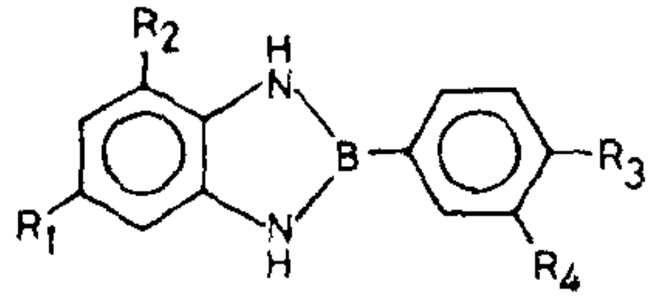
Table 1 *Bromoborimidazolines* (scheme 4)



R_1	R_2	R_3	R_4	M P°C	Yield per cent	Properties	Formula
Br	H	H	H	112–113	79.8	Colourless flakes	$C_{12}H_{10}N_2BBr$
Br	H	CH_3	H	136–137	63.7	Light brown powder	$C_{13}H_{12}N_2BBr$
Br	H	OCH_3	H	149–151	70.6	Dark brown flakes	$C_{13}H_{12}N_2OBBr$
Br	H	Br	H	158–159	74 1	Colourless shining flakes	$C_{12}H_9N_2BBr_2$
Br	H	H	NO_2	>285	62 8	Dark brown powder	$C_{12}H_9N_3BO_2Br$
Br	Br	H	H	126–128	82 1	Pinkish crystals	$C_{12}H_9N_2BBr_2$
Br	Br	CH_3	H	140–141	81.4	Light brown powder	$C_{13}H_{11}N_2BBr_2$
Br	Br	OCH_3	H	171–172	61.7	Dark brown powder	$C_{13}H_{11}N_2OBBr_2$
Br	Br	Br	H	168–169	70 1	Colourless flakes	$C_{12}H_8N_2BBr_3$
Br	Br	H	NO_2	218–220	64.9	Light brown powder	$C_{12}H_8N_3BO_2Br_2$

1. Nesmeyanov, A. N. and Sokolik, R. M., *The organic compounds of boron, aluminium, gallium, indium and thorium*. North Holland, Amsterdam.
2. Skvortsova, E. K., Putyatina, T. I., Mikhailov, B. M., Limanov, U. E. and Starkov, A. V., *Trans. Trsent. Nauch. Issled. Dezinfek. Inst.*, 1967, **18**, 154.
3. Sweet, W. H., Soloway, A. H. and Wright, R. L., *J. Pharmacol. Exp. Therap.*, 1962, **137**, 263.
4. Farben, F. and Bayer, A. G., *Brit. Patent.*, 1963, 27th Feb. 119374.
5. Gerrard, W., Lappert, M. F. and Mountfield, B. A., *J. Chem. Soc.*, 1959, 1529; 1960, 380.
6. Dewar, M. J. S., Kubba, V. P. and Pettit, R., *J. Chem. Soc.*, 1958, 3073.
7. Letsinger, R. L. and Hamilton, S. B., *J. Am. Chem. Soc.*, 1958, **80**, 5411.
8. Hemming, R. and Johnston, D. G., *J. Chem. Soc.* (B), 1966, 314.

ON THE FLANK (MUSK) GLAND OF THE HOUSE SHREW, *SUNCUS MURINUS BLANFORDI* (ANDERSON)

R. V. RANADE and P. V. JOSHI
Department of Zoology, University of Poona, Pune 411007, India.

SUNCUS MURINUS is increasingly used as an experimental animal in biomedical research. Several papers on unrelated aspects including anatomy and histology have appeared, for example on skeleton and muscular systems[1], on the anatomy and histology of stomach[2], on pituitary gland[3] and a histological account of the spleen[4]. The reproductive biology of this mammal was earlier described[5] and the chromosomal analysis of *S. murinus* from Pune was also presented[6] while the effect of vasectomy on epididymis was noted[7]. With a view to presenting a consolidated picture, anatomical and histological studies in the form a monograph were undertaken. During this monographic study a number

of observations are made which were not reported earlier.

'Musk gland', 'side gland' or 'flank gland' as it is called, has been studied by Balakrishnan and Alexander[8] who reported the histomorphology of *S. murinus viridescens* and discussed the possible ethological relevance of the same. Dryden and Conaway[9] described the histomorphology and questioned the scent production by this gland. This work was done on *S. murinus* colonalised in U.S.A.

