries) is much broader and much more obtuse in front in the "Steypireyðr" than in *Balænoptera antiquorum*, and that the outer borders of this part of the skull run almost parallel in their posterior half, and only begin to curve towards each other beyond this point. But this, on the other hand, is a diagnostic character of the skull of *Balænoptera Sibbaldii*.

An additional resemblance to the latter species is further presented in the orbital processes of the frontals, whose breadth at their base is considerably greater than their length in the transverse direction of the skull. A pervading resemblance to this species in almost all the proportions of the skull will easily be proved by the table below, giving the measurements of the skull of the "Steypireyðr" taken exactly as Mr. W. H. Flower measured the skull of *Balænoptera Sibbaldii* formerly belonging to Lidth de Jeude; in which, further, the corresponding measurements of that skull are

	<i>Steypireyðr.</i>	<i>B. Sibbalkii.</i>	<i>B. antiquorum.</i>
Length of the skull *	205	118	184
Breadth of the occipital condyles	17	15	12
Greatest breadth of the occipital bone	65	36	56
Greatest breadth of the skull (across the zygomatic processes of the temporals)	99 $\frac{3}{4}$	60	96
Distance from the occipital foramen to the anterior edge of the occipital	38 $\frac{1}{4}$	27	41
Length of the orbital process of the frontals (in the transverse direction of the skull)	31	19	32
Breadth of the orbital process at base	39 $\frac{3}{4}$	22	34
Breadth of the same along the upper surface of the outer end	20	13	18
Length of the nasals (along the median suture)	9 $\frac{1}{4}$	6 $\frac{1}{2}$	8 $\frac{1}{2}$
Breadth of both the nasal bones at the posterior end	7 $\frac{1}{2}$	5 $\frac{1}{4}$	6
Breadth of the same at the anterior end	9 $\frac{1}{2}$	6	9 $\frac{1}{4}$
Length of the beak	133 $\frac{3}{2}$	73	133
Length of the maxillaries	159	86	145
Projection of intermaxillaries beyond maxillaries	7 $\frac{3}{4}$	5	9
Breadth of the maxillaries at hinder end	19 $\frac{1}{2}$	15	17
Breadth of the same across the orbital process	88	—	—
Breadth of the same in the same place, following the curve	103 $\frac{1}{2}$	64	89
Breadth of each of the maxillaries in the same place	33 $\frac{1}{2}$	—	—
Breadth of the beak at its base	60 $\frac{1}{2}$	—	—
The same, the curve included	67	—	45
Breadth of the maxillary in the same place	18 $\frac{1}{2}$	—	—
The same, the curve included	20	13 $\frac{1}{4}$	13 $\frac{1}{2}$
Breadth of intermaxillary in the same place	9 $\frac{1}{2}$	3	6
Breadth of beak in the middle	61 $\frac{1}{2}$	—	—
The same, the curve included	64	32	33
Breadth of the maxillary in the same place	20	11	9 $\frac{1}{2}$
" " intermaxillary in the same place	9 $\frac{1}{2}$	4	5 $\frac{1}{2}$
" " beak at three-fourths of its length from the base	45 $\frac{3}{4}$	—	—
The same, the curve included	49	22	18 $\frac{1}{2}$
Breadth of maxillary in the same place	10	5 $\frac{1}{3}$	5
" intermaxillary in the same place	8 $\frac{3}{4}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$

* The measurements of the Icelandic cranium are given in Danish inches, but those of the other two in English inches. As the question is only about the relative dimensions, I have considered it unnecessary to transfer the English to Danish measurements. They are taken in a straight line when the contrary is not stated expressly.

added for comparison, and also the measurements of the skull of a large *Balænoptera antiquorum* in the zoological garden at Antwerp—both taken from a table communicated by the above-mentioned English cetologist in his valuable “Notes on the Skeletons of Whales”*. The little discrepancies which may be found in some few relative dimensions can hardly have any importance when we consider that the skull of whales changes considerably during growth, and that the Icelandic cranium is not very far from being twice as large as the one described by Flower.

