œsophagus, instead of passing into the thorax directly in front of the vertebral column, are so to speak pushed away to the right side of the latter at the lower part of the neck, and at their entry into the thorax lie between the right side of the vertebral column and the right limb of the furculum. In every species of Penguin which I have had an opportunity of examining this arrangement holds good, although there seems to be no reason why the tubes in question should not pass into the thorax in contact with the left side of the column. The strongly-developed flexures of the neck in the Penguins are associated with the maintenance by these birds, when on land, of the characteristically erect attitude, and serve to bring the centre of gravity of the head and neck over the base of support formed by the feet. In the genera which include the smaller species (*Eudyptes* and *Spheniscus*) the cervical curves are more strongly developed than in those which include the larger (*Pygosceles* and *Aptenodytes*), but the arrangement is essentially the same in all.

Dorsal Vertebræ.

The dorsal vertebræ, understanding by this term all those which possess moveable ribs, are nine in number in every species which I have examined. The last dorsal vertebra is immovably fused by means of its body, arch, spinous, and transverse processes with the first lumbo-sacral vertebra.

The bodies of the dorsal vertebræ in *Eudyptes chrysocome* from Tristan d'Acunha are much compressed from side to side. The articular surfaces of the bodies of the first and second,[1] and the anterior articular surface of the body of the third dorsal vertebræ are saddle-shaped, and resemble the corresponding surfaces of the cervical vertebræ. The succeeding dorsal vertebræ differ from these inasmuch as they are opisthocœlous, the anterior surfaces of their bodies being rounded and globular, while their posterior surfaces are deeply concave, so that the convexity of any given vertebra is received into the concavity of the body of the vertebra next preceding. In this respect, as pointed out by Owen,[2] and Gervais and Alix,[3] this portion of the vertebral column of the Penguin bears a remarkable resemblance to that of many reptiles. The body of the last dorsal is immovably fused with that of the first lumbo-sacral vertebra. On either side of the body of each dorsal vertebra, close to the anterior extremity, is a facet for the reception of the head of a rib.

The lower surfaces of the bodies of all the dorsal vertebræ, with the exception of the first and ninth, are provided with well-developed hypapophyses. In the first and ninth these processes are absent. Those connected with the second, third, and fourth dorsal vertebræ have bifid extremities which afford additional surface of attachment to the

[1] According to Gervais and Alix (Ostéologie et Myologie des Manchots, p. 3), the body of the second dorsal vertebra differs from those of the cervical vertebræ in being opisthocœlous. Such is not the case in any of my specimens. Owen (Cyclopæd. of Anatomy, Art. "Aves," vol. i. p. 270) correctly remarks that the opisthocœlous character of the vertebræ shows itself for the first time in the third dorsal vertebra.

[2] Cyclopædia of Anatomy, Art. "Aves," vol. i. p. 270.

[3] *Loc. cit.*, p. 3.