The present report deals mainly with two factors (a) whether the secretory tissue of the flank gland leads to the exterior via hair follicles as stated by the above workers, or is there a definite area or opening through which secretions pass out? (b) is there any contractile mechanism to expel the secretions to the exterior since arrector pili muscles are absent or are sparce as observed in the present work, and also by the workers mentioned above?

About 70 specimens were trapped in Pune. The male always emitted a very intense foul (musky?) odour, which was insignificant in the female. Animals were etherised and the hair on the flank gland were shaved. The glandular area with adjoining skin was cut and transferred to saline for further cleaning. The tissue pieces were fixed in Carnoy's fluid (6:3:1). After usual dehydration and clearing, blocks were made in paraffin wax (52–54° C MP). Transverse and longitudinal sections at seven micra thickness were obtained. Delafield's haematoxylin and alcoholic eosin (70%) were used for contrast staining.

The flank gland is located laterally on the trunk region just posterior to the forelimbs. Slightly oval in longitudinal direction, it appears very prominent and thickened in male. The glandular area is covered by rather stiff hairs which converge towards the midline anteroposteriorly.

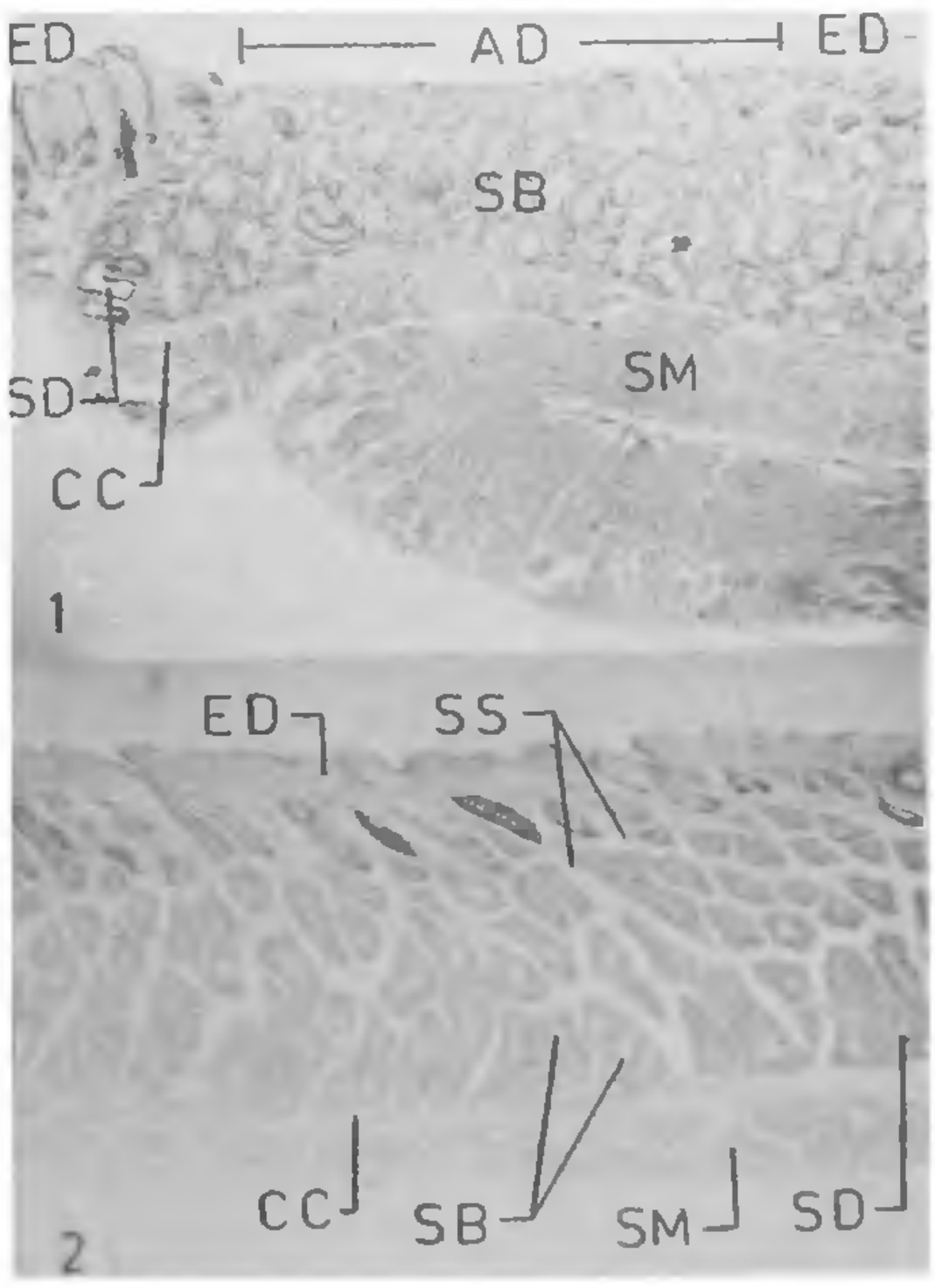
Histologically the secretory tissue of the gland is surrounded by a distinct connective tissue capsule. The glandular tissue consists of sebaceous and sudoriferous components. The sebaceous component presents the usual histological details and forms a major portion of the gland. The sudoriferous or tubular gland component forms a small fraction and is characterised by large eosinophilic cells enclosing a wide lumen in secretory end piece. These cells are surrounded by distinct myoepithelial cells.

