go complete metamorphosis both under constant illumination and conditions of alternate day and night illumination.

The efficacy of antibiotics used for reducing bacterial growth in the rearing jars is debated.[1-3,7] In the present study use of antibiotics (penicillin and streptomycin) proved beneficial and it is recommended that for the successful completion of the metamorphosis, freedom from bacteria is ensured.

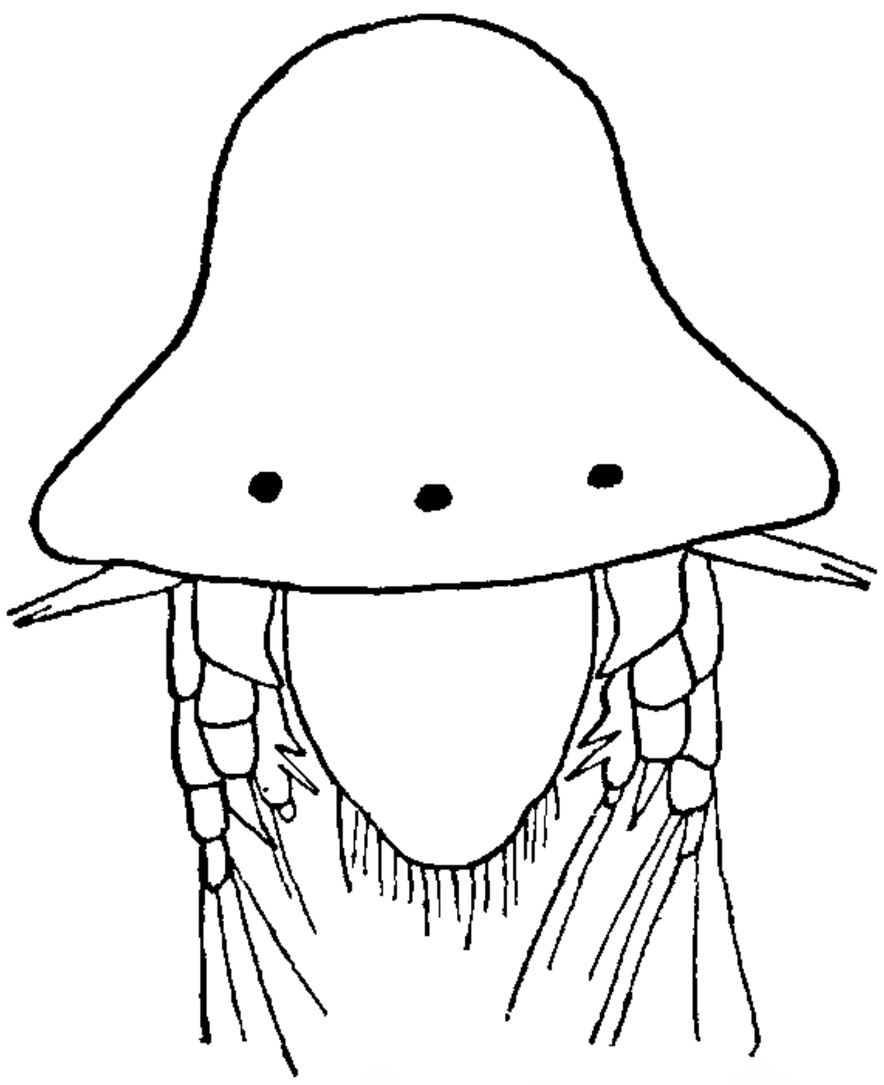

FIG. 1. Sixth nauplius stage of *Balanus amphitrite communis* (D).

