

those above referred to in connection with the wing, appear to me to lie in the extraordinary development of the extensor muscles of the vertebral column—a development which is correlated to the exceptionally erect attitude maintained by the various members of the group while on *terra firma*. This erect attitude is assumed by these birds so soon as they leave the water, and is maintained not only when at rest but even during the act of progression. The spinal muscles are therefore developed to an extent unknown in other birds, in all of which, with the exception of the Spheniscidæ, the trunk of the body occupies a more or less horizontal position during progression, and the necessity of powerful extensor muscles to act on the vertebral column is correspondingly diminished.

#### IV.—ANGEIOLOGY.

##### THE HEART.

The heart (Pl. XI. fig. 1) occupies the middle line of the thorax, its apex being accommodated in a depression between the right and left lobes of the liver. From its base the trunk of the aorta passes off, and from the latter the right and left innominate arteries pass obliquely forwards and outwards, being placed symmetrically on either side of the middle line. To the outer side, and rather above the level of the innominate arteries, the corresponding *venæ cavæ superiores* pass backwards to the right auricular cavity. The right and left pulmonary vessels extend forwards from the base of the heart, while the inferior vena cava passes onwards from behind to join the right auricle. The heart, as usual, is enclosed in a special pouch of the general serous membrane which constitutes the pericardium.

The heart in *Eudyptes chrysocome* from Tristan d'Acunha measures  $2\frac{1}{4}$  inches in length, and 2 inches in breadth at the base. The organ is slightly bent upon itself, so that the apex instead of projecting directly backwards is directed backwards and to the right. The grooves which indicate the separation of the auricles from the ventricles, and of the auricles from one another, are clearly defined externally, but the inter-ventricular grooves are scarcely recognisable.

On opening the right auricular cavity (Pl. XI. fig. 2) the walls are seen to be almost smooth and devoid of special muscular bands, except at the orifice of the right superior vena cava, where there is a slight indication of their presence. The orifices of the three *venæ cavæ* occupy the usual positions. The valve in connection with these orifices consists of two segments, a right and a left, which come into contact in front of the orifice of the right superior vena cava, and behind that of the inferior vena cava. Consequently, both these orifices are guarded by the segments of the valve in question, one segment lying to the right and the other to the left of each. The left segment