A distinct striated or voluntary muscle layer is present adjacent to the gland which is continuous with that in subcutis of the skin.

Though the overall histology of the gland in the male and in the female is similar, they differ considerably from each other in the following details.

In the glandular tissue of male (figure 1) (i) the sebaceous component is highly proliferated and can be clearly distinguished from the sudoriferous component; (ii) at a specific region, the glandular tissue is directly exposed to the outside since the epidermis is absent. This is the possible area of discharge of the gland; (iii) the striated muscle coat just below the possible area of discharge is very much thickened. Contraction of these striated, *i.e.* voluntary muscles may have an expulsion effect on the secretion.

In the glandular tissue of female (figure 2) on the other hand, (i) both the secretory components are poorly developed and undifferentiated, leaving wide space between the secretory end pieces; (ii) muscular coat adjacent to the gland is relatively thin.



Figures 1, 2. (×45) V. S. of flank gland of **1.** male shrew and **2.** female shrew. (AD—Probable area of discharge, CC—Connective tissue capsule, ED—Epidermal and dermal layer, SB—Sebaceous component, SD—Sudoriferous component, SM—Striated muscle coat, SS—Spaces between secretory end pieces.)

These observations suggest that the quantum of the glandular tissue of male flank gland differs considerably from that of the female gland, and affects the secretory activity. In male, it is high while in female it is feeble.

This communication forms part of the Ph.D dissertation submitted by RVR to Poona University. RVR is grateful to UGC for a fellowship.

8 January 1985.

1. Sharma, D. R., *J. Morphol.*, 1958, **102,** 427.
2. Phansalkar, R. B., *J. Zool. Soc. India*, 1971, **23,** 63.
3. Naik, D. R. and Dominic, C. J., *Am. J. Anat.*, 1972, **132,** 145.
4. Fukuta, K., Nishida, T., Mochizuki, K., *J. Anat.*, 1982, **134,** 129.
5. Rana, B. D. and Prakash, I., *Z. Saugetier Kunde*, 1979, **44,** 333.
6. Ghaskadabi, S. M. and Indurkar, A. K., *Curr. Sci.*, 1981, **50,** 406.
7. Singh, S. and Dominic, C. J., *Indian J. Exp. Biol.*, 1981, **19,** 912.
8. Balakrishnan, M. and Alexander, K. M., *Acta. Theriol.*, 1977, **22,** 241.
9. Dryden, G. L. and Conaway, C. H., *J. Mammalogy*, 1967, **48,** 420.

NEWS

DIAMONDS ARE FOREVER

Geologist Dr Jeffrey Haris from the Department of Applied Geology of the University of Strathclyde in Scotland and three scientists from the Massachusetts *Institute of Technology in the U.S. and the South* African University of Cape Town have been involved in a 10 year research programme aimed at finding out whether those sparkling gems were a product of the early days of the Earth's creation some 4,600 million years ago. Dr Harris told the conference delegates that they had successfully identified the age of the diamond by measuring one particular element, neodynium, which was among a series of elements trapped in minerals that became encapsulated in diamond at the time of its formation. Other trapped elements included uranium, lead, strontium and potassium.

Particles of minerals were taken from diamonds produced by the Finsch and Kimberley mines in South Africa, and analysis of the rare neodynium metallic element indicated that the diamonds from both mines were very old. In the case of Kimberley diamonds they were found to be around 3,410 million years old while the Finsch diamonds were 3,255 million years old. (British Information Services, *British High* Commission, Chanakyapuri, New Delhi 110 021).

Edited and Published by Prof. M. R. A. Rao, Current Science Association, Bangalore 560 080
Phototypeset by Macmillan India Ltd., Bangalore 560 025 and
Printed at Macmillan India Press, Madras 600 041.