

longitudinal bars are arranged as follows.

D. 0 (10) 1 (5) 2 (10) 1 (8) 1 (5) 0 V.

One or two thinner transverse vessels present. 3 to 6 stigmata in a mesh. Tentacles short and thick and bipinnate. 14 to 15 large tentacles besides a few small ones. Dorsal tubercle U shaped, with one or both arms curled in.

Alimentary system: The hepatic caeca are brownish yellow in colour and finger-shaped with small papillae projecting from their surface. There is an accentuated curve of the gut (figure 1) where the gonad is crossing the intestine. Anus with two plain lips.

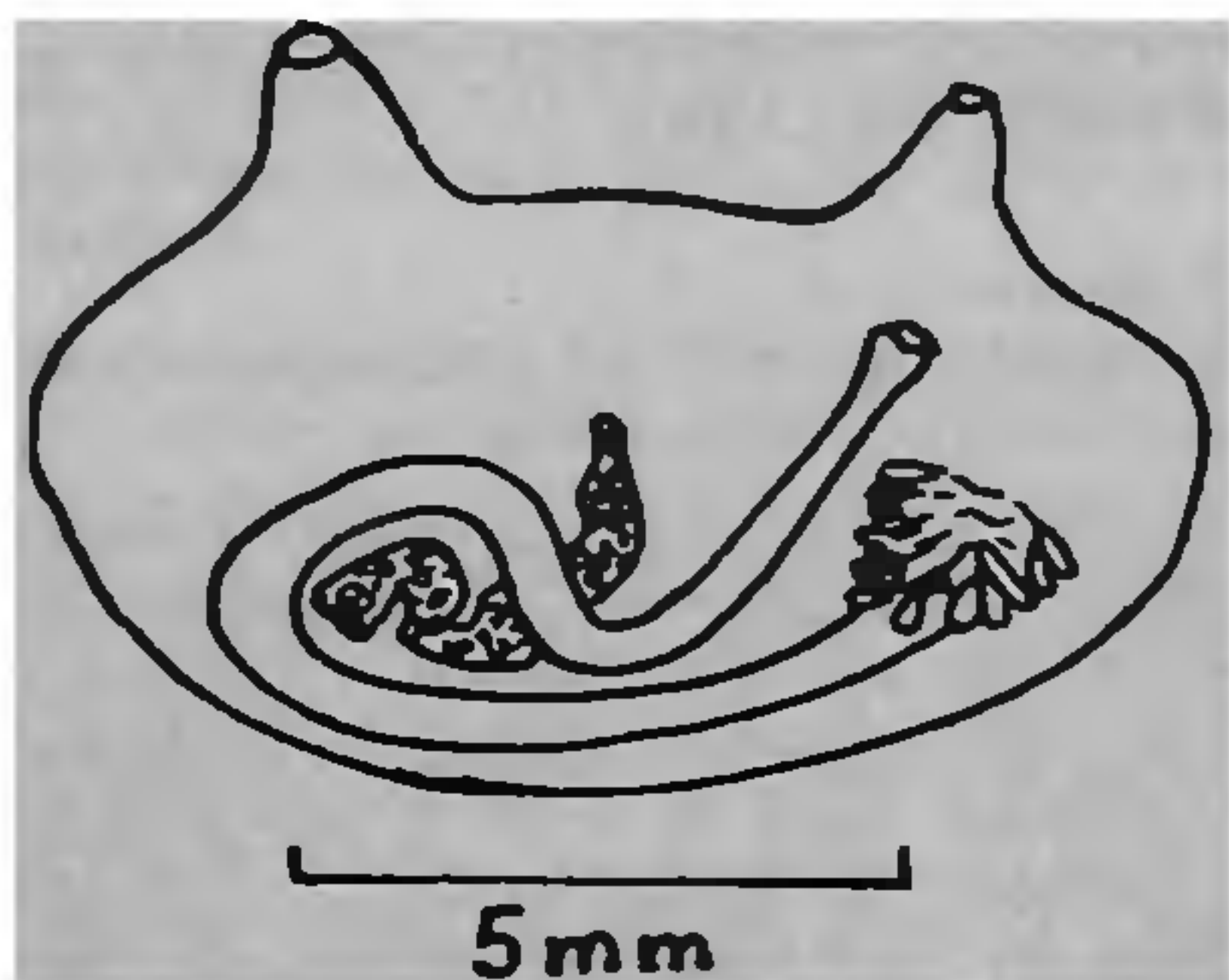


Figure 1. Left half of mantle body of individual, inside showing gut loop and gonad.

Gonad: Gonad shows much variation in shape and number. Usually one gonad on each side but a maximum of 3 have been found. Usually they are strongly curved and lobed. The gonad on the left side lies across the dorsal branch of the first intestinal loop.

