of incubation (see Table II) gave unmistakable evidence in favour of this conclusion.

TABLE II

pH	Relative growth	
	26 hrs.	46 hrs.
6·50	482	969
6·80	617	996

From the above considerations it is abundantly clear that the optimum pH of *Cl. lacto-acetophilum* is 6·8, or a point exactly midway between the "good growth" range of 6·2 and 7·4.

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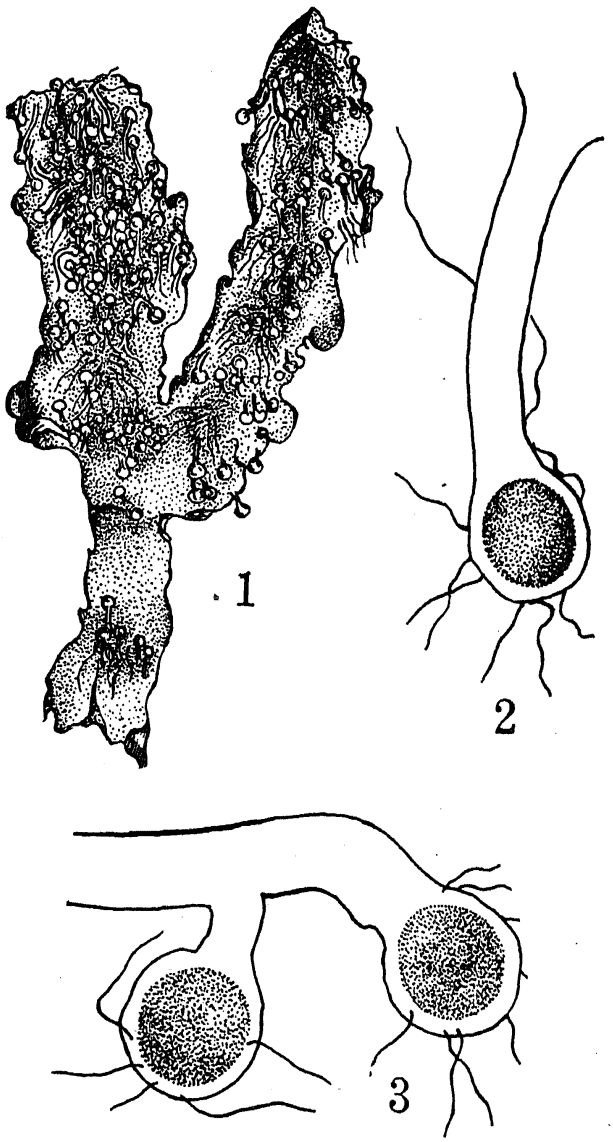
TUBERS IN A SPECIES OF *ANTHOCEROS*

COLLECTIONS of an *Anthoceros* species made in the Bababudangiris, Mysore, in the month of September 1948, showed that the thalli were dichotomously branched and possessed slender, long, greenish sporophytes, with stomata on their outer walls, and conspicuously elongated epidermal cells. The spores were echinate, purple black in colour and interspersed with elaters. The latter were multiseptate with a hump as in *Anthoceros erectus* Kashyap.

Observations revealed the presence of large numbers of tuberous outgrowths on the undersurface of the thalli, springing from the margin as well as the midrib (Fig. 1). In the initial stages these tuberous structures developed as small cushion-shaped bodies, later being surmounted on a long stalk (Fig. 2); sometimes two such tubers were borne on the same stalk (Fig. 3). The occurrence of such tubers has been reported in *A. dichotomus*, *A. argentinus*, *A. tuberosus* (Goebel,[1] 1905) and *A. himalayensis* (Kashyap,[2] 1929, p. 26). In *A. dichotomus* the tubers stand on the underside of the thallus, mostly on the sterile parts. In *A. argentinus*, on the other hand, partly lateral and partly ventral shoots, darker in colour, become transformed into tubers. In *A. himalayensis* the tubers are generally borne on the sterile plants at the apex, margin, ventral surface, and also on the



FIGS. 1-3. Tubers in an *Anthoceros* sp.
Fig. 1. A thallus showing numerous tubers on the ventral surface. ×3. Figs. 2 and 3 Tubers with stalk. ×45

male and female thalli occasionally. As a rule they are stalked but are found embedded sometimes in the thallus.

