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XL.—Notes on birds

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7. *Strophosomus limbatus*, Fab., Payk., Gyll., Steph. Manual.
Curc. Sus (var. γ .), Kirb. MSS., Steph. Illustr.

Distinguished at first sight from the preceding by having the thorax exactly truncated at the base; the sides of the thorax and elytra more thickly clothed with subelliptical shining silvery-white scales, and by being without erect hairs; the upper surface is frequently glabrous.

I have many times taken this insect in the north and south of England, invariably on the common heath (*Calluna vulgaris*), in June and October.

XL.—*Notes on Birds*. By T. C. EYTON, Esq., F.L.S.

No. VI.

[With a Plate.]

[Continued from p. 29.]

Trogon melanocephalus, Gould (male).

LENGTH of intestine from gizzard to cæca seven inches. Length of cæca one inch two-tenths. Length of rectum two inches four-tenths. Œsophagus large at its upper extremity, contracted in the middle, but at its lower extremity expanded into a proventriculus, measuring nearly one inch in length and four-tenths in diameter when inflated; stomach round and slightly flattened. Epithelium longitudinally rugose, not hardened, extending slightly into the proventriculus. Intestine of large diameter for the size of the bird; rectum only slightly larger than the lower end of the small intestine. Cæca small at their junction with the rectum, and at about half their length expanding into a sac. Cloaca small, the membranes thickened. Trachea simple, acted upon by one pair of sterno-tracheal muscles only. Bronchiæ of large diameter in proportion to that of the trachea. Tongue arrow-shaped, four-tenths of an inch long, armed with a strong spine on each side at the base, and with numerous smaller ones scattered round the epiglottis. The stomach and œsophagus were filled with hard seeds about the size of a pea mixed with a pulpy matter.

The sternum is very broad in proportion to its length; it is narrowest at the junction of the ribs, where it measures half an inch in breadth. The anterior margin is narrower than the posterior; at the former it measures seven-tenths of an inch in breadth, at the latter one inch. The total length of the sternum including the manubrial process is one inch. The posterior margin is indented on both sides with two deep and wide fissures, the exterior ones largest. The keel is four-tenths of an inch in depth, much arched on its inferior margin, and with its anterior one much scolloped; it extends quite to the hinder edge of the sternum. The manubrial process is long and strong, somewhat deflexed and triangular.

The os furcatum, coracoids and scapulæ, and indeed the whole of the skeleton is light and weak ; the former is much arched anteriorly ; when *in situ* the branches are rather suddenly divided, spreading very wide at their extremities ; each branch is laterally flattened on its upper half ; the process at the point where it approaches the sternum is small and rounded.

The coracoids are seven-tenths of an inch in length, much expanded at their junction with the sternum, and jointly, with the exception of that portion occupied by the manubrial process, spreading over the whole breadth of its anterior margin.

The scapulæ are twelve-tenths of an inch in length, nearly straight to within a short distance of their posterior extremities, where they are abruptly deflected and pointed ; the internal surface is slightly concave.

The pelvis is eight-tenths of an inch in length, fourteen-tenths in breadth at its posterior extremity, and five-tenths of an inch at its anterior one ; on viewing it from above it appears very broad for the size of the bird ; and its upper plane is slightly arched. On viewing the posterior extremity from behind it presents a wide and regular arch formed by the sacral vertebræ in the centre, and the posterior edges of the ilium, ischium and os pubis on each side ; the points of the latter bones are turned upwards at their extremities ; the posterior extremity of the ischium is much expanded, and incloses on one side a very large ischiadic foramen ; the obturator foramen consists of an elongated slit inclosed between the ischium and os pubis, and extending from immediately behind the femur to the membranous junction of those bones near their posterior extremities. The whole of the bones of the legs are very light and weak ; the femur is eight-tenths and a half in length ; the tibia eleven-tenths in length ; the fibula, which is somewhat broad and flattened transversely, extends for two-thirds of its length, forming a sort of keel. The tarsus measures six-tenths of an inch in length. The bones of the wing are the strongest and most powerful of the whole skeleton ; they are however short in proportion to the size of the bird, which, together with the large size of the head, contributes somewhat to give the skeleton rather a clumsy appearance ; the humerus is twelve-tenths of an inch long ; the ulnar bones measure fourteen-tenths of an inch in length, and the metacarpal bones six-tenths.

The inferior maxillary bones are united for only three-tenths of an inch from their tips, and divaricate abruptly and widely ; at the extremities of their rami they have two very wide and powerful capsules for articulation with the os quadratum.

The cranium is broad in proportion to its length, measuring from the tip of the bill to the occiput one inch and six-tenths,—its greatest diameter ; the posterior extremities of the zygomatic bones measure one inch.

