

more or less rectangular structure. On its ventral side there is an annal opening on an elevated region encircled by a circular groove.

Totally 1006 specimens (501 males and 505 females) were collected from off-shore waters of Waltair, Bay of Bengal. In immature male or female the end of the telson bears plumose setae. The mature female *T. orientalis* can be identified from the mature male by the presence of large plumose setae on the telson (Figs. 1 and 2). At a certain stage of maturation in

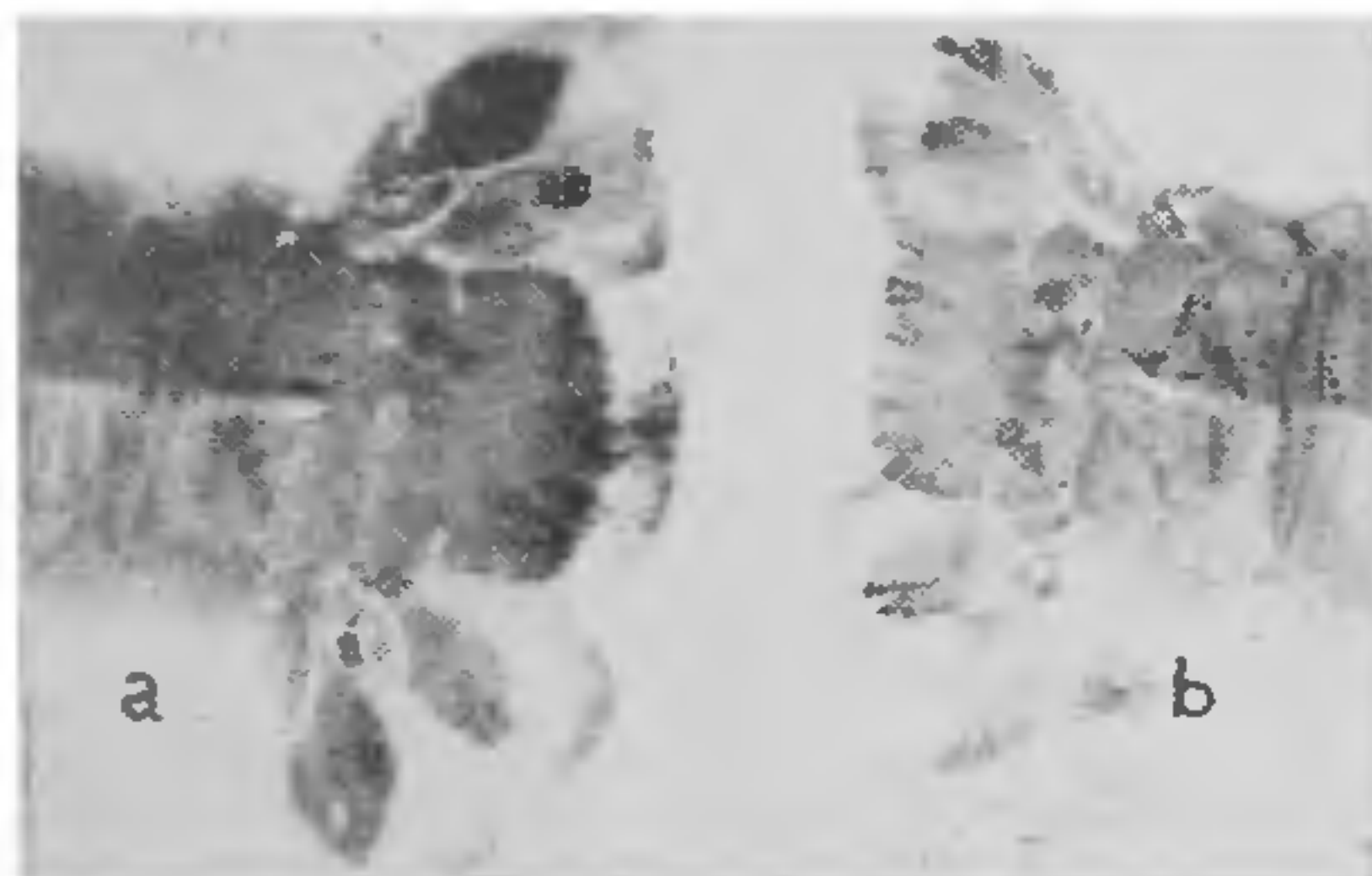


FIG. 1. *T. orientalis* (Dorsal). (a) Abdomen of female with telson and elongated plumose setae at the end. (b) Abdomen of the male with telson and small plumose setae at the end.

