The arrangement of the arteries of the anterior extremity of the Penguins is even more exceptional, and indeed, so far as I can ascertain, is altogether confined to members of the group of Spheniscidæ. The existence of retia mirabilia in various species of mammals is well known, and in birds they have been described in connection with the orbital and anterior tibial arteries. I cannot, however, ascertain that anything at all resembling the perfect arterial rete, above described in the Penguins, has hitherto been observed in any other bird. A venous rete has been described by Van der Kolk[1] in the wing of the Condor, but an alar arterial rete appears to occur in the wing of the different members of the group of Spheniscidæ, and in them alone. The occurrence of this arterial rete in birds which spend a large portion of their existence beneath the surface of the water, is of interest in connection with the occurrence of large retia in the truly aquatic mammalia, such as the Cetacea. In the Penguins, as in the Cetacea, the physiological *raison d'être* is far from apparent.

The characteristics of the group of the Spheniscidæ, so far as the arterial system is concerned, may be summed up shortly as follows:—*Firstly*, The possession of two common carotid arteries of equal size, symmetrically placed with reference to the middle line of the neck, and furnishing branches which are symmetrically distributed in the regions of the head and neck. *Secondly*, The entire absence or marked degeneration of the sciatic artery, and the substitution for it of a branch of the crural artery. *Thirdly*, The existence of an arterial rete mirabile in the region of the humerus and forearm.

## VENOUS SYSTEM.

### Pulmonary Veins.

Of these there are two—a right and a left. Each is formed by the junction of two branches, and passes transversely inwards above the corresponding innominate vein, to open close to its fellow into the cavity of the left auricle. The pulmonary veins are situated above (dorsad of) the other constituents of the root of the lung.

### Systemic Veins.

#### *The Jugular Veins.*

The jugular veins (Pl. XI. fig. 1) of the two sides are of equal size. Each is formed by the union of a number of branches in the region of the head. These branches may be divided into two sets—a superficial and a deep. The superficial branches are three in number.

[1] Annales des Sciences Naturelles, sér. iv., tom. v. p. 141, pl. iv.