To this almost perfect resemblance in the skull we must further add a correspondence in the colour of the baleen, which is uniformly black in the Icelandic whale, as is also that of the *Balænoptera Sibbaldii*, and, finally, according to the statement of Capt. Bottemann, a correspondence as to the number of the vertebræ, so much the more important as sixty-four vertebræ is the greatest number yet met with in any fin-whale †, and is only found in the above-mentioned species ‡. Accordingly I do not hesitate to refer the “Steypireyðr” of the Icelanders to *Balænoptera Sibbaldii*; and as we hitherto have only known the skeleton of half-grown specimens of this whale, the knowledge of it has been not a little promoted by the information now procured.

This result established, we have still to find out what the relation of this species is to the two other fin-whales, to which it bears such a striking resemblance in colour that it seems impossible to point out any essential difference, viz. the species recently described under the name of *Balænoptera Carolinæ*, and the “Tunnolik” of the Greenlanders, usually considered identical with the Ostend whale.

As to its relation to *Balænoptera Carolinæ*, I see, from a short notice in the English periodical the ‘Athenæum’ (1868, No. 2108, p. 427), that Mr. W. H. Flower, at the meeting of

* Proc. Zool. Soc. of London, Nov. 8, 1864, p. 411.

† In the essay of Eschricht and myself on the Greenland whale (in the K. D. Vid. Selsk. Skr. ser. 5. vol. v.) the number of the vertebræ in *B. antiquorum* (*B. musculus*), p. 549, is, by a misprint, stated to be 63; and the same error appears also in the English translation of the same essay in the “Recent Memoirs on the Cetacea,” edited by W. H. Flower for the Ray Society (p. 105). I consider it my duty to correct this error, so much the more as I perceive with regret that others have been led astray by it. The *Balænoptera antiquorum* has regularly only 61 vertebræ, and that is also the number found in the skeleton alluded to by Eschricht and myself in the treatise quoted above.

‡ One of the two skeletons on which this species has been founded is known to have sixteen pairs of ribs, the other fifteen. As Mr. Bottemann only found fifteen in the fetus dissected by him, it is probable, though by no means certain, that the latter number is the normal one.

the Zoological Society of London on the 12th of March, communicated some remarks on Mr. Malm's new species, suggesting that the latter would most probably prove identical with *Balenoptera Sibbaldii*. I think this supposition to be highly probable; and to the reasons for it (which, I suppose*, Flower has taken from resemblances of the skeletons) we must now also add the remarkable correspondence in colour, the peculiar low dorsal fin, and, finally, the backward position of this fin, just before the posterior fourth of the animal. Yet I must confess that I have not succeeded, by the assistance of Mr. Malm's description and measurements of the skull, in entirely convincing myself that the latter has the same broad beak by which the *B. Sibbaldii* is at once distinguished; and it is to be regretted that Malm has given no figure of the cranium that might assist his description, and which I am sure most zoologists, if they had been allowed to choose, would have much preferred to several of the illustrations (of rather doubtful scientific value) with which his work is so abundantly provided. Nor must it be overlooked that Malm, who has had an opportunity of comparing in detail his own whale with a skeleton of *B. antiquorum*, and who in general is very minute in pointing out the various more or less weighty reasons which have induced him to consider it a species different from the latter, does not make one word of allusion to any difference in the form of the cranium; and yet it would be thought that if the skull of his whale had resembled the illustration here given (fig. 2), such a peculiar form could not have quite escaped his attention. But we know, on the other hand, that even the two specimens of *Balenoptera Sibbaldii* on which the species is founded differ somewhat from each other as to the breadth of the beak, and it appears that in *Balenoptera antiquorum*, too, the breadth of this part varies in the different specimens†. Thus it may be that the diagnostic character afforded by the beak has not been so strongly developed in Malm's whale as in the Icelandic cranium, and so might the more easily have been left unnoticed; and though I have not ventured to suppress this little difficulty which may possibly still be found in Flower's view of the matter, yet his supposition is, after all, much more probable than that two species of fin-whales resembling each other so closely in most respects, and yet specifically distinct, should exist in the northern seas.

