

the fish attains maturity in one year when it is about three inches in length.

The physico-chemical conditions of the above three places immediately after breeding had taken place are given below :

The embryonic and larval development were followed by us and found to agree with the observations of Khan. The larvæ were noticed to commence feeding on the fourth day on the following organisms :

Desmidiaceæ: *Closterium*, *Cosmarium* :

Diatomaceæ: *Cocconeis*, *Cymbella*, *Gomphonema*, *Melosira*, *Navicula*, *Nitzschia*, *Synedra* :

Algæ: *Ankistrodesmus*, *Aphanocapsa*;

Protozoa: *Chilomonas*, *Euglena*, *Eudorina* and *Phacus*.

Adult characters were fully assumed when 25 mm. in size and one month old in all the three places. Colour varied from red, yellow, olive brown to black.

It is thus found that the gold fish could be propagated in simple garden pools and aquaria under varying meteorological conditions. This is encouraging from the point of view of the present movement to establish in popular favour for keeping and breeding fancy fishes. The gold fish is however predaceous, and has been observed to feed on young ones of *Etroplus suratensis*, *Barbus stigma* and *B. ticto* and on its own young ones below one inch in size. Gold fish culture in ferneries and ornamental ponds is also an effective check on mosquito breeding. Atkins⁵ and Schrenkeisen⁶ have found the species to be effective larvivores. We have observed the fish to consume about 200 mosquito larvæ in 24 hours. The fish can be transported over long distances without any casualty provided the water in the container is changed every six hours and the temperature is kept below 30° C.

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Freshwater Biological Sta.,
Kilpauk, Madras,
April 1949.

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ON THE OCCURRENCE OF ENTEROPNEUSTS IN SHINGLE ISLAND, GULF OF MANAAR¹

THE occurrence of Balanoglossids in Krusadai Island has already been reported.² The area where they are available in moderately large quantities has been termed as the 'Balanoglossus area'³.

On the 7th, 8th and 22nd of October 1948, fifty specimens of Balanoglossids were collected from Shingle Island which lies cut away from Krusadai by a gap of over a mile and a half width. The specimens were collected from the southern shores of the Island in a small lagoon enclosed by dead coral reef. The animals were found comparatively deeper down the sand than at Krusadai.

Though systematic collections of marine animals have been made in Krusadai and nearby islands by various biologists year after year no record has so far been traced to indicate the presence of this protochordate in Shingle Island. A search for these animals in islands nearby would throw more light on the distribution and ecology of this primitive chordate.

Krusadai Island,
Gulf of Manaar,
February 1949.

G. K. KURIYAN.

1. Published with the kind permission of the Director of Industries & Commerce, Madras.
2. Narayna Rao, C. R., *Curr. Sci.*, 1934, 3, 70.
3. Ramanujam, S. G. M., *Ibid.*, 1935-9, 427.

SEQUEL TO THE HYBRIDIZATION BETWEEN THE SUGARCANE × THE BAMBOO

PROFESSOR C. A. TAYLOR of State College of Agriculture, Brookings, South Dakota, U.S.A., considers that the systematic positions of the bamboo, sugarcane and the panicoid grasses might need revision in the light of successful hybridization between the sugarcane and the bamboo. He thinks that the floral morphology and anatomy of the genera *Arundo* and *Ochlandra* might throw some light on the problem and wishes to get into touch with researchers in India who have worked on the two genera.