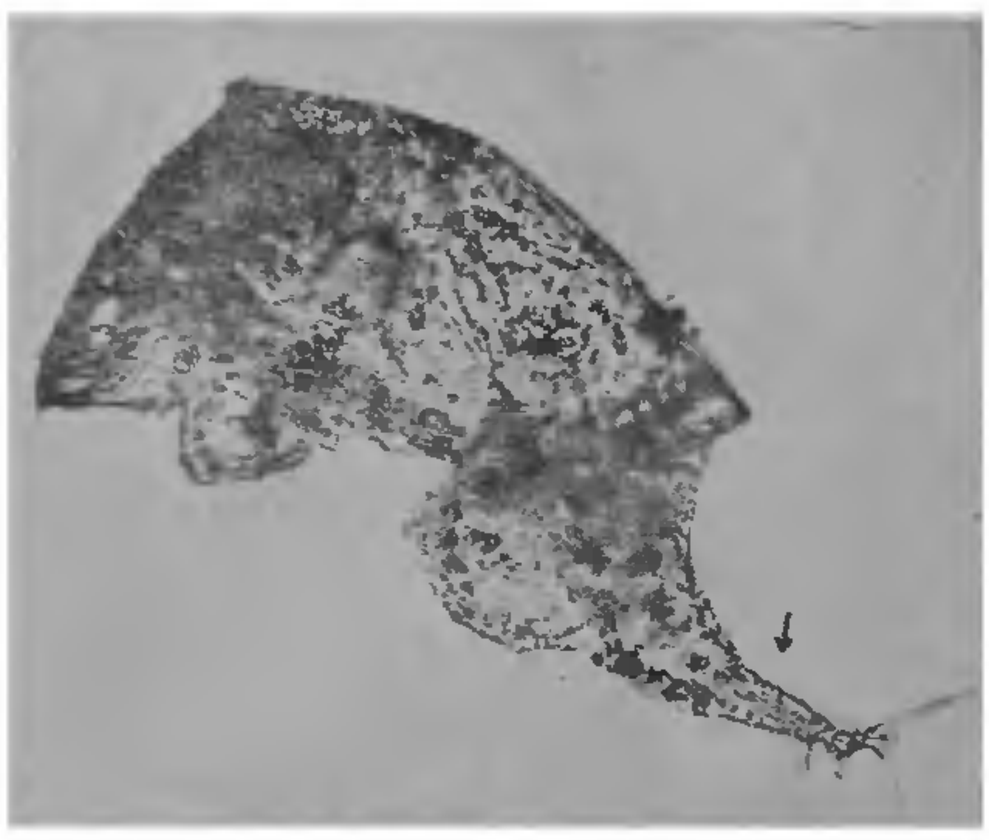

FIG. 2. Cementing organ of cypris of *Balanus amphitrite communis*.

The time required for complete metamorphosis into cypris varies from species to species of barnacle and generally depends on the rearing technique. An availability of food, however, is an important factor. Moyse[7] obtained cyprids of *Elminius modestus* within 6 days, whereas Wisely[1] reported their emergence within 15 to 20 days. In the present study cyprids of *B. a. communis* were obtained within 5 to 11 days. Nauplii having failed to emerge into cyprids' survived as long as 21 days and cyprids having failed to settle under experimental conditions generally survived for a period of 3 days.

Nauplius of *B. a. communis* at stages I, IV and VI measure 180 μ, 300 μ and 420 μ respectively in overall length (Fig. 1). Cypris of this species measures 480 μ to 500 μ in carapace length (Fig. 2). Cypris of *Elminius modestus* measures 515 μ to 576 μ and that of *Balanus balanoides* (L.) measures 1,000 μ.

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OCCURRENCE OF *KLOSSIELLA MURIS*, SMITH, 1889 IN THE KIDNEY OF A MOUSE

SMITH,[1] and Smith and Johnson[2] described a coccidium found in the epithelium of convoluted tubules of the kidney of a mouse and named the parasite as *Klossiella muris*. Since then the parasite has been recorded in the kidneys of mice from different parts of the world. The purpose of this note is to place on record its occurrence in India.

During the routine post-mortem examination of healthy mice which are received at this laboratory from different divisions of this Institute and those utilized for experimental purposes in the laboratory, kidneys of mice showing any macroscopical abnormality were collected for histopathological examination in

10% formol-saline. They were processed through conventional methods, and as a routine were stained by haematoxylin and eosin. Other stains used were Wolbach's modification of Giemsa, Perrin-Goodpasture technique and Hotchkiss's modification of periodic acid-Schiff technique for organisms and protozoan parasites.

One of the kidneys (Sp. No. 313 Ex/69) revealed changes associated with the presence of *Klossiella muris*. Macroscopically, the cortical surface of the kidney had a granular appearance. Microscopically, the striking feature was the presence of parasitic cysts in the glomeruli and in the proximal and distal convoluted tubules of the cortex of the kidney. The parasitic stages recognized were multiple sporocysts and spores within the lumen of the tubules (Fig. 1), sporoblasts each with its nucleus at its distal end which appeared to bud out from a large central mass, sporozoites still attached to the restiform body and the falciform bodies. Except for the presence of parasites, the cortex and medulla failed to reveal any other changes of pathological significance.