Remarks: The reduced branchial sac, the accentuated curve of the gut and the various shapes of the gonads are distinguishable features to be noted in this Indian specimen. *Microcosmus curvus* possesses curved gonads whereas they are elongated and straight in *M. manaarensis*. Herdman's account of the appearance of one test lying within another is characteristic of *manaarensis*.

The author is thankful to Dr F. Monniot, Lab. inv. mar. Malacological Museum, 55, Rue de Buffon, Paris, France for her kind help in confirming the identification of the present specimen. Thanks are also due to UGC New Delhi for financial assistance.

21 January 1983; Revised 3 June 1983

2. Oka, A., *Mem. Ind. Mus.*, 1915, 6, 1.

3. Das, S. M., *J. R. Asiatic Soc. Bengal, Science.*, 1945, 11, 6.

4. Tokioka, T., *Publs Seto Mar. Biol. Lab.*, 1954, 3, 239.

5. Tokioka, T., *Bull. U. S. Natn. Mus.*, 1967, 251, 1.

A RARE ASSOCIATION BETWEEN THE LARVACEAN, *OIKOPLEURA INTERMEDIA* LOHMANN AND THE PROTOZOAN, *ACINETA* SP.

K. VENKATARAMANUJAM AND G. SANJEEVIRAJ
Department of Fishery Biology, Fisheries College,
Tamil Nadu Agricultural University,
Tuticorin 628 003, India.

AMONG the larvaceans, species of *Oikopleura* are well known for their wide distribution in most oceans and seas. From the Bay of Bengal so far, 26 species of larvacea have been identified¹. Prior to this, only three other reports²⁻⁴, are known in this group from the east coast of India. *Oikopleura* spp. are particularly important as food for the larval stages of fish⁵. So far no information on the association of *Oikopleura* spp. with other organisms is available.

During one of our plankton collections from the inshore waters of Tuticorin on 22 May 1982, the authors came across an interesting and rare association between a larvacean, *O. intermedia* and the protozoan, *Acineta* sp. Out of the four specimens of *O. intermedia* encountered, only one had this sort of association. The total length of *O. intermedia* was 1.64 mm and the zooids of *Acineta* sp. ranged from 0.05 to 0.20 mm. The salinity and temperature of the

