

some of which swell up at their free ends owing to the engorgement of the blood.

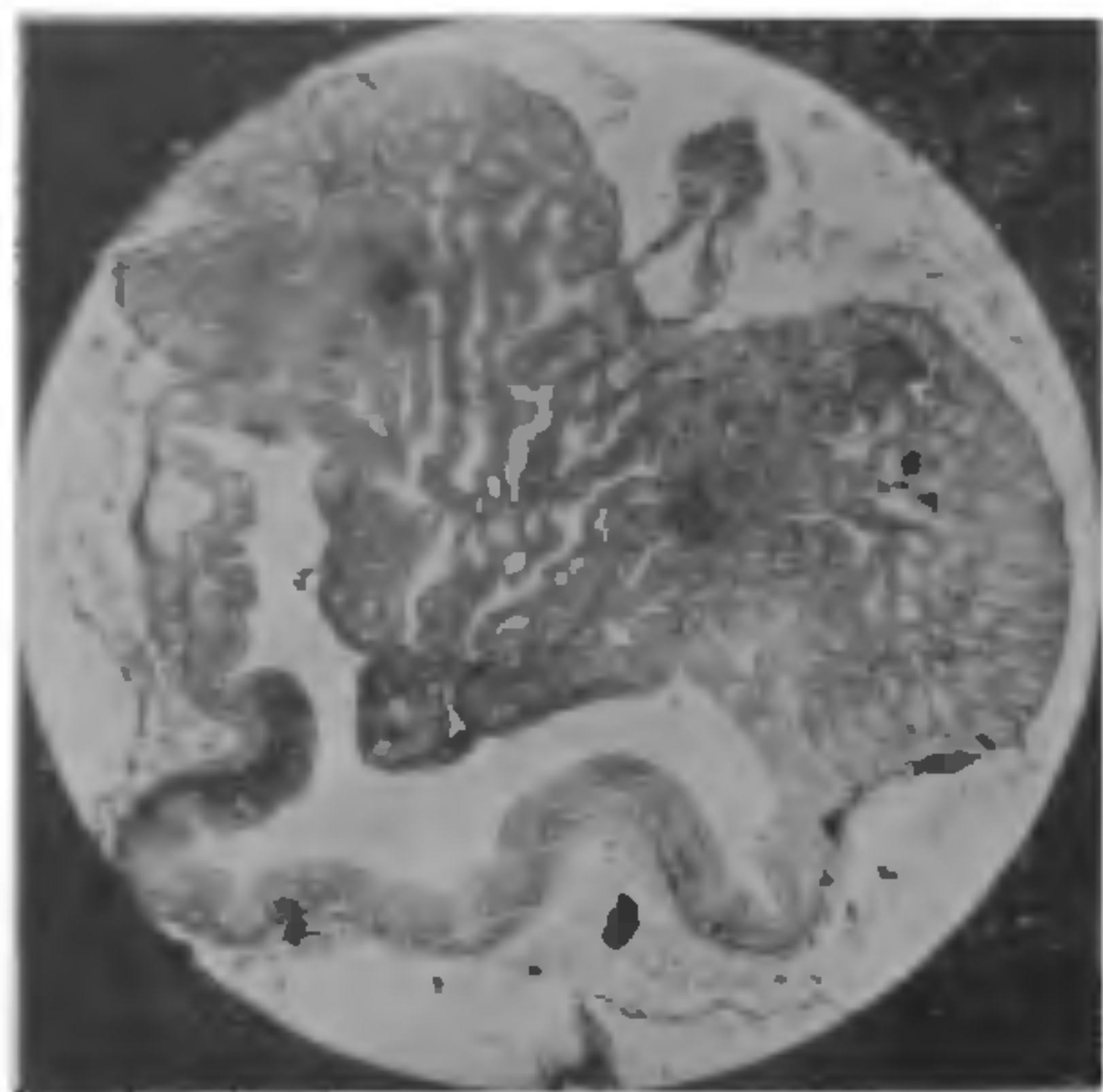


Fig. 2.

Microphotograph of the glands in section.

The glands have peritoneal cells covering the muscular layer, which latter is, however, deficient in the lamellæ. The inner lining of the gland consists of cubical cells full of granular material, which also surround the lamellæ (Fig. 4).

