The authors are thankful to Professor S. D. Misra, Head, Department of Zoology, University of Jodhpur, Jodhpur, for providing the research facilities

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A CASE OF AMBISEXUALITY IN AN AIR-BREATHING FRESH-WATER TELEOST, *CLARIAS BATRACHUS* (L.)

HERMAPHRODITISM is often found in lower phyla of the animal kingdom; but it is occasional in higher vertebrates. Teleostean fishes, in general, are dioecious in nature. However, instances of monoecious specimens have also been reported, but only in a few species.

In teleosts, hermaphroditism may occur either as a result of teratological variation or during the course of sex reversal, except in certain species where it is a regular feature. Teleostean fishes providing instances of teratological hermaphroditism in India include—*Hilsa ilisha*[1], *Cirrhina reba*[2], *Barbus stigma*[3], *Polynemus heptadactylus*[4], *Rastrelliger canagurta*[5], *Kotsuwonus pelamis*[6], *Mystus vitatus*[7], *Sardinella longiceps*[8] *Clarias batrachus*[9], *Eleutheronema tetradactylum*[10], *Gerres oyena*[11] *Heteropneustes fossilis*[12–13], *Channa striatus*[14], *Labeo fimbriatus*[15], etc.

The present observation is made on a specimen of *Clarias batrachus* belonging to zero-year class. The specimen stemmed from a paddy field catch in the Ranchi plateau region in September, 1977. The specimen had a total length of 130 mm weighting 15 gm. The smooth external appearance of the gonads gave the usual impression of being ovaries, The left gonad was smaller than the right one, measuring 11·0 mm and 11·5 mm in length respectively. The gonoduct measured 7·0 mm in length (Fig. 1).

The material was fixed in Davidson's fixative[16] and sectioned at 10 micron. The sections were stained with Biebrich scarlet and FCF green, according to

