

NOTES ON MARSUPIALIAN ANATOMY.

I. ON THE CONDITION OF THE MEDIAN VAGINAL
SEPTUM IN THE TRICHOSURIDÆ.

PL. XXI.

By T. Thomson Flynn, B.Sc.

Professor of Biology, University of Tasmania.

(Read October 9, 1911.)

There has been at various times some little discussion on the state of the median vaginal septum in various members of the genus *Trichosurus*; up to the present however, the only member of the group which seems to have been examined is the common phalanger *Trichosurus vulpecula*. Brass (1) in 1880 described the organs of this animal, and in his specimen found the two median cul-de-sacs separated from one another by a complete partition. In 1899 Forbes (2), in a foot note on a communication on the anatomy of the Koala, speaks of the median vaginal apparatus as a "common vaginal chamber formed by the coalescence and fusion of the two diverticula present in *Phascolomys* and *Phascolarctos*."

In 1900 the question was finally decided for *T. vulpecula* by Hill (3), who, as a result of his own observations on the genital organs of both virgin animals and those which had given birth to young, conclusively showed that in the former the septum was complete, in the latter it was incomplete, causing a more or less complete coalescence of the two cul-de-sacs, and that this condition of incompleteness of the septum arose almost certainly as a result of and most probably during the first act of parturition. Under these circumstances, the incomplete nature of the septum in

1. Brass A. "Beiträge zur Kenntniss des weiblichen Urogenital systems der Marsupialien." Leipzig, 1880.

2. Forbes, W.A. "On some points in the Anatomy of the Koala (*Phascolarctos cinereus*)." P.Z.S., 1881.

3. Hill, J.P. "Contributions to the Morph. and Dev. of the Fem. Urog. Organs in the Marsupials." I.) P.L.S., N.S.W., 1899.

a specimen of *T. vulpecula* would be sufficient evidence of the fact that the animal had borne young. In spite of this, Van den Broek (4), in his work on the anatomy of the female genital organs in the Marsupials, in a table given on page 277, mentions a specimen of *T. vulpecula* with such an incomplete septum, and yet queries the possibility of the animal having borne young. On page 274 the same author says:—"Doch ist diese Unterbrechung des Septum nicht ein bestimmtes morphologisches Merkmal gewisser Geschlechter von Beuteltieren, denn bei demselben Geschlechte findet man bei der einen Art die Scheidewand vollständig, bei der andern Art unvollständig. — So fand ich selber bei *Didelphys* folgendes. Bei einem *Didelphys marsupialis* mit Jungen im Beutel war das Septum inkomplet, bei einer anderen kleineren *Didelphys*art, ebenfalls mit Jungen im Beutel war es komplet; bei einem 6 cm. grossem Beuteljungen von *Didelphys canerivora* bestand eine vollständige Scheidewand. Doch selbst bei verschiedenen Individuen derselben Art findet man das eine Mal ein unterbrochenes Septum, das andere Mal ein komplettes."

The above statement has some significance, in view of the condition of this portion of the female genital system in *Trichosurus caninus*, a specimen of which I recently received, through the kindness of Professor Welsh, of Sydney. It had in its pouch a mammary foetus measuring approximately from snout to root of tail along the dorsal curvature, 13 cm. (As it reached me minus its head only approximate measurement can be given).

On examining the organs of the adult animal I expected to find the septum broken as a result of parturition, but was considerably surprised to find it quite entire. (Pl. XXI., Fig. 1.) Recently, I have had the opportunity of examining the female organs of *Trichosurus vulpecula* var. *fuliginosus*, the Tasmanian "black opossum." The median vaginal apparatus of this animal agrees with that of the common Phalanger, the median septum being thin, often transparent, and perforated by a larger or smaller opening after parturition. In extreme cases the two cul-de-sacs have quite fused, the septum being only represented by extremely minute rudiments. For the purposes of comparison the median vaginal apparatus is shown in fig. 2. It will be seen that there are other points of difference in the two figures, besides the condition of the septum. Thus

4. A. J. P. v. d. Broek. "Untersuchungen über die weiblichen Geschlechtsorgane der Beuteltiere." Petrus Camper. Pl III., Af. 2.

we have in *T. caninus* the internal lining raised into a number of large, rounded folds, separated by deep grooves, the whole having a reticulate appearance. In *T. vulpecula*, on the other hand, the reticulate appearance is confined to the area around the os uteri, and even in this region is not very conspicuous, the remainder of the cul-de-sac being occupied by a series of slightly raised long, narrow folds. The presence of the strong septum as well as the other points mentioned give the median vaginal apparatus in *T. caninus* an appearance of strength absent in other members of the genus.