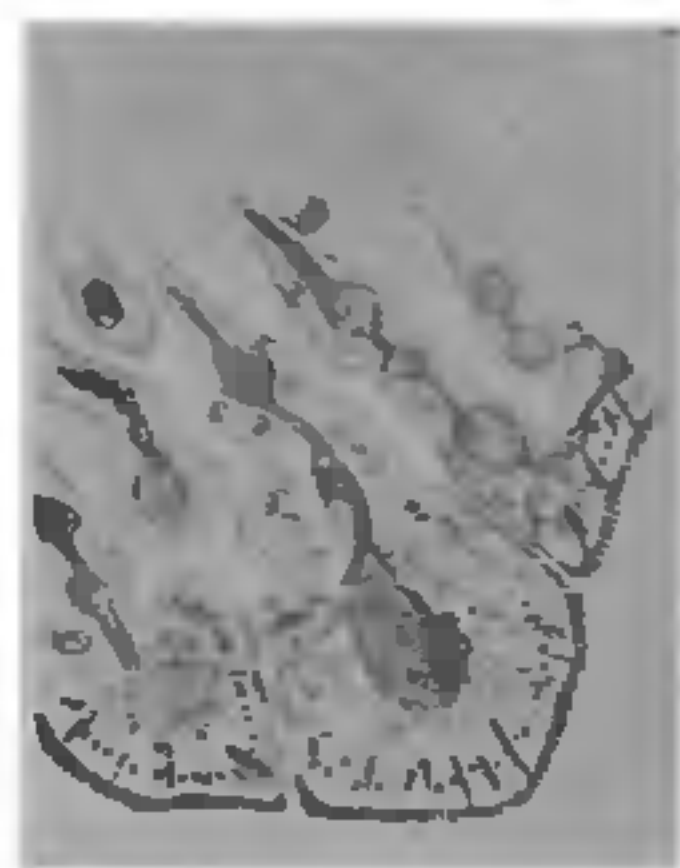


Fig. 3.

Glands near the opening into the intestine showing ciliation.

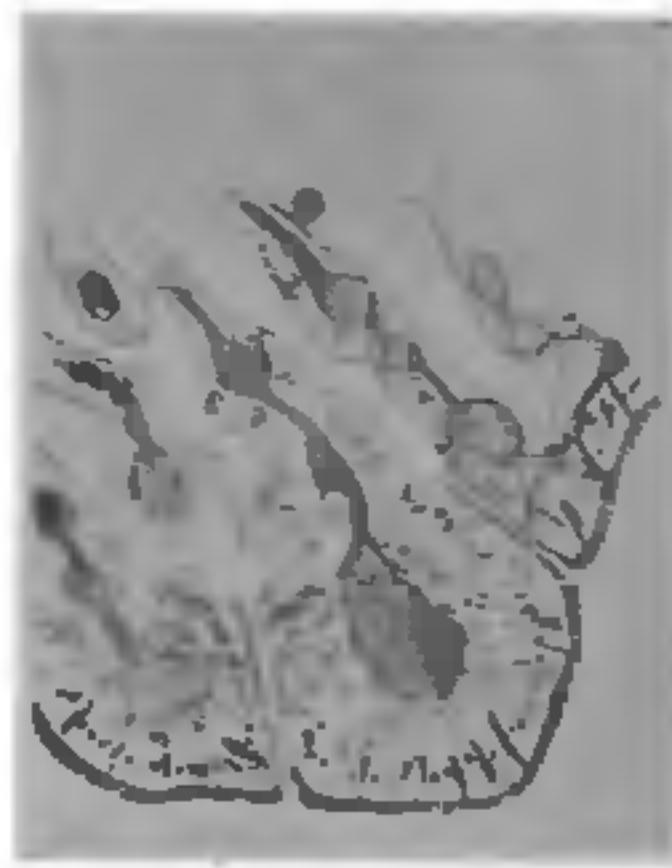


Fig. 4.

A few lamellæ of the gland showing disposition of cellular structure.

The blood supply of the glands is from the dorsal vessel and also from the subneural vessel. The branches of both the vessels ramify in the substance of the gland and form a complete anastomosis, thereby indicating a kind of portal system. Further investigations may show that the glands are of the nature of a liver that pours a digestive secretion into the gut.

G. S. THAPAR.

Department of Zoology,
University of Lucknow,
September 28, 1932.

Maintenance of Oscillations by a Triode with Filament Feed Cut Off.

WHEN some types of dull emitter tubes, *e.g.*, Cossor 215 P, Cossor 220 P, and Cossor 210 H.F., are made to generate oscillations in the normal way by coupling the grid coil inductively to the oscillatory anode coil, it is found that the oscillations continue to be maintained even when the filament battery is entirely disconnected. The mean anode current, however, as also the oscillatory current, drops to 50 to 80% of the original value and there is a slight reduction in the filament temperature as can be judged by the comparatively fainter glow of the filament. On applying the grid voltage fluctuations to one pair of the deflecting plates of a low voltage Cathode-Ray Oscillograph, it was found that the negative grid swing exceeded 30 volts. The observed filament glow and the electron emission resulting therefrom appear, therefore, to be maintained by the bombardment of the electrons repelled from the grid towards the filament during that major portion of the cycle when the grid is negative with respect to the filament. A series of characteristic curves was drawn for the tubes that show this behaviour, and a careful study of these curves does not reveal the presence of detectable traces of any gas indicating thereby that the filament is bombarded mainly if not exclusively by electrons.