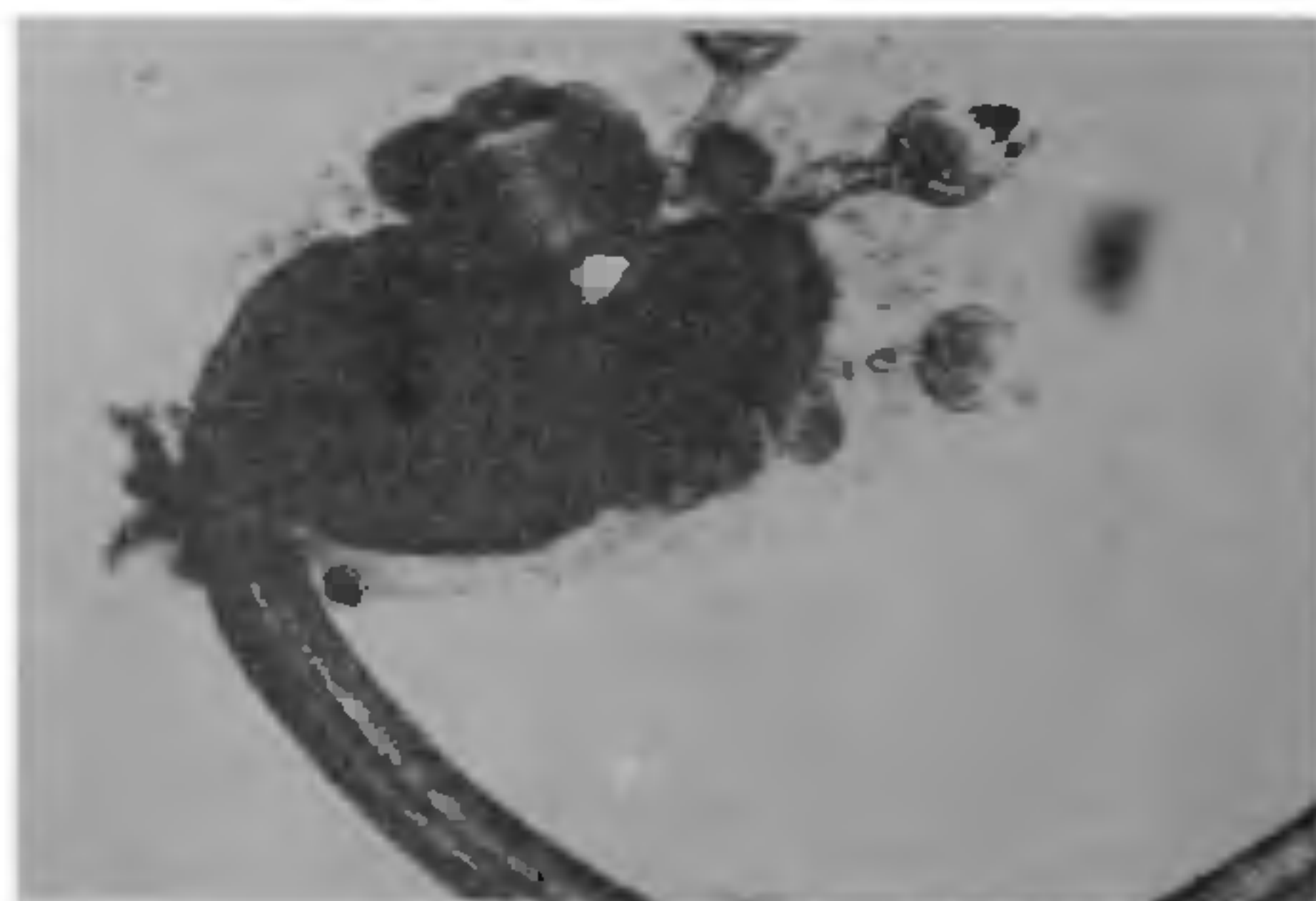


Figure 1. Attachment of *Acineta* sp. at the trunk region of *O. intermedia*.

1. Herdman, W. A., *Ceylon Pearl Oyster Fisheries Reports V.*, 1906, 295.

surface water were 34.5° and 30.5° C respectively. The colony of *Acineta* sp. was found attached at the trunk region of *O. intermedia* (figure 1).

O. intermedia, being a filter feeder, sets up a current of water and so water along with nanoplankton is drawn into the house through the funnel-like structures guarded by a set of fine mesh gratings capable of excluding organisms greater than 0.13 × 0.03 mm size⁶. When water circulates through the inner filter it is capable of retaining organisms about 0.03 mm in diameter. So it is evident that the zooids of *Acineta* sp. less than 0.03 mm in diameter, would have been retained and developed into adults. Since the adult *Oikopleura*, generally bases its house after the internal net gets clogged, it is possible that adult *Acineta* sp. might have been attached when it was actively fabricating its house with mucous.

The authors express their sincere thanks to Dr M. D. K. Kuthalingam, for encouragement. They are also thankful to Dr Samuel Paul Raj for the microphotographs.

15 March 1983; Revised 28 June 1983

1. Fenaux, R., *Mar. Biol.*, 1969, 2, 252.
2. Tokioka, T., *Publ. Seto Mar. Biol. Lab.*, 1955, 5, 74.
3. Ganapathy, P. N. and Bhavanarayana, P. V., *Curr. Sci.*, 1958, 27, 57.
4. Dhandapani, P., in *Proceedings of the Symposium on warm water zooplankton*, N.I.O., Goa, Spl. Publication, 1977, 60.
5. Shelbourne, J. E., *J. Mar. Biol. Assoc.*, 1953, 32, 149.
6. Sverdrup, H. U., Johnson, M. W., and Fleming, R. H. *The Oceans*, 1962, 888.

ON THE PRESENCE OF RENIN GRANULES IN THE KIDNEY OF TOAD *BUFO MELANOSTICTUS* (SCHNEIDER)

M. FIROZ AHMAD
Department of Zoology, Ranchi University,
Ranchi 834 001, India.

THE proteolytic pressor enzyme renin exists in the form of granules in Juxtaglomerular cells (JGC) of the afferent vessel of the kidney. This pressor substance is an important factor in renin-angiotensin system (RAS) which in turn is responsible for short term blood pressure regulations and stimulation of aldosterone secretion in mammals. The role of renin in amphibians has

yet to be defined with certainty although the presence of renin has been reported in some of the representatives of this group¹⁻³.

The present communication is the first report which describes the site of renin granules and histomorphology of Juxtaglomerular apparatus in *B. melanostictus*.

Small pieces of renal tissue of *B. melanostictus* were fixed in Helly's fluid and embedded in paraffin. Sections were cut at 2 μm to 4 μm, and then stained with Bowie's⁴ method specifically recommended for renin granules of JG cells.

The JG apparatus in *B. melanostictus* consists of JG cells only. The other components of JG apparatus like mucula densa (MD) and extraglomerular mesangium (EGM) are absent. The JG cells with distinct boundaries are located (figure 1) along the wall of the afferent arteriole of the glomerular complex. These cells are beset with deeply stained granules in their cytoplasm. The cells located in the vicinity of the glomerulus are more granulated than the distal JG cells. Some of the granules which are also positive to Bowie's stain are present even in the glomerulus near the vascular pole.