A study of the table given by Van den Broek (5) summarising the existing knowledge of the changes occurring in the median vaginal apparatus consequent on parturition, brings strongly forward the general rule that where the young are borne through a direct median passage, the septum between the two cul-de-sacs is more or less incomplete. A possible exception to this is *Sarcophilus* (6), but it is as yet doubtful whether the young are here not borne through the lateral canals, although the main evidence points to the median passage as their means of exit. At first, as stated in his work on the anatomy of the female organs in *Perameles*, Hill (7) believed that the young of *Trichosurus* were borne through the lateral canals, "here comparatively short and simple in their course," but later he communicated the discovery of a pseudo-vaginal passage in that genus similar to that in *Perameles* and *Dasyurus viverrinus* (8). These points may be summarised as follows:—

(1.) Marsupials which possess in the virgin completely separated median vaginal cul-de-sacs, and in which, after parturition, these cul-de-sacs are in communication, bear, so far as is known, their young through a direct median passage.

(2.) In some genera of marsupials (e.g., *Didelphys* and *Trichosurus*) one species may still have an entire septum after parturition, while another may not.

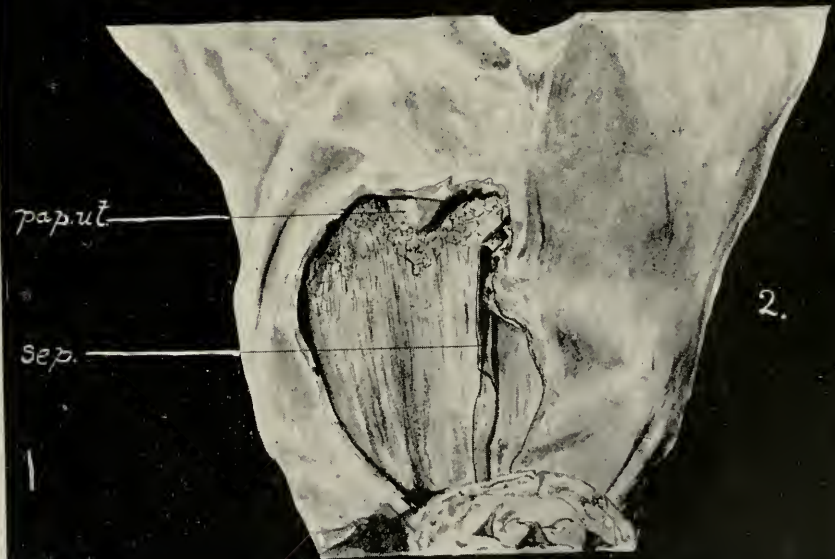
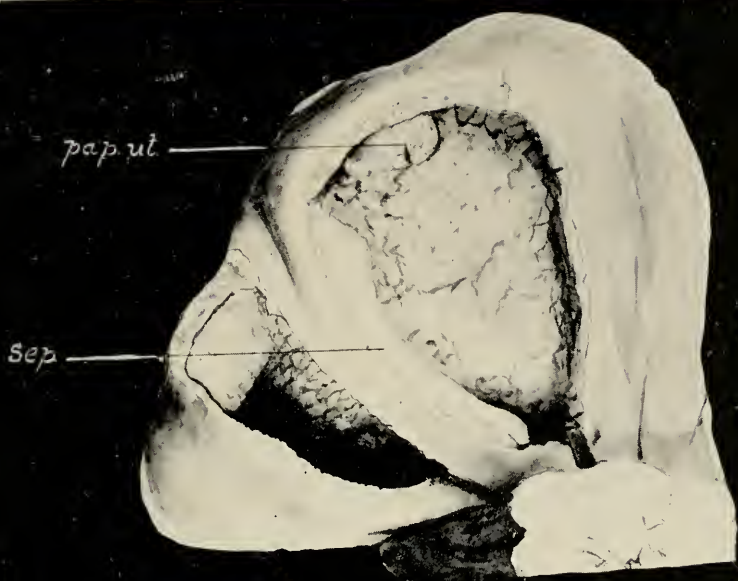
Hence, it is possible that in a genus of marsupials in

5. Loc. cit., p. 276-278.

6. Flynn, T. T. "Contributions to a knowledge of the Anat. and Dev. of the Marsupialia." I. P.L.S., N.S.W., 1910.

7. Loc. cit.

8. Hill, J.P. "Contribution to the Morph. and Dev. of the Fem. Urog. Organs in the Marsupialia" II. V. P.L.S., N.S.W., 1900, p. 56.



one member of a genus parturition may take place through the lateral canals, while in another member it may not.

EXPLANATION OF FIGURES.

Fig. 1.—Median vaginal apparatus of *Trichosurus caninus*. The two cul-de-sacs have been opened from the ventral side.

Fig. 2.—Median vaginal apparatus of *Trichosurus vulpecula* var. *fuliginosus*, opened from the ventral side.

Pap. ut.—Uterine papilla.

Sep.—Septum between cul-de-sacs.
