

The Indian *Artemia* are tiny creatures half an inch in total length and cherry-red in colour when full grown. They swim upside down, as if with back strokes, like typical Phyllopods. Younger forms are pale whitish in colour. There is a pronounced sexual dimorphism, the male (Fig. B) having well developed claspers and the female possessing prominent ovisacs (Fig. A). Besides, the males are smaller than the females and are far fewer in numbers; about 98% of the population being females only.

Preliminary observations indicate that the Indian species of *Artemia*, like its foreign congener is very specialised, thriving normally in salinity of over 160°/oo, the salinity of normal sea water being only 35°/oo. Its osmo-regulatory mechanism is also very wonderful as specimens placed directly from such highly concentrated saline water into fresh tap water (0 salinity) lived for 3 days without any apparent discomfort.

Eggs of Brine Shrimp generally remain dormant for more than a year and hatch out when the optimum salinity is reached. In dry condition they are known to remain viable for 12 years. Detailed observations on the viability of eggs of the Indian Brine Shrimp, its life cycle and development will be studied later, but initial observations show that these eggs float in concentrated water of salt pans and wash up on the sides. Whether they hatch out immediately when water of lower salinity is taken into the pans in the following fortnight during the normal process of salt manufacture, has not yet been established. Experiments in the laboratory show, however, that some of the eggs hatch out on the second day in water of salinity of 65°/oo. Eggs which were yet within the egg pouches (ovisacs) were viable, for when a few mature females were crushed and put into slightly saline water the eggs from the ovisacs hatched on the third day. After hatching, the embryo remained suspended from the egg capsule, encased in the embryonic membrane for some time before it actually began to swim about. The newly hatched larva passes through the typical Nauplius (Fig. C) and Metanauplius stages.

Further observations on the systematics and bionomics of these shrimps are in progress.

I am indebted to Dr. S. B. Setna, Director of Fisheries, without whose encouragement this discovery would not have been possible.

TARAPOREVALA MARINE BIOLOGICAL STATION,
BOMBAY 2,
September 30, 1953.

C. V. KULKARNI

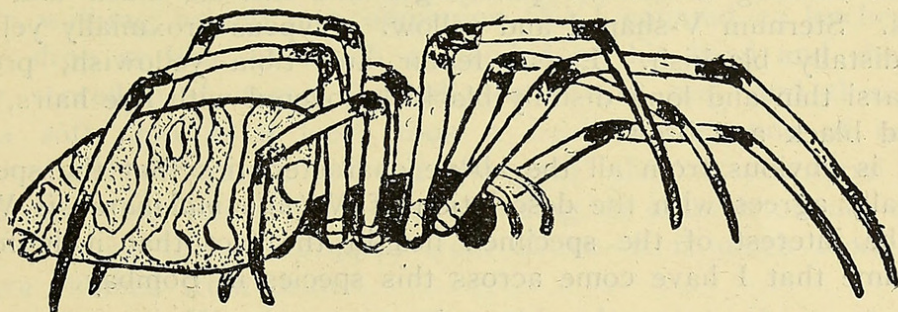
17. OCCURRENCE OF *NEPHILA MALABARENSIS* IN BOMBAY

(With a text figure)

Recently I secured an interesting Argyopid spider from an expansive orb-web that lay stretched between the tiled roof of Matunga Road Booking Station and a nearby tree (*Pithecolobium saman*). Attracted by the immense size of the web which was about 6 sq. ft. I searched for the inmate for a number of days without success.

Last week (30-6-1953) while returning late in the evening at about 7.30 p.m. I fortunately located the spider just coming out of its hiding place and repairing the web. A large-sized spider it was, with long

Eyes and
Fangs



Nephila malabarensis Walck.

stout legs and the abdomen of a general black colour with bright orange dots and streaks. I tried to bring it down with my umbrella but the spider cleverly receded and concealed itself in the narrow interspace between the batten and the tile. With some difficulty I managed to drop it into a bottle containing denatured spirit (for at that time I could not obtain any other better media like glycerin and formalin or pure spirit) and carried it home. In the denatured spirit the spider lost much of its original bright colour; the dark turned pale brown and the orange to pale yellow or even white.

On a closer examination, however, it was found that the legs were somewhat longer than in the case of *Araneus* and further the protarsi and tarsi definitely longer than the patellae and tibiae. Now, the last mentioned characteristics are those which at once distinguish the genus *Nephila* from *Araneus* (Pocock, Fauna of British India).

The species of *Nephila* commonly met with in Bombay, especially in the jungles during the monsoon months is the Giant Wood Spider, *Nephila maculata*—which has a cylindrical abdomen and has its legs about six times as long as its carapace.

The external morphological details of the newly secured specimen are given below:—

Total length	...	...	24 mm.
Carapace	...	...	9 mm.
Abdomen	...	...	15 mm.
Palp	...	...	9 mm.

		Patella & Tibia	Protarsi & Tarsi
First pair of legs ¹	... 34 mm.	10 mm.	14 mm.
Second pair of legs	... 29 mm.	9 mm.	11 mm.
Third pair of legs	... 19 mm.	6 mm.	7 mm.
Fourth pair of legs	... 28 mm.	8 mm.	11 mm.
Thickness of femur about 2 mm.			

Abdomen long oval brownish variegated with orange lines on sides and dots below. Spinnerets form a normal rosette below at the hind end of the abdomen. Mandibles stout and black. Carapace somewhat convex and reddish brown in colour. Median eyes whitish forming a normal quadrangle and laterals black and contiguous. Sternum V-shaped and yellow. Clypeus proximally yellowish and distally blackish. Legs: femur and tibia yellowish, pro-tarsi and tarsi thin and long distally blackish covered with fine hairs, joints striped black and brown.

It is obvious from all the above characteristics that the specimen generally agrees with the description of *Nephila malabarensis* Walck.

The interest of the specimen lies in the fact that it is for the first time that I have come across this species in Bombay.

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1, QUEEN'S ROAD, FORT,
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T. V. SUBRAHMANYAM

18. NOTES AND QUERIES ON LAND LEECHES

The two notes published in Vol. 50, No. 2 of the *Journal* suggest that a general article by an expert on the biology and habits of land leeches would interest many members of the Society; it is difficult for the laymen to find the answer to queries such as these:—

1. How many species of land leech are known to science?
2. Land leeches are unknown from Africa and the Americas: true or false?

3. Where do they go in the winter time?

In the tropics they are active all the year round; but in a monsoon climate they disappear entirely for about six months, during the cold dry winter. Do they get through this period in the form of eggs? or by burrowing into the soil? How do they survive the snow and frost at the upper limit of their range.

4. What is the normal food of a leech?
Humus? Soil?

5. What is the significance of a blood meal to a leech?

¹ About 4 times as long as the carapace—a feature of *N. malabarensis*.



Subrahmanyam, T V. 1953. "Occurrence of Nephila Malabarensis in Bombay." *The journal of the Bombay Natural History Society* 51, 952–954.

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