

SUBMARINE CANYONS OFF MADRAS COAST

IN the recent 15th Scientific Cruise of INS KISTNA (June 8-20, 1964), as part of the International Indian Ocean Expedition Programme, the writer participated in geological exploration. A series of submarine canyons were identified and interpreted from the echograms taken with an Edo Echosounder. These stretch to a distance of about 45 nautical miles across, off the coast of Madras (between 12° 13' 30" N, 80° 20' E. and 11° 30' N, 79° 58')—between 35 miles northeast of Pondichery and 12 miles east of Porto Novo. It is known that in this region the 100-fathom line bends near to the coast in several places (Shepard, 1963, p. 238).

These submarine canyons, so far noticed, are in two sets and each consists of hill-like projections and V-shaped valleys. The height of the ridges ranges from 300-2,400 feet and the V-shaped valleys range from 30-2,550 feet from a depth of 50-250 fathoms below the sea-level.

The first series, consisting of four hill-like projections and two big and five small V-shaped valleys, covers a distance of about 18 nautical miles. One of the hill-like projections is 1.85 nautical miles wide whereas one of the two big V-shaped valleys is 2,550 feet deep and approximately 2½ nautical miles wide. This is followed by a flat but a deeply inclining shelf, giving rise to the second series which consists of four hill-like projections, and five V-shaped valleys. One of the flat-topped, steep-sided hills is 1.65 nautical miles wide and 2,400 feet high.

Several theories have been put forward regarding the origin of submarine canyons. They are attributed to diastrophism, faulting, erosion during a vast lowering of sea-level, and action of turbidity currents especially during Pleistocene times (Kuenen, 1938; Dietz, 1953). But, in recent years, most of the theories have been discredited, leaving only the turbidity current hypothesis and another which combines subaerial erosion with drowning and maintenance of the canyons by turbidity currents, submarine slides, and sand flows' (Shepard, 1963, p. 337).

However, a detailed investigation of these canyons is necessary before their exact relationship to the continental shelf could be explained.

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OBSERVATIONS ON A GASTEROSTOME METACERCARIA FROM BAGARIUS BAGARIUS

A GREAT variety of fish, both inland and marine, have been reported as hosts of a number of representative forms belonging to the trematode family *Bucephalidas* Poche, 1907 (*Gasterostomata* Odhner, 1905). Verma (1936, 1936a), Bhalerao (1937), Srivastava (1938), Chauhan (1943), Dayal (1948) and Gupta (1956) have described Indian species, occurring in the intestine, under such genera as: *Bucephalus* Baer, 1826; *Rhipidocotyle* Diesing, 1858; *Neihartia* Negaty, 1937; *Neoprosorhynchus* Dayal, 1948; *Prosorhynchus* Odhner, 1905; *Bucephalopsis* (Diesing, 1855) and *Neobucephalopsis* (Dayal, 1948). The fresh-water fishes recorded as hosts of this commonly occurring group of digenetic trematodes are:—*Macrones seengala*, *M. aoria*, *Belone strongylina*, *B. concila*, *B. garuai*, *Pangasius buehanani*, *Silundia gangetica*, *Eutropiichthys vacha*, *Pseudotropius garua* and *Bagarius yarrelli*—all carnivorous species. The bucephalid trematodes, mostly parasitic in fishes and sometime in amphibians also, have furcocercus cercaria with mussels and some of the fishes acting as second intermediate hosts. As far as could be ascertained, the metacercaria of this group do not seem to have so far been recorded or described from India.

In three of the five specimens of *Bagarius bagarius*, available locally for collection of its parasitic fauna, the musculature revealed a heavy infestation with small whitish thin-walled cysts of 0.3-0.51 mm. in diameter with a black-pigmented area in the centre, the bodies being more numerous in the regions of the trunk (Fig. 1). After teasing of the cysts, the worm lying folded upon itself was extracted and showed an extensive excretory bladder full of dark contents and occupying the major part of the body. A prominent sucker at one end with a group of hypodermal glands situated behind and representing the fundamentals of vitellaria were the other features (Fig. 2).