The occiput when viewed either laterally or from above has a truncate appearance, when viewed from behind it has a quadrate figure ; the articulation however of the os quadratum with the inferior maxillary bone projects considerably beyond the lateral perpen-

dicular line of the cranium. The crotaphyte impression between the zygomatic and post-orbital processes is deep and well-defined; above this, is a well-defined impression of the temporal muscle. The lachrymal bones project in the form of a broad process anteriorly to the orbits of the eyes, and must in a great degree protect that organ; the septum between the orbits is perfectly closed. The formula of the vertebræ is—

Cer. 12; Dor. 7; Sac. 11; Caud. 7.

The terminal caudal vertebra is deep and narrow, measuring perpendicularly half an inch.

The ribs are seven in number, two false ones being placed anteriorly and one posteriorly. The ring of the cornea is rather elevated, and consists of fifteen distinct and divisible segments.

REMARKS.—The anatomy of the soft parts of this bird approaches very nearly to that of some of the *Cuculidæ*; the stomach however in the latter family has the epithelium smooth, and is proportionately of larger size. The cæca, œsophagus and proventriculus are of nearly the same form.

The trachea in *Trogon* acted upon by one pair of sterno-tracheal muscles only, in which respect and also in the large size of the bronchia it agrees with the Kingfishers. The intestinal canal in *Trogon* is of larger diameter than among the Cuckoos, and the rectum smaller in proportion to the size of the small intestine.

In the structure of the trachea as before mentioned, *Trogon* agrees with the Kingfishers, but differs as regards its soft anatomy in almost every other respect. Its intestinal anatomy is that of an insect-feeding bird; but I should not have supposed, from the slight muscular power of the stomach and its only slightly hardened epithelium, that it fed upon seeds had I not found them in the stomach, and it is perfectly possible that they might have been swallowed with some small and soft insects which had become decomposed into the soft pulpy matter which was mixed with the seeds. In the general contour of the skeleton and in the lightness of the bones *Trogon* closely resembles *Alcedo*; in fact the skeleton might, if the head was removed, be easily mistaken for a species of that genus; there are however distinctions which a more minute examination renders apparent; it must however be placed in contiguity with that form in a natural arrangement, as it approaches more nearly to it than to any other with which I am acquainted. From all the scansorial forms it is at once distinguished by all those distinctive characters which divide the typical genera of that order from the fissirostral or volitorial* group.

* I propose to divide the class Aves into the following eight orders, which may be all distinguished by their skeletons: Raptores, Volitores, Scansores, Insessores, Rasores, Cursores, Grallatores, Natatores.

The sternum of *Trogon* has the inferior edge of the keel much arched, among the Kingfishers it is nearly straight; it is also proportionately deeper, and has its anterior edge more deeply scooped than in that family.

The branches of the os furcatum are less laterally flattened, and not so broad in *Trogon* as among the Kingfishers; the former has also a process where that bone approaches the sternum, which is wanting among the latter. The terminal joint of the caudal vertebræ is also larger in *Trogon* than among the *Alcediæ*.

The remainder of the skeleton is so precisely similar to that of the smaller species of Kingfishers that it is impossible to point out any distinctions. It is to be regretted that so little is known of the habits of the Trogons; I am informed however by Capt. A. Charlton, who has lately returned from Malacca with a large collection of objects of natural history, that they frequent only the dense forests of that country, sitting nearly perpendicularly on branches of trees, and making, when an insect comes in view, a sudden dart in a straight line at it, returning often to the same bough which had previously been occupied. I am also informed by Mr. Gould, that Mr. Dyson, who has lately returned from Honduras with a collection of birds in spirits, of which the subject of this paper formed a part, made the same remark to him regarding the position of the bird when at rest.

These observations confirm in a certain degree what the osteology shows, namely a near affinity between the Kingfishers and Trogons in habit and in the mode of taking their prey by a sudden dart.

The intestinal anatomy merely bears that resemblance to the *Cuculidæ* which the anatomy of one insect-feeding bird often bears to another.

The *Trogonidæ* therefore, as far as I am at present acquainted with them, appear to be, if I may be allowed the expression, a family of partially or wholly insect-feeding Kingfishers, and must be classed in a natural system near to that family.

EXPLANATION OF PLATE VIII.

Fig. 1. Tongue, cesophagus, proventriculus and stomach.

Fig. 2. Cæca.

Fig. 3. Sternum.

Fig. 4. Coracoid.

Fig. 5. Scapular.

Fig. 6. Portion of cranium, showing the lachrymal bones.

Fig. 7. Pelvis, upper surface.

J. Basire. lith.

Trogon melanocephalus.