4. THE FEATHER-TRACTS OF SPHENURA BROADBENTI: McCOY.

Pl. IV.

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The genus Sphenura is represented only in South-East Australia and in South-West Australia, and in each area by two species. It is a disappearing genus.

The species occupy a similar type of country, and point to an old and closer connection between the two faunas: a land bridge suitably wooded.

At the present time the genus is placed in the sylviidæ with a heterogeneous collection of genera. To compare the pterylosis of these genera would probably throw further light upon their relationship.

The specimens* under review represent four phases:

(A) Approximately four days old.

(B) Seven days later, with the eyes open.

(C) One of two nearly ready to leave the nest.

(D) An adult male for comparison of markings.

Phase A (fig. 1) may be considered as absolutely naked until the third day. If there are any neossoptiles of more than one kind they are vestigial, being represented by rictal bristles, and those probably closely related to filoplumes.

In the earliest stage, as well as in the later ones, the only representation is that of prepennæ on the defined tracts, the quills, and the bristle type about the mouth. Preplumulæ are absent.

*Locality, Otway Forest, Victoria, Oct.-Nov., 1910, by the favour of Mr. Geo. Graham.

There should be a moult in spec. A to provide the single rhachis prepennæ of spec. B: not considering the after shaft, which is present. A section of a follicle of spec. A would probably show this down-like feather making way for the succeeding prepennæ. This view is favoured by the presence of odd specimens of fig. 1 among the more fully developed prepennæ of stages B and C.

Looking at the youngest phase (figs. 1-2), those generally known as downs are absent. The feathers still in the follicles of the tracts of figs. 1-2 are down-like, and with the brown pigment of the true feather. This leads one to believe the first generation has been suppressed. They occupy the same areas that the feathers of fig. 3 will do. These latter (second stage) compare with those of the newly-hatched megapodius†.

Downs are said to be absent in Atrichornis, a second remnant genus also represented in the south-west and south-east of the continent by a single species in each area.

The colour of stage A is uniform bluish grey, excepting the lower mandible, the proximal edge of the upper mandible, the inside of the mouth and the tongue, which are strong lemon yellow.

Figs. 1 and 2 show the feather tracts of the dorsal and ventral surfaces.

Pteryla ventralis. It forms a single tract that is not divisible into the usual short outer and long inner branches. It forms a band of great breadth extending from the shoulder a considerable distance backward, and then narrowing down, but not to meet, thus leaving a distinct and broad apt mesogastrei.

Pt. Spinalis.—A. Rami, all arising from a common base.

B. Two types, one without rami, from a common base, the other having a central rhachis.

C. Two types: one as in A, the other showing a well-developed ramus, with a long rhachis.

D. Contour feathers, as in the latter of C, being much longer. There are few hooklets when compared with the normal quantity in Cracticus and Collyriocincla.

† W. P. Pycraft (Willey's Zool Results, New Britain, etc., Plate XLIX., fig. 6, 1910), kindly lent by Prof. T. T. Flynn.

The tract is oval, tapering off in the lumber region, and becoming attenuated, though not junctioning with the oil gland, and remaining free from other pterylæ.

Pt. Capitis.—Beginning at the anterior nares, it is forked along the culmen, and passes over the frontal parietal and occipital region, bulging downwards, immediately over the apertures of the ears, and later joining the pteryla colli dorsalis, ear-coverts breaking from their follicles.

Pt. Colli Dorsalis. This tract blends with the pt. spinalis and pt. capitis.

Pt. Caudalis.—Ten rectrices in B and C, with the ten coverts well developed, two-thirds the length of the former, while in A there distinctly appears to be twelve rectrices, with ten upper coverts just showing their follicles. Uropygium not tufted.

Pt. Femoralis.—Made up of two sets, a strong outer series and a short feeble inner series at the anterior end. This inner series does not yet show in specimen A (fig. 1). The posterior portion is abnormally long, indicating the habitat as wet and scrubby. This tract is free from any other.

Pt. Cruralis.—The tract does not encompass the leg. In B the whole length of the inner surface is bare, broken by an oblique line of a single row of well-developed yet unburst follicles. There are a few additional feathers in specimen C, the upper part of the tibial area of the leg being bare.

Pt. Humeralis.—Well developed.

Pt. Alaris.—Metacarpo-digitalis 10, subequal to A, B, C, D, the 9th and 10th being a little shorter; veins not emarginated as in the contours, the 11th remex wanting.

Cubitals 10, 1-8 being subequal, the 9th being much smaller, the 10th still much reduced, and scarcely distinguishable from its covert. There is an 11th quill that does not indicate whether it is a cubital or a covert, either in position or its form.

While there is no sign of primary coverts in the left

wing of specimen A, there is a sign of them in the right wing, being sufficiently distinct to be counted.

The wing is cutaxic.

Tectrices.—In spec. A the t. majores of the cubitals are 10, and well indicated, the t. mediæ being 6, and well marked, a lens being needed to see the t. minores, t. marginales being not yet visible.

