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GLANDULAR AREAS OF SOME AUSTRALIAN JERBOA MICE,
AND REMARKS ON *NYCTINOMUS* AND
MYRMECOBIUS.

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Plate VIII.

NOTOMYS.

The genus *Notomys* as defined by C. W. Brazenor in this Memoir is distinguished from the other genus of Australian Jerboa Mice (*Podanomalus*) by a glandular area on the ventral surface of the neck.

A gular pouch also occurs in certain Australian bats of the genera *Taphozous* and *Nyctinomus*.

The gular glandular area of *Notomys cervinus* (Gould) is bounded by a raised thickened margin and is sunk below the surface of the surrounding integument. In one female it measured 7 mm. by 6 mm.; in this specimen the area of reflected skin does not extend very far forward and is small compared with the whole glandular area.

Vertical sections through the gular region of a female specimen with a definite fold of skin were examined. Some distance away from the pouch, both dermis and epidermis are comparatively thick and hair follicles with attached sebaceous glands occur. Closer to the pouch, the integument is rather hypertrophied and much folded. Still closer, small lymph glands and isolated areas of fatty tissue make their appearance; and closer again, a number of much larger areas of lymphoid tissue are scattered through the dermis. (Pl. VIII, fig. 1).

In sections through the gular pouch the integument and the reflected flap of skin are definitely hypertrophied (Pl. VIII, fig. 2), and sebaceous glands associated with hairs are also enlarged.

Notomys mitchelli has a gular glandular area but no reflected flap of skin. Sections through this area reveal structures similar to those in *cervinus*; integumental hypertrophy associated with enlarged and elongated hair follicles and enlarged attached sebaceous glands.

Brazenor has noted both in *N. cervinus* and in *N. mitchelli* that the hair of gular glandular areas is specialised.

In *Notomys mitchelli* the hairs towards the periphery of the area are medullated and the centre of some hairs within the

area contain elongated air-spaces. In some the air-space is confined to the portion of the hair enclosed by the follicle, and in others to the free portion of the hair.

In regard to function of the gular pouch, Waite (2) suggests that it is used for storing food. Oldfield Thomas (4) considers this extremely unlikely and that the gland is probably of a sexually attractive nature. Wood Jones (1) says that the pouch is probably glandular and that observations on captive specimens have failed to provide any clue as to its true function.

In all gular glandular areas the hairs are definitely oriented. When the area of reflected skin is small, the hairs are arranged centripetally and their free ends project towards the centre ; these hairs also tend to point ventrally and form an inverted cone when the animal rests on its hind legs. When the reflected skin is larger, the tips of the hairs are directed towards a point anteriorly.

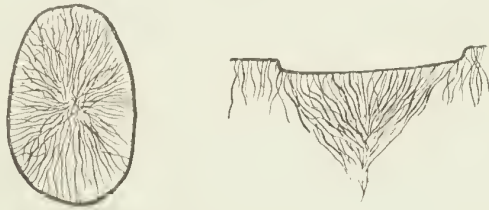


Fig 1. Arrangement of hair on gular pouch of *Notomys* : ventral and lateral views. Diagrammatic.

This arrangement of hairs suggests a definite function. Their converging tips would enable sebaceous material from the base of the hairs to run together and form a droplet. The animal may use such droplets for its toilet.

PODANOMALUS.

Podanomalus has no external indication of a gular pouch ; the epidermis in the gular region is not hypertrophied and the dermis presents no unusual features. Numerous fatty and lymphoid areas are in some cases suggestive of degenerate glands. (Pl. VIII, fig. 3.)

The pre-sternal glandular area varies in size and shape, and except for a few fine, short hairs, it is almost entirely bare ; it has a granulated appearance. It is lower than the surface of the surrounding integument and is bounded by a thickened rim. In one specimen it measured 6 mm. by 25 mm. Microscopically the area appears to consist almost entirely of

sudoriparous follicles somewhat similar to those described by Beddard in *Myrmecobius* (3).

Modified sudoriparous and sebaceous glands are difficult to distinguish. In this paper glands associated with hair follicles are called sebaceous glands, and those not associated with follicles, sudoriparous.

NYCTINOMUS.

The microscopic details of the gular pouch of the bat *Nyctinomus australis* were examined and were found to correspond generally with those described above in *Notomys*.

MYRMECOBIUS.

The Marsupial Anteater, *Myrmecobius*, has a pre-sternal gland which has been described by F. E. Beddard (3) from an adult female preserved in spirit. He found the following glandular structures: sweat (sudoriparous) glands; sebaceous glands; sudoriparous follicles; and a large compound tubular gland.