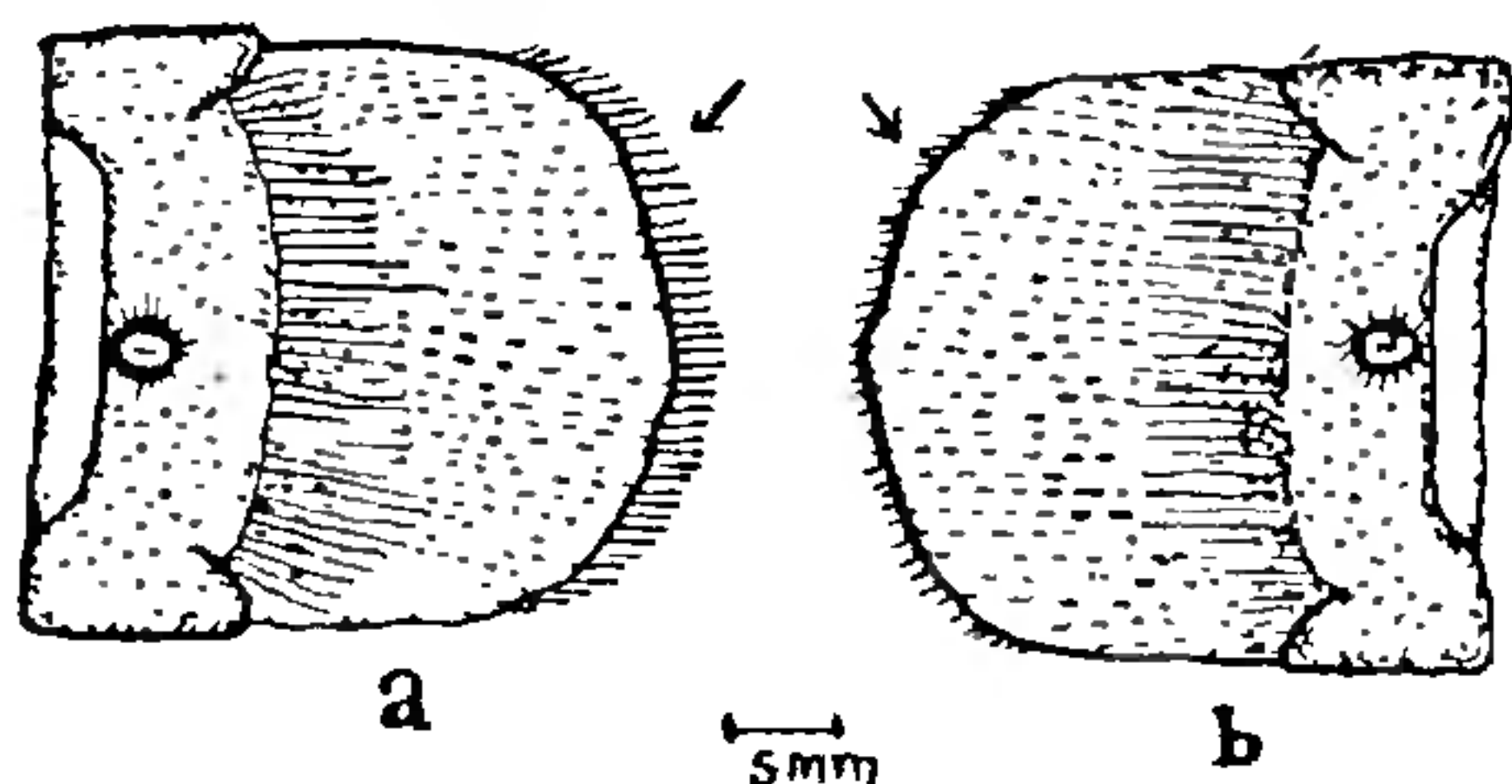


FIG. 2. *T. orientalis* (Ventral). (a) Telson of female. (b) Telson of male.

the female the setae in the telson increase rather rapidly in size. The plotted value of carapace length against total length in males and females of the same size range, reveal cross-over region which coincides with the first maturation stage of the female³. At first the maturation of the female is detected by the record of the smallest berried female (size 153 mm in total length)³. The function of these elongated setae of female presumably is to protect the berried eggs and also to enable circulation of water among the berried eggs by forward and downward beating movement of the telson.