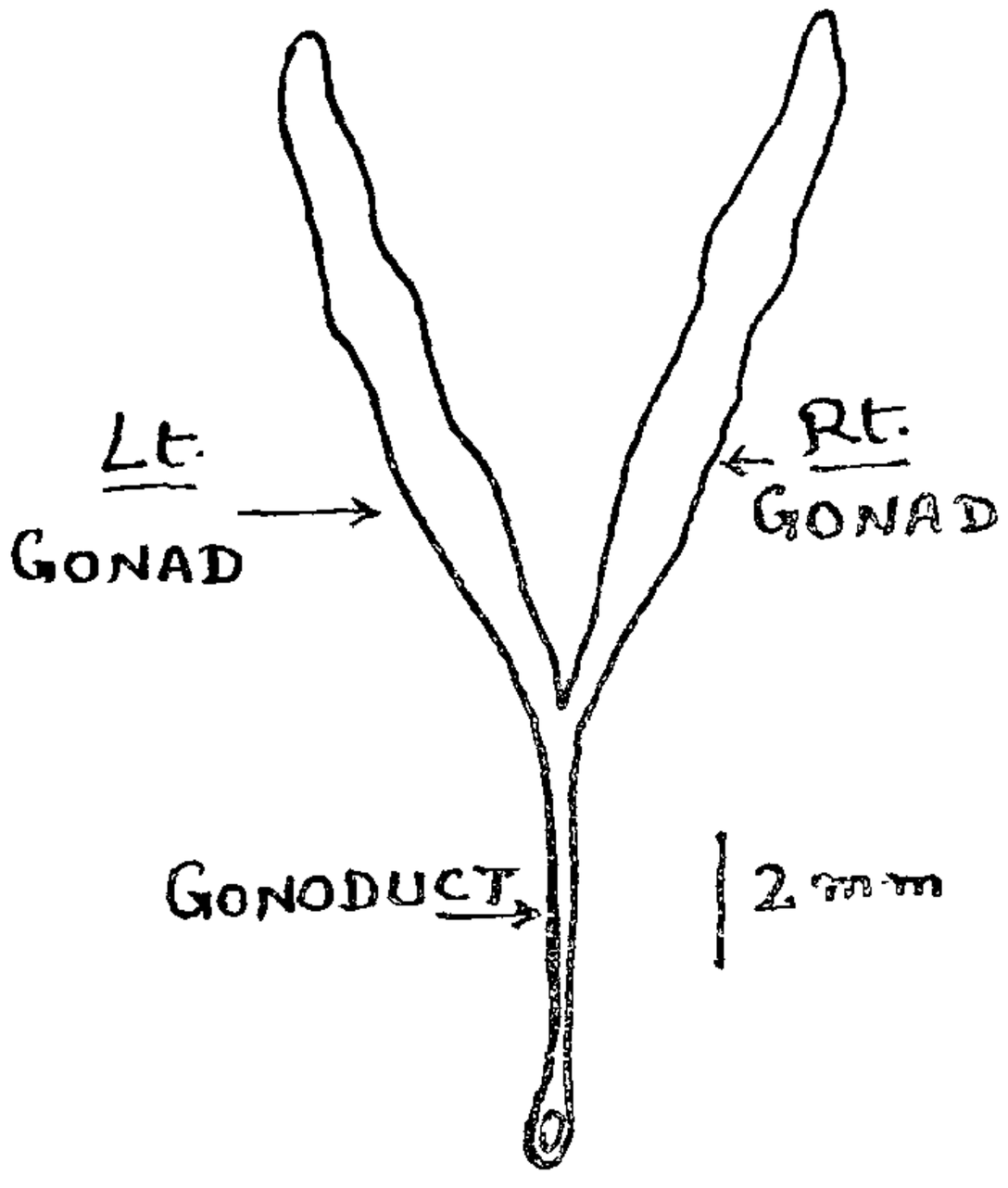

FIG. 1. Outline drawing of the gonads of the examined *Clarias batrachus* (Total length 130 mm).

the procedure of Beckert and Garner[17] Other stains such as haematoxylin-eosin and iron-alum haematoxylin were also used. Examination of the sections revealed that the gonad is ovotestis, contrary to its external anatomical appearance as ovary. The major part of the gonad was composed of testicular tissues (Fig. 2). Hermaphroditism has been observed by Lehri[9] in the mature specimen of *Clarias batrachus*. He observed that the testicular and ovarian tissues were enveloped by a common sheath, and there was a clear line between testicular parts, which lie on the anterior side, and ovarian region, on the posterior side of the gonad, connected by a narrow connection. In the present case, however, the ovarian tissues were found strewn in between the testicular lobules (Fig. 2 A). The germinal epithelium which gave rise to the oocytes, were found scattered in between the testicular lobules. The oocytes were not found to be intermingled with the spermatogonial cells as has been observed by Belsare[18] in the four months old specimen of *C. batrachus*.

The maturing oocytes were characterized by basophilic cytoplasm and a nucleus with diffuse chromatin. Nucleoli were arranged on the priphery of nucleus. The testicular part was composed of testicular lobules containing spermatogonia. Spermatocytes and sperms were not seen in the lumen of the tubule.

To assign it as a case of sex reversal, needs further study, as the specimen in question was in the first

preparatory phase (for breeding) of its life. At the same time, it is premature to assert it as a normal hermaphrodite.