The JG apparatus has been studied by several investigators in nearly all groups of vertebrates⁵. Literature survey revealed that JG apparatus of amphibians, despite its unique position has not attracted much attention as evident from the fact that renin granules have been demonstrated only in a few species.

Bowie's positive renin granules similar to *B. melanostictus* have been demonstrated in *Triturus pyrrhogaster*, *Rana catesbeiana*, *R. japonica*, *R. nigromaculata* and *Bufo vulgaris* only³. The renin granules have also been identified with the help of

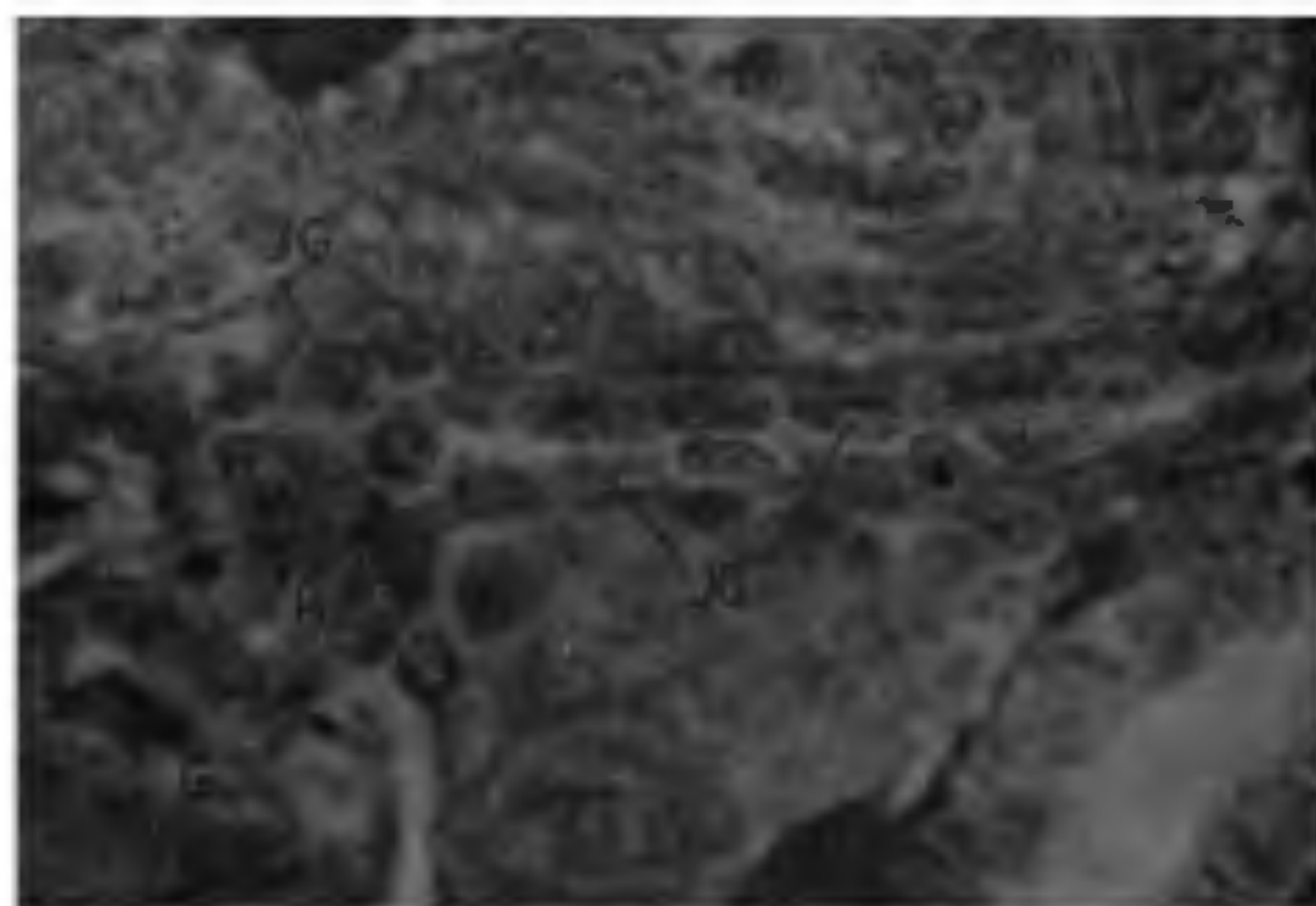


Figure 1. Portion of kidney of *B. melanostictus*, showing Juxtaglomerular cells (JG) with renin granules (R) in their cytoplasm. Note the aggregation of renin granules near the glomerulus (G).