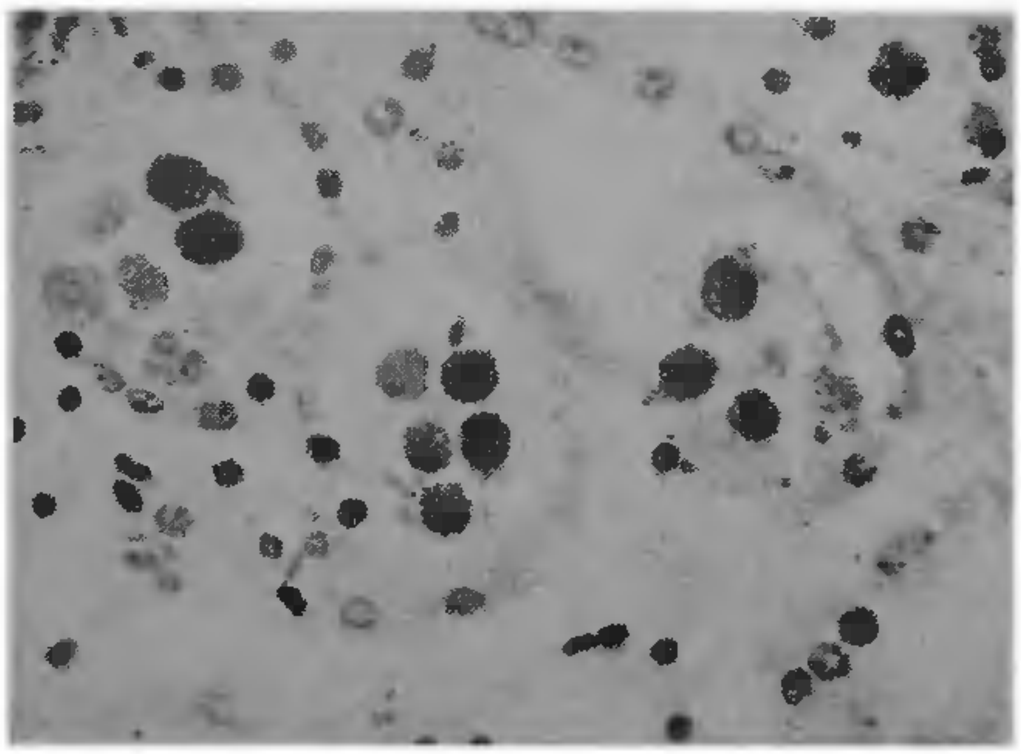

FIG. 1. Lumen of kidney tubules showing multiple sporocysts and spores. Giemsa, × 500.

Most of the parasitic stages identified in the present study resembled those described by Smith and Johnson.[2] It has been pointed out by Cotchin and Roe[3] that a high incidence of the parasite is usually associated with poor hygiene. Occurrence of the parasite only in one of the 154 kidneys examined indicates that the infection is rather sporadic in the mouse colony.

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OCCURRENCE OF SYMBIOSIS IN SPECIES OF *AMARANTHUS*

IN pursuance of the International Biological Programme, a search was made for new instances of symbiosis amongst weed plants in the tropics. This search was suggested by the review by Bond[1] drawing attention to symbiotic nitrogen fixations in some non-leguminous trees and shrubs.

Early success in this search was secured with a species of *Amaranthus*, tentatively identified as *Amaranthus oleraceus*. In the root system of this common plant, nodule-like structures were frequent. Microscopic examination of hand sections using fresh mounts showed that these structures were not due to nematode infection.

The presence of colonies of a micro-organism was easily observable. This observation was confirmed by microtome sections. These dense colonies did not stain when crystal violet and iodine combination was used for staining. Even Delanfield's Haematoxylin stained these bodies very lightly.

In order to determine whether the micro-organism contributed to the nitrogen metabolism of the host, young plants were grown in a nitrogen-free water culture and the plants showed normal growth. This experiment and an experiment to determine the effect of varying pH of water culture on nodulation and growth was reported elsewhere (Parija *et al.*[2]).

Further search showed that the characteristic colonies were consistently found in the stem as well as the tap-roots of *Amaranthus viridis* L., *A. spinosus* L. and also the cultivated group of vegetable Amaranths generally classified as *A. gangeticus* L. These colonies were located tangentially in the cortex, appearing as elliptical patches, caused by enlarged cells filled with the organism and also as larger areas caused by the lysis of host cells. The appearance of such colonies in a transverse section of the tap-root is shown in the photomicrograph in Fig. 1. It is evident that the organism which is widely distributed in shoots and roots of all the plants examined is important to the host. The cultivated Amaranths are easily