maximum of 10 visits during a period of 30 minutes) to the highly humid zones. Nevertheless, they spent most of their time in less humid environments. These reactions away from saturated conditions may have been for reducing the chance of "water poisoning", and perhaps of attack by fungi or other pathogenic organisms which thrive under wet conditions.[5]

Also, the nature of humidity reaction, in invertebates in general, depends on the state of their water reserves. Since the majority of the individuals showing a preference for less saturated condition were in their early stages of development, they may have higher body moisture contents than the mature ones, and consequently, were least susceptible to death by desiccation. Similar reactions have been reported in certain members of the genera *Forficula*,[4] *Allochironomus*,[5] and certain species of termites.[3]

Département de Biologie, M. A. ALIKHAN.
Université Laurentienne
de Sudbury,
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METACERCARIA OF *BUCEPHALOPSIS* (A PROSORHYNCHINE GASTEROSTOME) IN JUVENILES OF A TOAD AND TWO CYPRINID FISHES

ADULT bucephalid trematodes belonging to *Bucephalopsis* Dies, 1885 (Prosorhynchinæ Nicoll, 1914) and *Bucephalus* Baer, 1826 (Bucephalinæ Nicoll, 1914) occur in some of our freshwater siluroid fishes (Rai, 1967). Since the description of the life-history stages of *Bucephalus elegans* by Woodhead (1930), bucephalid metacerariæ have been recorded from several countries in a number of small freshwater fishes, among others, by Dollfus (1951) and Chubrik (1952).

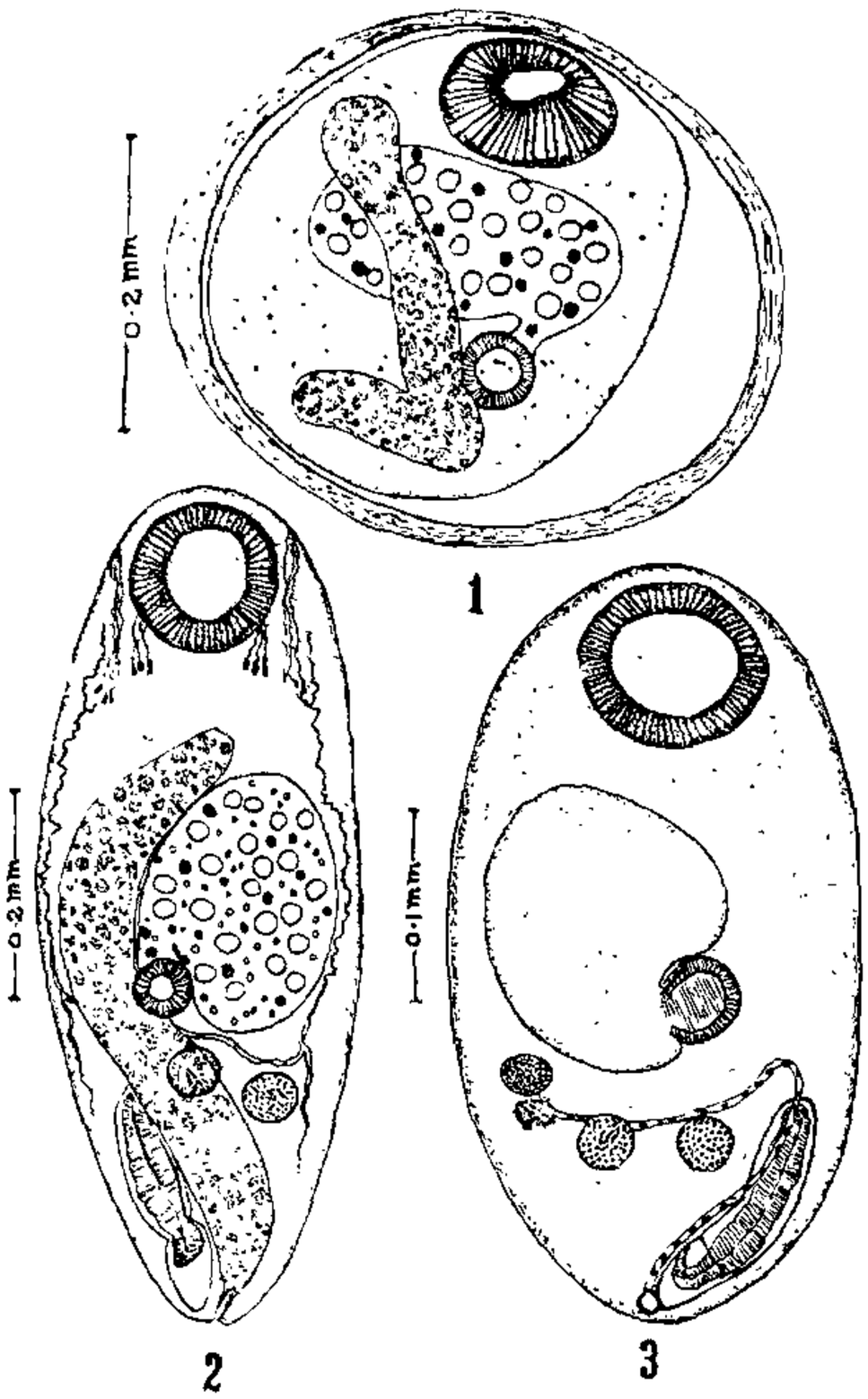
During investigations on metacercarial incidence in our lower vertebrates—piscine and amphibian, numerous specimens of the juveniles (with four limbs and tail) of *Bufo andersonii* Boulinger and the juveniles of the two carps, *Aspidoparia morar* (Ham.) and *Barilius ovazardi* Day, were examined during April, 1967. The collection, made from a small pond developed near the banks of river Jamuna at Mathura, was thoroughly searched for the larval helminths occurring in the musculature and viscera. Of the 157 developing toads, 46 were found to harbour, in regions of subcutaneous tissues, musculature of fore and hind legs, muscles of the eye and mesentery, an infection with bucephalid cysts.