The present author has examined six spirit specimens of *Myrmecobius fasciatus* in the West Australian Museum through the courtesy of the curator, Mr. L. Glauert; all were females. The pre-sternal glandular area is not well marked nor is it completely bare in any of them, being covered, though thinly, with fine silky hairs. As Beddard notes there is a lens-shaped thickening of the integument in this region, but the external orifices he describes are difficult to see. Associated with the fine hairs are sebaceous glands. Sudoriparous glands are also present, but sudoriparous follicles are neither common nor typical; when present they are somewhat attenuated and bent in various directions. Some sections show sudoriparous glands opening into follicles. (Pl. VIII, fig. 4.)

No trace could be found of the compound tubular gland described by Beddard. In fact, his figures and its position beneath the dermis suggest a salivary gland.

To Mr. Brazenor of the National Museum and to Mr. Glauert of the West Australian Museum I am indebted for the material on which this paper is based.

References.

1. Wood Jones, F. The Mammals of South Australia; Pt. III. Govt. Printer, Adelaide, 1925.
2. Waite, E. R. Observations on Muridae from Central Australia. Proc. Roy. Soc. Vict., Vol. X (N.S.), Pt. 2, 1898.



FIG. 2—NOTOMYS.

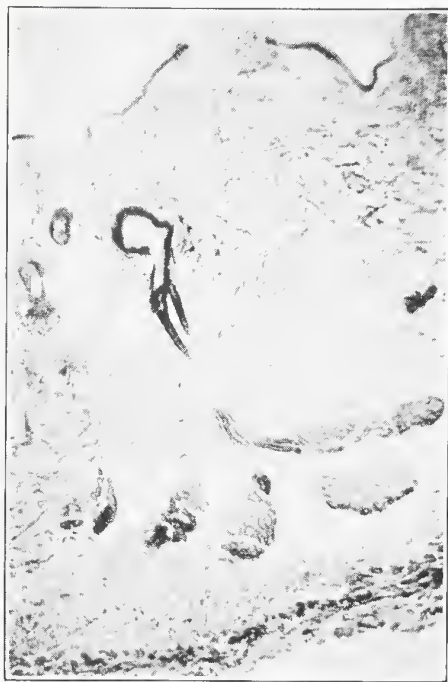


FIG. 4—MYRMECOBIUS



FIG. 1—NOTOMYS

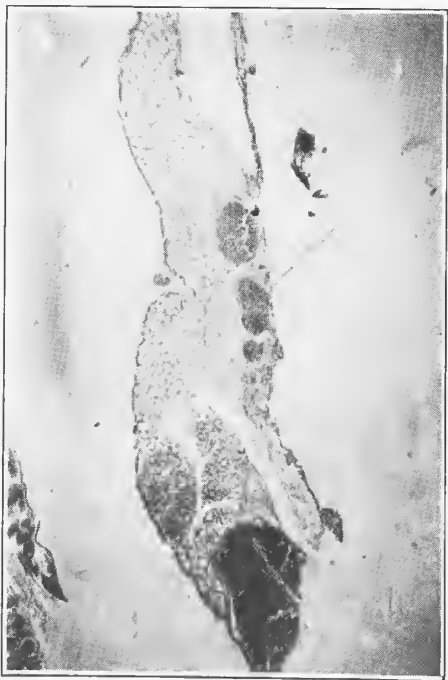


FIG. 3—PODANOMALUS

Sections of Glandular Areas

GLANDULAR AREAS OF AUSTRALIAN JERBOA MICE.

3. Beddard, F. E. Note on a Point in the Structure of *Myrmecobius*. Proc. Zool. Soc. London, 1887.
4. Thomas, Oldfield. Notes on the Species of *Notomys*, The Australian Jerboa Rats. Anns. & Mag. of Nat. Hist., Vol. VIII, Ninth Series, 1921, pp. 536-541.

Plate VIII.

- Fig. 1. *Notomys cervinus* (Gould). Vertical section just posterior to the gular glandular area, showing a large lymph gland underlying the dermis. $\times 120$.
- Fig. 2. *Notomys cervinus* (Gould). Vertical section through the gular glandular area; the underlying glands are salivary glands. $\times 90$.
- Fig. 3. *Podanomalous aistoni* Brazenor. Fatty and lymphoid tissue in gular area; vertical section. $\times 120$.
- Fig. 4. *Myrmecobius fasciatus* Waterhouse. Vertical section through pre-sternal gland; sudoriparous glands opening into base of sudoriparous follicle. $\times 90$.