T. Nagar,
Madras,

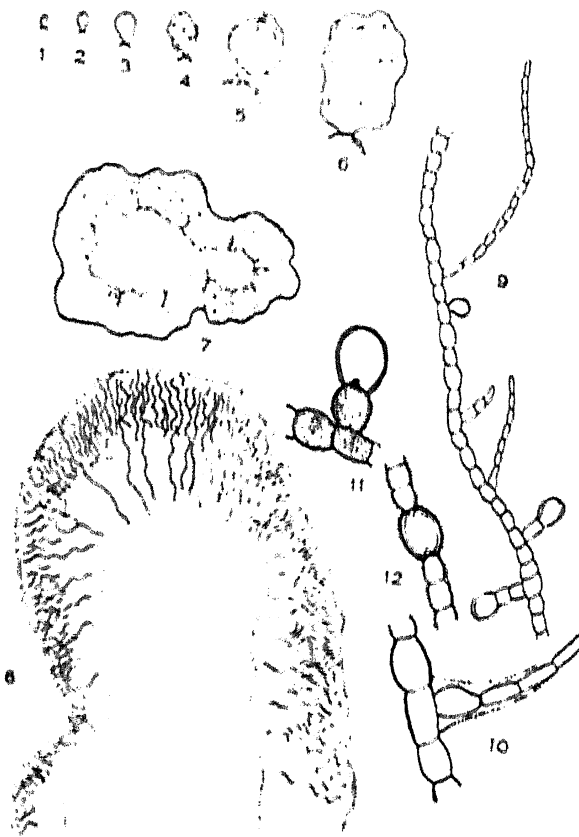
T. S. VENKATRAMAN.

June 19, 1949.

ON A *NOSTOCHOPSIS* FROM MYSORE
LARGE collections of a species of *Nostochopsis* agreeing closely with *N. lobatus* (Wood)

Geitler were made recently in the Cauvery River which enabled a study in some detail. The alga occurs in abundance during the months from November to January, attached (Figs. 1-6) to the large boulders submerged in water and sheltered from exposure to direct currents. As the alga grows in size its attachment to the rocks becomes less firm, and finally gets detached. Consequently numerous individuals are found floating in the currents and this seems to be one of the important modes of dispersal.

The young thalli appear like small bluish-green pinheads on the submerged surfaces of the rocks. Earlier stages than these also occur on the rocks as flat slimy encrustations.



Figs. 1-12

Figs. 1-6. Showing the development stages of the thallus. Natural size. Fig. 7. Section through young thallus to show the hollow nature $\times 2$. Fig. 8. Enlarged view of part of the same $\times 24$. Fig. 9. Portion of the trichomes at the branching zone $\times 970$. Fig. 10. Showing the development of the lateral branch $\times 970$. Fig. 11. Lateral heterocyst $\times 970$. Fig. 12. Intercalary heterocyst $\times 970$.

As development proceeds, the young balloon-shaped gelatinous thallus assumes a subspherical to globose shape, and shows numerous convolutions. In the mature condition the thallus measures upto 20 cm. in diameter (reported to be 3.5μ by oversight by Desikachary¹), and is cinnamon-yellow

to yellowish-brown in colour. In many cases, small green islands of actively growing groups of filaments are seen on the mature thallus.

Microtome sections of the young thalli revealed that in early stages the filaments are compactly arranged without any space in the centre. However, in a relatively mature condition a large hollow space is formed in the centre (Figs. 7 & 8) as is characteristic of *Nostochopsis lobatus* described in detail by Geitler² and by Desikachary.¹ Some of the stages in the formation of the hollow space have been followed. In brief it may be stated, that the hollow space in the centre is formed as a result of moving apart, or lax arrangement of the filaments which get grouped compactly towards the periphery (Fig. 8).

Morphological study of the material collected by the writers revealed that the plant body is composed of a tangle of filaments embedded in an amorphous gelatinous matrix. A fairly large thallus is differentiated into a basal attachment region where the filaments are small contorted and without much cell contents, a middle region which is hollow or rarely traversed by groups of lax filaments, and an outermost region where the long filaments are densely grouped and have tapering ends.

Within the thallus the trichomes are radially arranged. Each trichome can be roughly differentiated into a basal region, a middle region showing branched condition and the cells manifesting beaded appearance (Figs. 9 & 10), and a projecting portion. The cells of the basal and middle regions are barrel-shaped while those of the projecting portion are cylindrical to rectangular.

The heterocysts are either lateral [in which case (Figs. 9 & 11) they are either sessile or borne on one to four basal stalk cells] or intercalary (Fig. 12). The lateral heterocysts are ovate-ellipsoid to spherical, and measure $5.0-9.2 \times .5-9.0 \mu$.

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Bangalore,
April 16, 1949.

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B. A. RAZI.
K. M. SAFEEULLA.

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