The coverts of the under surface of the wing do not yet show any sign of appearing. The dorsal major coverts of the primaries are not yet visible.

There is no appearance of pt. spuria. In spec. B the veins of pt. spuria are breaking from their sheaths, though not so advanced as the coverts, the major coverts of the secondaries being more advanced than those of the primaries. Only the innermost of the t. mediæ is exposing its vein.

The pt. marginales are just showing. The four rows of tectrices upon the under surface are well developed, but just breaking from their sheaths.

The carpal covert is equal to the t. minores of the cubitals, being much further ahead of the primary medium coverts in their development.

In pt. spuria five strong feathers take part in the formation.

Parapteron is naked in spec A and B, in C there are two rows, each four feathers.

Fig. 3 gives a lateral view of phase B. The veins breaking from the follicles indicate the pale rufous and grey colours that are in C and D. The plumage of C is already rufous-tinted, as in the adult D, being brighter upon the ear coverts than upon the head. The under-surface is devoid of the lunations of the adult, and the throat has a pale cream-coloured band across it, extending outwards to the region below the eye. This prominent mark does not appear on the adult D, its mark of the past.

At this stage the tail coverts are well developed, and more than half the length of the rectrices. In colour they are almost as intense as in the adult. The broad outer

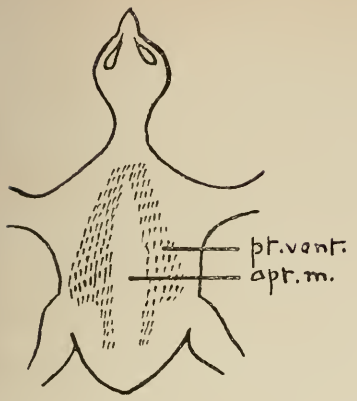

Fig.1. Spec. A. Vent.

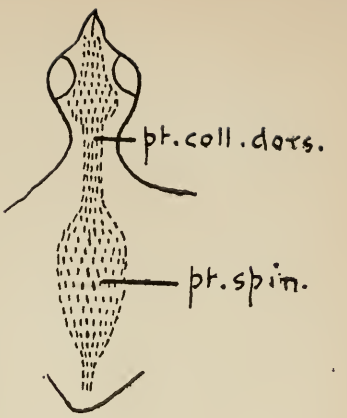

Fig.5. Spec. B. Dors.

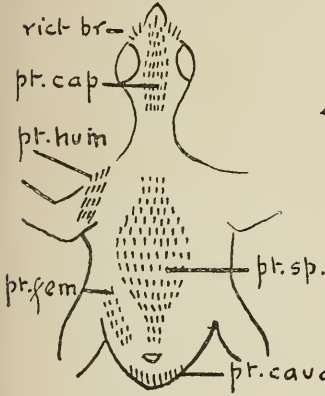

Fig.2. Spec A: Dors.

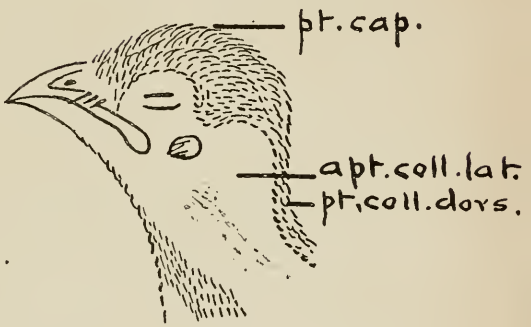

Fig 4. Spec. B: pt.cap etc.

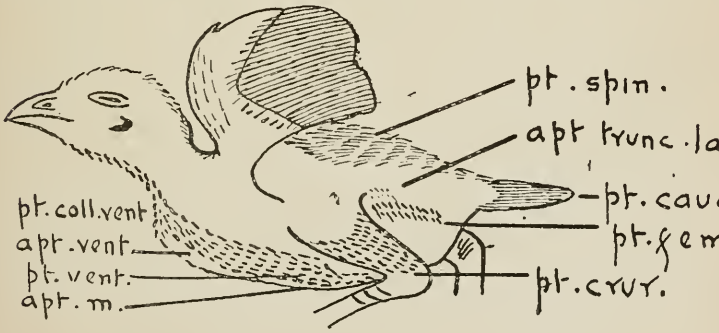

Fig. 3. Side view of spec. B.

margins of the wing-quills and the tail are not so rufous as in the adult. The contour feathers have the same loose appearance as in the adult stage, the hooklets being reduced, and only in part junctioning. On the left side only two rictal bristles are developed, the usual three being upon the other.

The cause of the distinctive markings of the under surface in the adult D is due to the terminal portion of each of the barbs of the feathers being deep brown, and the subterminal portion white in crescentic and imbricate position.

The same locality feathers on C are uniform grey, with the tips of each barb showing a dark hue, but not sufficiently strong to get any other effect than grey upon the breast and chest.