* I regret that I have not yet had an opportunity of becoming acquainted with Mr. Flower's paper itself.

† Mr. Flower states that in six crania of *Balenoptera antiquorum* the proportion of the breadth across the middle of the beak to the length of the skull was found to vary between 18 and 21 to 100. (See Proc. Zool. Soc. of London, 1865, p. 473.)

Now, as to the "Tunnolik" of the Greenlanders, it must be admitted that if this really is identical with the Ostend whale, as has hitherto been usually supposed, it must, no doubt, as science stands at present, be considered a species quite distinct from the "Steypireyðr" or *Balænoptera Sibbaldii*. But the question is, whether this supposition is true; and though with respect to this whale we are still limited to the very same materials that were formerly at Eschricht's disposal, yet they may be found sufficient to answer this question. What made Eschricht suppose that his "Tunnolik" might be the same species as the Ostend whale was the resemblance which he found between Dubar's figures of the pectoral fin of the latter and the fin which Mr. Möller sent him from Greenland*. Now this correspondence is so great, indeed, that at a time when only a single fin-whale with such a pectoral fin was known, he surely was justified in making such an inference and in disregarding the discrepancy that seemed to exist as to the place of the dorsal fin, and to explain it as caused only by a mistake in the measurement of one or other of these two whales, which had taken place under very unfavourable circumstances. But the matter appears in another light now that a pectoral fin, like that of the Ostend whale, characterized by the uncommonly elongated and slender form of the phalanges, is found also in the *Physalus* section.

The pectoral fin of the skeleton of *B. Sibbaldii* which originally belonged to Lidth de Jeude is stated by Flower to have four phalanges in the index, five in the third finger, five in the fourth, and three in the fifth; the fin of the skeleton at Hull agrees with this, except that the third finger has six phalanges†. It is, however, observed expressly by Flower, that, the phalanges of both skeletons being artificially articulated, we cannot be sure that they are arranged in their natural order of succession, or that they are all present; Eschricht found, indeed, when he examined the skeleton at Hull in 1846, seven phalanges in the third finger, or one more than Flower‡. Accordingly one phalanx seems to have been lost during the time that has elapsed since Eschricht had an opportunity of studying this skeleton. Thus it becomes very probable that the still smaller number of phalanges in

* See K. D. Vid. Selsk. Skr. ser. 4. vol. xii. (1846) pp. 379, 380, and ser. 5. vol. i. (1849) p. 138.

† Proc. Zool. Soc. London, 1864, p. 413, and 1865, p. 473. The metacarpal bones are not included in the number of the phalanges in these statements; and the same is the case in all the following statements where nothing is said to the contrary.

‡ K. D. Vid. Selsk. Skr. ser. 5. vol. i. p. 130.

the same finger, of the skeleton formerly belonging to Lidth de Jeude, is only a consequence of an injury; and the number of the phalanges of the four fingers in *Balenoptera Sibbaldii* may be stated to be either 4, 7, 5, 4 or (perhaps) 4, 7, 6, 4.

When, now, we compare with these the number of the phalanges in the pectoral fin of the "Tunnolik," I must first remark that the figure of the latter given by Eschricht is not quite correct; nor is his statement in the text of the number of the phalanges* perfectly accurate or quite in accordance either with the actual conditions or with the figure †. It is much to be regretted that this pectoral fin, which, at the time when Eschricht received it, was quite complete, has afterwards suffered some damage: the tips of the fourth and fifth fingers are lost, and there are now only four phalanges in the first, and two in the second, of these two fingers. It is therefore impossible to state exactly how great the error in Eschricht's figure really is; but there are certainly only four phalanges in the second finger (the index), and but six in the third; and though the fourth finger, as I have said, is incomplete now, and the original number of the phalanges cannot be stated, yet it may at any rate be positively inferred, from the form and length of the remaining part, that it was never so long as the third: therefore the woodcut in Eschricht's memoir is incorrect in representing it as being even a little longer than the latter; but what the cause of the mistake really is, whether the artist has drawn too many phalanges, or made the phalanges really existing too long, must be left undecided. The formula for the number of the phalanges in the hand of the "Tunnolik" will therefore be 4, 6, 6 (?), 3 (?); and as the woodcut cannot be thoroughly depended upon as to the comparative size of the single phalanges, I here add the measurements of the hand in Danish inches:—