Sexual dimorphism in spiny lobsters was reported by Kubo (1938)⁴, Creaser (1952)⁵, and Paiva (1960)⁶. But most of them considered the sexual dimorphism in the length-weight relationship. Kamiguchi (1972)⁷

reported sexual dimorphism in the antennule in the prawn, *Palaemon paucidens*. On the basis of telson and its setae it is possible to identify the sexually mature male and female of *T. orientalis*.

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ON THE UNUSUAL OCCURRENCE OF ZYMOGEN BEARING CELLS IN THE LIVER OF *LEPIDOCEPHALICHTHYS GUNTEA* (HAM.)

The liver in *Lepidocephalichthys guntea* is bilobed and the pancreas is diffuse. The structure of the liver is typically teleostean^{3, 6}. The hepatocyte is packed with neutral mucopolysaccharides (Fig. 1). However, their distribution is not uniform and they are restricted to one part of the hepatocyte.



FIG. 1. L.S. liver of *L. guntea* showing glycogen deposition in the hepatocytes, 450 (PAS).

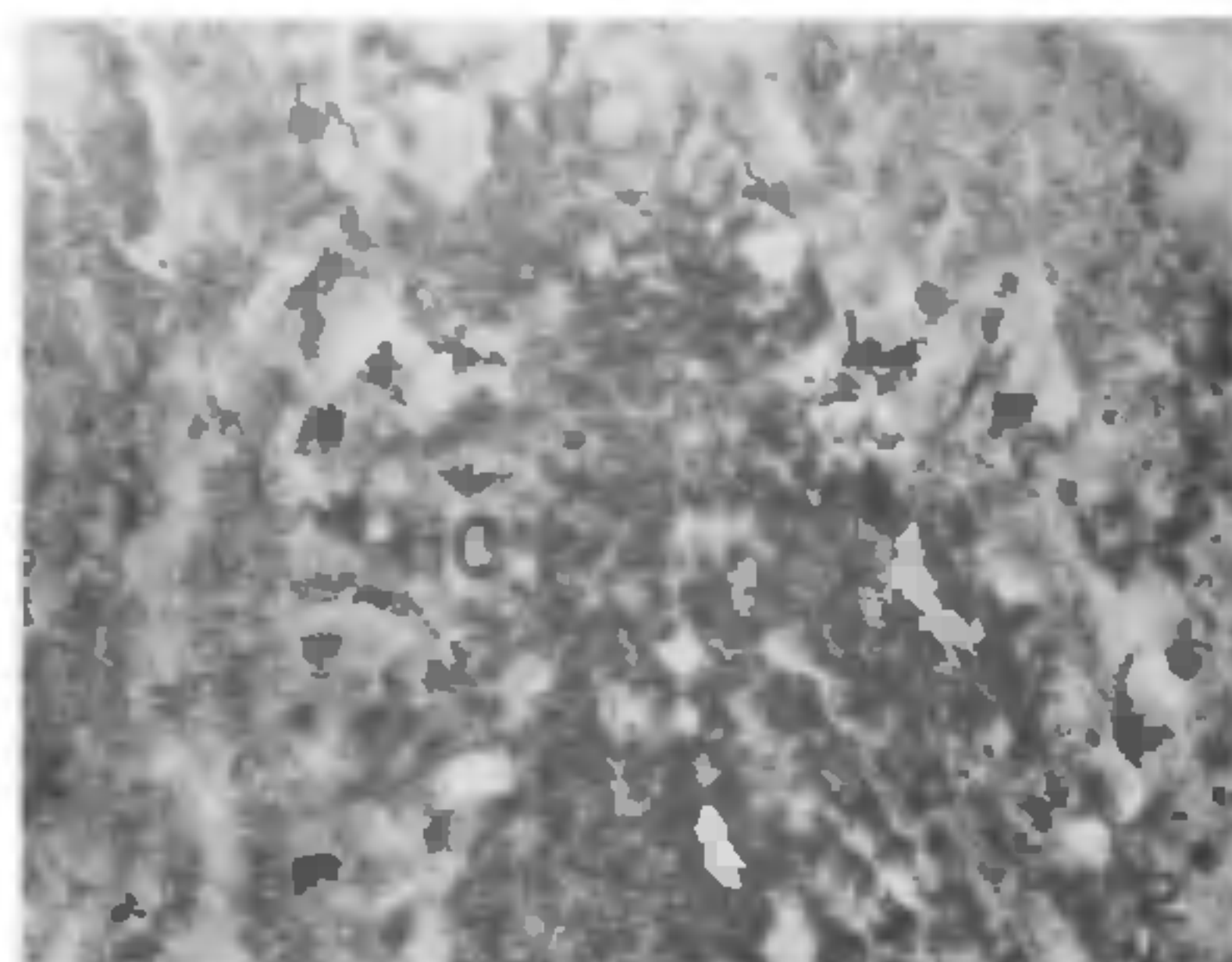


FIG. 2. T.S. liver of *L. guntea* showing zymogen bearing hepatocytes, $\times 450$ (Bensley's zymogen).

Bensley's zymogen stain reveals two zones in the liver, the central, with deeply stained cells and the outer, with unstained cells (Fig. 2). The cytoplasm of the cells is eosinophilic. These observations indicate that the cells in the central zone of the liver of *L. guntea* bear zymogen granules.

According to earlier investigators^{1,4,5}, the zymogen granules contain pepsinogen stored in the pancreatic acinar cells and in the peptic cells of the stomach of the fishes in the form of inactive precursors and are activated outside the cells in an acidic medium. However, in the opinion of the present authors the unusual occurrence of zymogen-bearing cells in the liver of *L. guntea* seems to be a compensatory device for the loss of a functional stomach.

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STAINING OF DNA WITH AQUEOUS SOLUTION OF AN OXAZINE DYE, MELDOLA'S BLUE

It was reported earlier that mammalian tissue sections following extraction of RNA through treatment with 0.1 N sodium hydroxide at 60° C for 15 min when stained with basic dyes reveal well-stained nuclei only¹⁻³. Tissue sections, that are not hydrolysed in

