

A SYSTEMATIC STUDY OF THE MAIN ARTERIES IN THE REGION OF THE HEART—AVES XIX

APODIFORMES, PART 1¹

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Recent studies on 39 species of Apodiformes, with respect to the arterial arrangement-pattern in the neck and thorax tend to substantiate the observations of Garrod (1873) on members of this order of birds. Garrod showed that while the left carotid alone persists as the chief cephalic supply in most of the Apodiformes a few species present the bicarotid condition commonly found in most orders of birds.

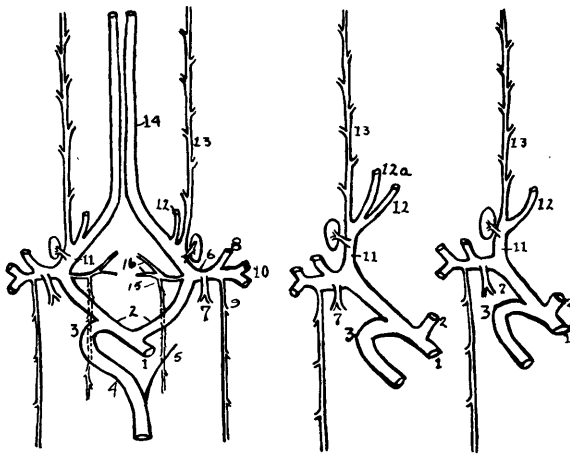


Fig. 1

Fig. 2

Fig. 3

FIGURES 1-3. Diagrammatic representation of the main arteries in the neck and thorax of: 1. *Nephocetes* and *Streptoprocne*. 2. Right side: *Aëronautes*. 3. Right side: *Apus*.

KEY TO ABBREVIATIONS

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| 1. aortic root | 10. pectoralis |
| 2. innominate artery | 11. common carotid |
| 3. right systemic arch | 12. vertebral |
| 4. right radix aortae | 12a. accessory vertebral |
| 5. ligamentum aortae | 13. superficial cervical (comes nervi vagi) |
| 6. subclavian artery | 14. internal carotid (trunk) |
| 7. coracoid or sterno-clavicular | 15. ductus shawi |
| 8. axillary | 16. tracheal. |
| 9. intercostal or internal mammary | |

In the Apodiformes, the coracoid or sterno-clavicular artery arises as the first branch of the subclavian which then gives rise to the pectoral branch as the subclavian continues as the axillary artery. The first branch of the pectoral stem is the intercostal or internal mammary artery. The common carotid then sends

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off a thyroid artery and further divides to form the superficial cervical (comes nervi vagi), vertebral, and carotid trunk artery. In most Apodiformes, the left carotid alone enters the hypapophysial canal. In one notable instance, the basal portion of the right internal carotid becomes modified as an accessory vertebral artery (fig. 2, 12a). In a few other species, especially of the Apodidae, the bicarotid condition persists in the adult. In the Trochilidae, two coracoid or sterno-clavicular arteries were found to arise from the face of the subclavian before the axillary artery passed anterolaterally to the wing. The ligamentum aortae is present, but unless otherwise noted, the ligamentum botalli is lacking.

APODIDAE:

Collocalia inexpectata bartschi Mearns: laevo-carotidinae.

Streptoprocne zonaris pallidifrons (Hartert): bicarotid.

Chaetura pelagica (Linnaeus): laevo-carotidinae; ascending oesophageal artery arises from common carotid after origin of vertebral on the right side.

Nephoecetes niger niger (Gmelin): bicarotid.

Apus andecolus andecolus (d'Orbigny & Lafresnaye): laevo-carotidinae.

Aëronautes saxatalis saxatalis (Woodhouse) 2 specimens: two right vertebral arteries; laevo-carotidinae.

Tachornis phoenicobia phoenicobia Gosse: laevo-carotidinae.

HEMIPROCINIDAE:

Hemiprocne comata major (Hartert): laevo-carotidinae.

TROCHILIDAE:

No major differences in arterial pattern are found in the species listed below. Only apparent differences due to reduction in size of the system and length of vessels may be noted, such "apparent" differences are not real differences and are therefore not mentioned herein. The following species show the same arrangement-pattern for arteries in the neck and thorax.

Glaucis hirsuta hirsuta (Gmelin).

Phaethornis sp. (U. S. National Museum #225016).

Florisuga mellivora mellivora (Linnaeus).

Anthracothorax dominicus (Linnaeus).

Eulampis jugularis (Linnaeus).

Sericotes holosericeus holosericeus (Linnaeus).

Chrysolampis mosquitus (Linnaeus).

Orthorhynchus cristatus exilis (Gmelin).

Lophornis sp. (U. S. National Museum #81493).

Chlorostilbon canivetti caribaues Lawrence.

Chlorostilbon ricordii ricordii (Gervais)

Cyananthus latirostris latirostris Swainson.

Thalurania furcata colombica (Bourcier).

Lepidopyga goudoti goudoti (Bourcier).

Hylocharis xantusii (Lawrence).

Hylocharis chrysurus (Shaw).

Trochilus polytmus polytmus Linnaeus.

Leucippus fallax fallax (Bourcier).

Amazilia tobaci (U. S. N. M. #346366) zoo specimen.

Amazilia tzacatl tzacatl (De la Llave).

Chalybura buffonii aeneicauda Lawrence.

Oreotrochilus leucopleurus Gould.

Sephanoides fernandensis fernandensis (King).

Sephanoides sephanoides (Lesson).

Sappho sparganura sappho (Lesson).

Heliomaster furcifer (Shaw).

Philodice evelynae evelynae (Bourcier).

Archilochus colubris (Linnaeus).

Mellisuga minima vieillot (Shaw).

Stellula calliope calliope (Gould).

Selasphorus platycercus platycercus (Swainson).

Garrod (1873) pointed out that the left carotid alone is present in the following species:

Patagona gigas (Vieillot).

Chlorolampis osberti (Probably = *Chlorostilbon canivetti osberti*).

Cypselus apus = *Apus apus apus* (Linnaeus).

Cypselus alpinus (Possibly = *Apus melba*).

Chetura vauxi = *Chaetura vauxi* (J. K. Townsend).

Chetura spinicauda = *Chaetura s. spinicauda* (Temminck).

Chetura caudacuta = *Hirund-apus caudacutus* (Latham).

Dendrochelidon coronata (Possibly = *Hemiprocne longipennis coronata*), while both carotids are present in:

Cypseloides fumigatus (Streubel).

In the Trochilidae there is a very high degree of uniformity in the arterial arrangement-pattern, while in the Apodidae there is a strong tendency for the laevo-carotid condition but with some evidence that this order of birds had their origin perhaps somewhat more recently from a bicarotid stock of birds.

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REFERENCE

Garrod, A. H. 1873. On the carotid arteries in birds. London, Proc. Zool. Soc., 457-472.