	Length.	Breadth in the narrowest place.
Second finger—		
Metacarpal	$10\frac{1}{8}\ddagger$	$3\frac{2}{3}$
First phalanx	$10\frac{1}{2}$	$2\frac{1}{2}$
Second „	8	$1\frac{1}{2}$
Third „	$5\frac{2}{3}$	1
Fourth „	$3\frac{1}{4}$	$\frac{1}{2}$

* Besides the metacarpal bones, 5, 5, 6, 3.

† K. D. Vid. Selsk. Skr. ser. 4. vol. xii. p. 382.

‡ The measurements are only taken from the osseous phalanges; the cartilages between them are, as usual, not included.

TABLE (continued).

	Length.	Breadth in the narrowest place.
Third finger—		
Metacarpal	13	$3\frac{1}{2}$
First phalanx	11	$2\frac{2}{3}$
Second „	$7\frac{3}{4}$	$2\frac{1}{3}$
Third „	$5\frac{1}{2}$	$2\frac{1}{2}$
Fourth „	$3\frac{1}{2}$	$1\frac{1}{2}$
Fifth „	$5\frac{1}{4}$	$1\frac{1}{2}$
Sixth „	$3\frac{1}{2}$	$1\frac{5}{8}$
Fourth finger—		
Metacarpal	$9\frac{1}{2}$	$2\frac{3}{4}$
First phalanx	$8\frac{5}{8}$	2
Second „	7	$1\frac{1}{2}$
Third „	5	$1\frac{1}{8}$
Fourth „	$2\frac{1}{2}$	$1\frac{1}{4}$
Fifth „	?	?
Sixth „	?	?
Fifth finger—		
Metacarpal	$6\frac{1}{4}$	$2\frac{3}{4}$
First phalanx	6	$1\frac{1}{4}$
Second „	$3\frac{3}{4}$	$1\frac{1}{2}$
Third „	?	?

From these statements it appears that the hand of the “Tunnolik” may quite as well have belonged to a *B. Sibbaldi* as to *B. gigas*, for a single phalanx more or less in a finger is of no great importance in the whales; and if it be further considered that the colour of the “Tunnolik,” as described by Möller in the account sent to Eschricht, as well as the place occupied by the dorsal fin, according to his statement, seem to be much more characteristic of *Balenoptera Sibbaldi* (as we now know it) than of the Ostend whale, it will certainly be admitted that there are good reasons for referring the “Tunnolik” to the former, and not to the latter species. It must be allowed that the description given by Eschricht of the dorsal fin of his “Tunnolik,” according to which it should be only 4 inches high, and placed upon a thick knob (“Fodstykke,” base of the fin, as it is called by Eschricht), is not in accordance with what we know of this fin in *B. Sibbaldi*; but it agrees no better with that of the Ostend whale, nor, indeed, with the dorsal fin of any known fin-whale. To me this strange form appears rather to have been a monstrosity; and it is to be regretted that Eschricht has not accompanied

his description with a drawing, and that the fin itself which Möller had sent him has not been preserved.

If the result I think we have come to is correct, *Eschricht's* "Tunnolik," the "Steypireyðr" of the Icelanders, and, finally, the whale described by Malm are only one and the same species, which appears to be one of the most common in our northern seas, and the systematic name of which must be *Balenoptera Sibbaldii**. If, contrary to expectation, it should appear, after all, that *B. Carolinæ* is different, I do not think it possible, from the materials now available, to state with certainty whether the "Tunnolik" in that case must rather be referred to the one or to the other of these two species; but, as I have said, there is scarcely any fear that this question will be raised.