I have not been able to find mention made of this effect anywhere. A more detailed account of the phenomenon will be shortly published elsewhere.

R. L. NARASIMHAIA.

Department of Physics,
Central College, Bangalore,
October 12, 1932.

A Siluroid Fish from Afghanistan.

Glyptosternum reticulatum McClelland.

Glyptosternum reticulatum was briefly and inadequately described by McClelland in 1842¹ from Sir-i-Chusma, the source of the Kabul River, and since then it has caused considerable confusion in the taxonomy of certain Sisorid fishes. In the August issue of the *Annals and Magazine of Natural History* evidence was adduced to show that *G. reticulatum* is identical with the well-known and widely distributed species "*Pareuxostoma stoliczkae* (Day)" and that

¹ *Calcutta Journ. Nat. Hist.*, 2, 584.

Pareuxostoma Regan is a synonym of *Glyptosternum* McClelland. These conclusions were based on an examination of abundant material collected by my colleague Dr. B. N. Chopra in the Chitral Valley, from which waters drain into the Kabul River.

Through the courtesy of the Bombay Natural History Society I have received a small collection of fish, comprising 4 specimens, made during August last in the Paghman River, a tributary of the Kabul River, by the Legation Surgeon to the British Legation at Kabul. In this lot there is a well-preserved specimen of *G. reticulatum*, the study of which leaves no doubt whatsoever of the identity of McClelland's much-discussed species with *P. stoliczkae*, and in consequence changes will have to be made in the nomenclature of these, as well as in the closely allied Sisorid fishes.

SUNDER LAL HORA.

Zoological Survey of India,
Indian Museum, Calcutta,
October 22, 1932.

Gregarious Collembola.

TURK¹ describes the swarming of Collembola in England and Davies² indicates the cannibalistic habit observed by him as a factor of swarming. There is no record of these interesting phenomena from India. Since swarming is confined to gregarious species only (Turk)¹, I give below a few examples of gregarious Collembola of Calcutta.

Protanura Carpenteri M.³ which has been reported by me to be gregarious in habit is found occasionally congregated in large numbers among kitchen garbage in Calcutta. *Onychiurus fimetarius* L., recorded by Handschin⁴ from South India, has been observed by me to live in colonies in the crevices of a wall close to a water reservoir. Both immature and mature individuals banded themselves at dusk into groups over the floor adjoining the wall. Swarming took place at the end of last July and specimens formed such a dense mass as to cover nearly the whole of the lower portion of a damp wall of a kitchen. The increase in number was such that specimens for days together were found carried away with the drainage water. The third example of gregarious

habit is furnished by a species of *Lepidocyrtus* specimens of which were seen crowded together near the surface of water and a number of their moulted skins occurred matted together.

I have not seen in any of these cases the cannibalistic habit reported for the first time by Davies.² Humidity is undoubtedly necessary for the existence of these atracheate species; but I believe, they would not, if the humid condition were favourable and uniform all over the locality, collect themselves into groups, unless there were other factors at work. Although the actual food of the gregarious collembola could not be determined by direct observation,³ an abundant supply of food as suggested by Turk¹ seems to be the important factor for keeping the members together. The cannibalistic habit referred to, may be explained in a different way as supplementing supply of food at times of scarcity rather than as a factor of swarming.

In discussing factors of swarming of these apterous insects, it should, however, be mentioned whether the term swarming is used in the same sense as in truly social insects as otherwise a confusion may arise between a temporary congregation and swarming that implies an active productive phase and migration for founding new colonies.

DURGADAS MUKERJI.

Zoological Laboratory,
University College of Science,
Calcutta.

Some Studies in the Infra-Red.

IN continuation with the work on the absorption spectra a self-recording spectrometer is constructed in order to avoid the uncertainties of visual observations which are found to be long and laborious. Since the time of Langley many designs have been suggested, especially by French workers in this field. In the construction of this instrument special precautions have been taken to protect it from stray radiations and to keep the rock-salt prism unaffected by moisture. A definite advance has been made in the technique of the instrument with the result that the fine line structure of the infra-red absorption bands has been observed with considerable precision. This has been secured by modifying the older methods, increasing the resolving power of the dispersing apparatus and enhancing the

¹ *Nature*, 129, 830, 1932.

² *Nature*, 130, 94, 1932.

³ *Rec. Ind. Mus.*, 34, 49, 1932.

⁴ *Rev. Suisse. Zool.*, 36, 236, 1929.