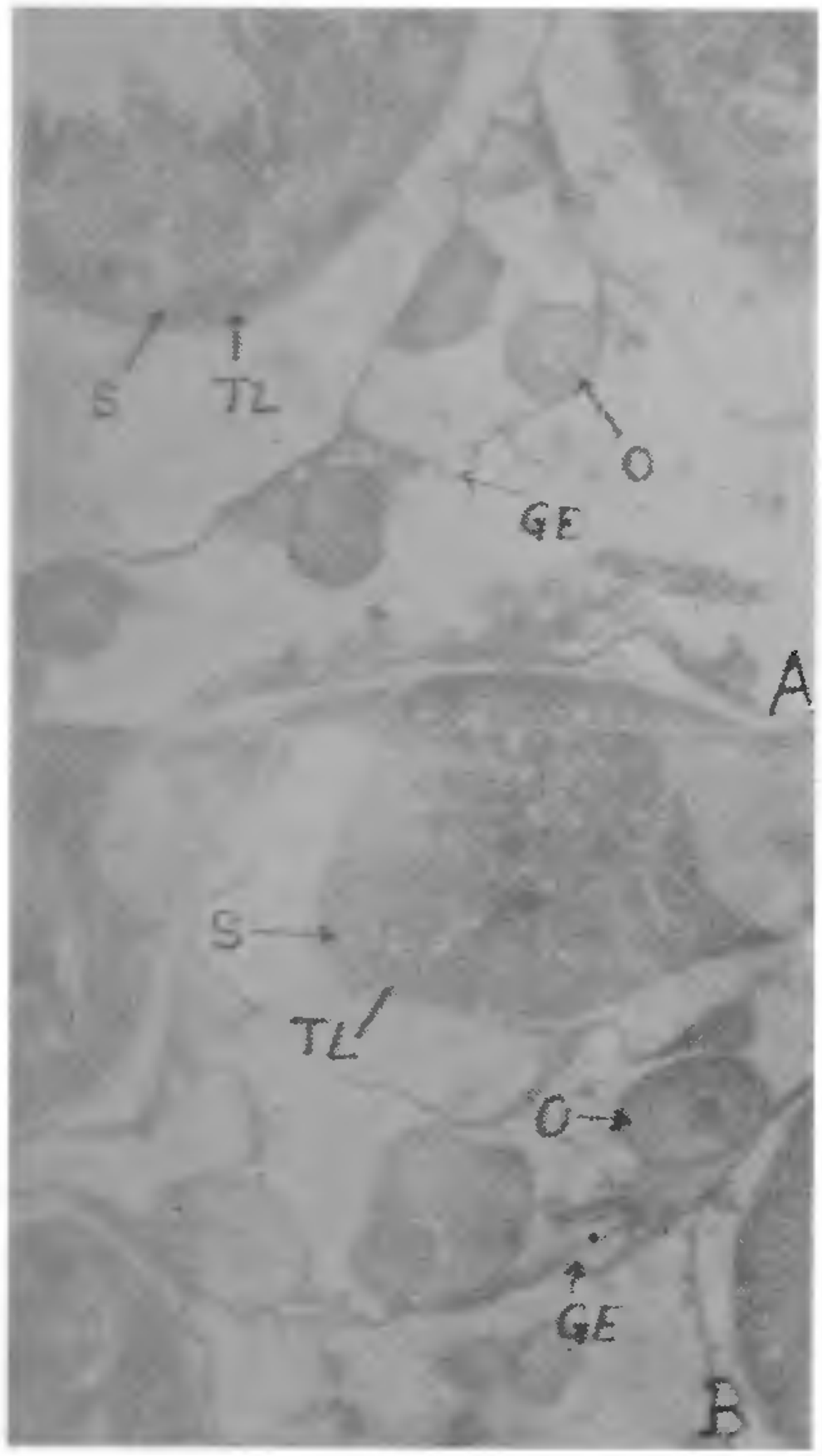

FIG. 2 A-B. Sections of the gonad of the examined *Clarias batrachus*. A. Showing scattered ova in betw en testicular tissues. B. Showing maturing oocytes arising from the germinal epithelium.

(TL, Testicular lobule, O, Ovum; GE, Germinal epithelium; S, Spermatogonia).

The somatic substratum of the gonad has its origin from the peritoneal wall (D'Ancona)[19]. In the course of development, the somatic substratum of the gonads gets differentiated either into male or female under the influence of inducing factors/morphogenetic operators. The development of abnormal gonad reported in the present paper, may be as a sequel to the simultaneous effects of both male and female determining factors.

The authors are grateful to Dr. V. G. Jhingran and Dr. P. V. Dehadrai of the Central Inland Fisheries Research Institute, Barrackpore, for their kind encouragement and help. Authors are particularly thankful to Dr. N. K. Thakur, *Officer-in-charge*, Mithapur Fish Farm, Patna, for his helpful suggestions and scrutiny of the manuscript.

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PARASITIZATION OF *ISOPARORCHIS HYPSELOBAGRI* BILLET IN *CHANNA PUNCTATUS* BLOCH

A REVIEW of the literature reveals that *Isoparorchis hypselobagri* Billet (Order, Prosostomata; Family, Isoparorchidae; Genus, *Isoparorchis*, Species, I. *hypselobagri*) usually infests the swim bladder of siluroid fishes. However, a few reports[1-6] are available about its occurrence in nonsiluroid species.