the alkali, reveal staining of both the nuclei and the cytoplasm when stained with these dyes. Treatment of sections with mild solution of sodium hydroxide at 60° C causes detachment of some sections at times from the slides and is, therefore, not quite a practical method for routine extraction of RNA. The author's⁴ introduction of phosphoric acid extractions of RNA at 5° C has solved this difficulty and has opened up the possibility of using basic dyes in aqueous solution for the staining of DNA. This communication presents results of staining mammalian tissue sections with Meldola's blue after phosphoric acid extraction of RNA and also embodies the spectral characteristics of the dye as well as of the stained nuclei.

Meldola's blue (Naphthol blue) (G. T. Gurr, London, C. 1. No. 51175), the first synthesized oxazine dye, was used as 1% aqueous solution. The dye solution after filtration revealed a pH of 4.7 to 4.8. This pH was adjusted to 3.0, 7.0, 9.0 and 10.0 with an aqueous solution of sodium hydroxide or hydrochloric acid as the case may be.

Paraffin sections (12 μ m) of rat liver, kidney and testis fixed in 10% buffered neutral formalin as well as in acetic acid-alcohol (1:3) were used. RNA from the deparaffinised sections was extracted in concentrated phosphoric acid at 5° C for 20 min or in 75% acid at 5° C for 2 h⁴. Staining with an aqueous solution of Meldola's blue for 3-5 min was performed after a thorough washing of the sections in water. Sections were then dried between folds of filter paper and left in butanol for one minute, cleared in xylol and mounted in DPX. In some cases regular dehydration through grades of ethanol was also performed.

Absorption properties of 5 stained nuclei were recorded in a microspectrophotometer^{5,6} at a magnification of $\times 650$. The method for determining the absorption characteristics of stained nuclei was as follows: Each of the 5 nuclei individually was focussed carefully under the microscope and light from the monochromator starting from 450 nm was allowed to pass through the central region of the nucleus and the galvanometer readings were taken at every 10 nm upto 630 nm (I_1). Then the nucleus was shifted slightly from its original position and the light from 630 nm upto 450 nm in the reverse order was allowed to pass through the blank (I_0) and the galvanometer readings noted at every 10 nm. The ratio of I_1/I_0 was obtained as transmission. Extinction values from these transmissions were obtained from the table as given by Brode⁷. Absorption values of an aqueous solution of the dye were recorded in a Beckman DB spectrophotometer.

Staining of DNA with aqueous solution of Meldola's blue following phosphoric acid extraction of