I have still to add some measurements taken by Capt. Bottemann, apparently with very great care, of the male fœtus of the "Steypireyðr" mentioned before in this notice. He has been kind enough to send these to the Museum at

* In his elaborate Monograph of the *Balenoptera Carolinæ*, p. xxi, Malm alludes to the possibility that his whale might be identical with *B. Sibbaldii*, remarking that, even if it were so (which, however, he denies), he could not use the name *Sibbaldii*, because "it has already been used by Neill in 1808 for another fin-whale, *Musculus Sibbaldii*, Neill." This, however, is a complete misunderstanding, which shows that Malm cannot have seen, much less read, Neill's paper on the whale stranded near the town of Alloa, but must have quoted at second hand from Eschricht's Schema A, in his sixth essay upon the Cetaceans (K. D. Vidensk. Selsk. Skrifter, ser. 5. vol. i. p. iii), or perhaps from the corresponding schema in the same author's 'Zoolog. Untersuchungen über die nordischen Wallthiere.' It is true that the whale was stranded in 1803; but Neill's paper was not read in the Wernerian Society till 1809, and not printed till 1811; and then, Neill does not give the Alloa whale any new name, but considers it to be the same species as that which was stranded in 1690 on Burntisland, and which Sibbald, in his 'Phalainologia Nova' (ed. 2, p. 69), thought to be identical with the *Musculus* of Pliny. Purposing to point out, in the schema mentioned above, the specific identity between the Alloa whale and Sibbald's "*Balæna tripinnis quæ rostrum acutum habet*," Eschricht has briefly expressed this in the words "*Musculus Sibbaldii*," or the whale denoted by Sibbald as "*Musculus*;" and this denomination was not understood by Malm. Of course it is not my intention to reproach Malm in the least for having been unable to examine the paper of Patrick Neill; but I think it would have been more correct to have stated expressly that his was a second-hand quotation. And even if Malm had never seen the notice in question, he would, by a more judicious use of the remaining zoological literature, have been saved from falling into the singular mistake that Neill had in 1808 established a fin-whale genus *Musculus* and a fin-whale species *Musculus Sibbaldii*.

Copenhagen; but unfortunately I am unable to state whether Danish or foreign measures have been employed.

	feet.	inch.
From the tip of the beak to the hindmost end of the blowers	3	0
" " " " the dorsal fin	12	10
" " " " notch of the tail	17	1
From the tip of the beak to a line supposed to be drawn between the points of the flukes of the tail	18	1½
From the notch in the tail to the anus	5	3
" " " " penis	6	5½
" " " " umbilical cord	7	5½
From the tip of the beak to the pectoral fin	5	0
" " " " eye	3	0½
" " " " ear-opening	4	1½
Length of the blowers	0	5½
Distance between the blowers behind	0	3½
" " " " in front	0	0¾
Length of the dorsal fin along the back	1	0
Height of the dorsal fin	0	4½
Length of the pectoral fin	2	9
Greatest breadth of the pectoral fin	0	9
Distance between the points of the flukes of the tail	3	3
Girth of the head in the middle between the eye and the ear-opening	7	2½
Girth of the body across the pectoral fins	7	0
" " " " at the umbilical cord	6	6
" " " " penis	5	5½
" " " " anus	4	7
" " " " just before the tail	2	2
Perpendicular diameter of the body at the pectoral fins . .	2	8
The same, at the umbilical cord	2	5
The same, at the anterior edge of the dorsal fin and anus	1	9¾
The same, at the posterior edge of the dorsal fin	1	7
The same, at the base of the tail	1	0
Number of furrows in the belly between the pectoral fins	66	
Ditto beneath the place where the ear-openings are found	82	

XL.—Notes on the *Lodoicea sechellarum*, Labill. By EDWARD PERCEVAL WRIGHT, M.D., F.L.S., Professor of Zoology, Trinity College, Dublin.

IN June 1867 I was invited, by Swinburn Ward, Esq., H.M. Civil Commissioner for the Seychelles Islands, to accompany him on a tour of inspection around the Island of Praslin. I was at that time engaged in exploring the forests of Mahé, the largest and most populous island of the group; but anxious to visit the native island of the well-known "Coco de mer," I at