The nearly spherical and somewhat whitish cysts measured 0·23–0·38 mm. in diameter, the cyst wall being 0·009–0·018 mm. thick. The coverslip preparations of the extracted cysts revealed the well-developed and tubular excretory bladder full of dark contents, the prominent and sub-terminal rhynchus without papillar prominences, the pharynx, and the sac-shaped intestine containing different-sized globules with a yellowish-green tinge.

The morphological details including the excretory system and the developing gonads were evident in the fresh preparations of the excysted juveniles. The elongated body, with a broader anterior end, a somewhat narrower posterior end, measured 0·63–0·88 mm. × 0·23–0·35 mm. Minute spines covered the entire cuticle. The circular and sub-terminal rhynchus measured 0·12–0·14 mm. in diameter. Four groups of unicellular glands, lying behind the rhynchus, had thin and long ducts passing laterally towards the anterior end. The mouth, situated slightly behind the middle of the body, opened through a pharynx into the sac-shaped intestine. The tubular excretory bladder, anteriorly extending to some distance behind the rhynchus, opened through the excretory pore at the posterior end and, near the level of the pharynx, received the two transverse ducts formed by the anterior and posterior longitudinal collecting canals. The rudiments of the genitalia included the two rounded testes (situated symmetrically, in a line, or slightly obliquely behind the pharynx), the pretesticular ovary (lying just lateral to the pharynx or slightly posteriorly), the shell-gland mass (situated immediately posterior to the ovary), the developing uterus with its terminal part passing along the well-developed cirrus sac, and the common genital pore situated subterminally at the posterior end.

Measurements from the stained permanent mounts were: length 0·27–0·50 mm.; breadth 0·16–0·23 mm.; rhynchus 0·07–0·09 mm. in diameter; pharynx 0·04–0·06 mm. in diameter; testes of 0·02–0·027 mm., ovary 0·020–0·022 mm. and cirrus sac of 0·07–0·14 × 0·02–0·03 mm. in

size. The specimens available from the different sites were within the size-range indicated.



FIGS. 1-3 (Camera lucida drawings). Fig. 1. A cyst. Figs. 2-3. Excysted juveniles. (Fig. 2. Living; Fig. 3. Stained mount.)

The collection from nearly 100 fingerlings of *A. morar* and *B ovazardi*, available from the same pond, revealed an identical infection as judged from their topographical and dimensional characters. Evidently, the juveniles of two different classes of vertebrates harboured the same metacercaria. The present finding reports, for the first time, *Bucephalopsis metacercaria*, in the aquatic developmental stage of a toad. So far, small freshwater fishes are alone known to act as the second intermediate hosts of bucephalid gasterostomes. The available specimens, on grounds of topography, are assignable to *Bucephalopsis fusiformis/B. garuai*.

Bucephalopsis, with definitive hosts in the carnivorous siluroids, has a wide range of second intermediate hosts (Verma, 1936; Pande and Rai, 1964 and Rai, 1967). These, besides their own smaller specimens, include the juvenile stages of carps and a bufonid anuran which seem to constitute the normal food of these fishes.

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Department of Parasitology, B. P. PANDE.
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INDUCTION OF POLYPLOIDY IN THE PASTURE LEGUME—*GLYCINE**

INDUCED polyploidy has played a considerable role in the evolution of superior strains of several forage species like Red clover (*Trifolium pratense* L.) and alsike clover (*T. hybridum* L.) in Scandinavian countries.[1] In India, Pusa Giant Berseem—the first colchicine-induced tetraploid—has been released recently for general cultivation.[2]

Investigations on the improvement of forage legume—*Glycine javanica*—through induced polyploidy were taken up in the Division of Botany, Indian Agricultural Research Institute, New Delhi-12, in 1964. The colchicine treatment was given in two batches, *viz.*, (*a*) seed treatment and (b) seedling treatment. In the former case, seeds presoaked in water for 6 hours were treated with 0·025%, 0·05% and 0·1% colchicine solution for a period of 3, 6 and 9 hours and subsequently after washing, sown in pots. In the second method, the presoaked seeds were sown in pots and the apical buds of the young seedlings were treated with 0·1% and 0·2% colchicine solution for 3, 6 and 9 hours for one to three consecutive days by placing cottonwads saturated with colchicine in between the newly opened cotyledons. The technique which gave highest percentage of tetraploids was the apical bud treatment with cottonwads saturated with 0·2% colchicine solution for 6 hours for 2 days. The following is the summary of observations made on the induced raw tetraploids.

The autotetraploid plants show a bit slower growth at the initial stage but later on they