Microscopic examination of the tubers revealed the following structural details (Fig. 4). The central core of cells were orange yellow and filled with oil globules. The outer enveloping layers were composed of two to three layers of hyaline cells. Some of these outer cells elongated into unicellular rhizoids. These were also seen to arise from the outer cells of the stalk, especially at their point of origin. Goebel (1905) reported similar cases of development of rhizoids in *A. dichotomus*.

Since viable material was not available

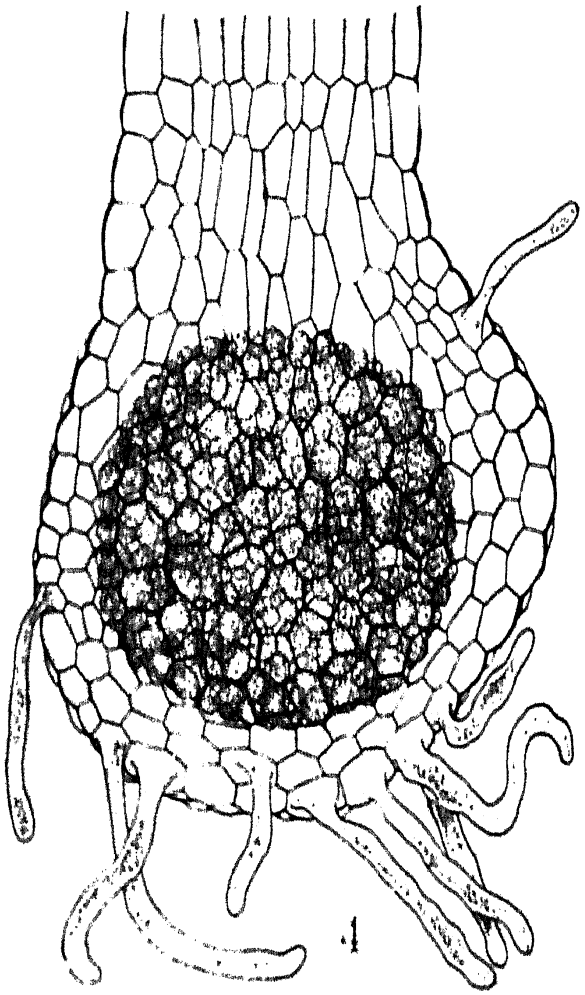


FIG. 4. Tubers in an *Anthoceros* sp. A tuber magnified to show the lighter contents of the cortical cells and the translucent storage cells in the centre and the rhizoids. ×196.

germination experiments were not carried out in the present study to further elucidate the nature of the tubers. Goebel (1905) suggested that they may be of the nature of vegetative reproductive structures. He further regarded them as being transformed branches of the thallus whose ends have become swollen and filled with reserve food materials. So far as our present observations go we are inclined to accept this view of Goebel.

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TWO ECTOPARASITES OF THE BAT *ROUSETTUS LESCHENAULTI* DESM.

DURING our studies on bats in the island of Bombay, we came across a number of ectoparasites which are being studied here. Of particular interest were two Nycteribiids and Streblids (Diptera) which do not seem to have received enough attention in the past.

Phillips[5] recorded some wingless Nycteribiids from frugivorous bats of Ceylon, but he did not get any Streblids. Thompson[6] also recorded a number of these parasites from bats in India. MacCann[4] has reported both these families from bats in and around Bombay and our results confirm his observations.

The anatomy of these interesting parasites has been worked out largely by Jobling[1,2,3]. Very little work in this direction has, however, been done in India on these insects. The anatomy of these parasites is being studied here and the interesting results will be published elsewhere.

These two insects have been identified to be *Eucampsipoda hyrtli* Kolenati and *Nycteribosca gigantica* Speiser. They were collected from the wing membrane and the neck region of *Rousettus*.

Apart from the well-developed piercing mouth parts, there is a well-developed antennal gland with a number of branches. The thoracic segments, though varying in size, are heavily padded with stiff bristles. The legs have sensitive pads on the last tarsal joint, followed by a sharp bent claw. The appendages are so adapted that they could be tucked below the body in times of need. The first abdominal segment bears comb-shaped etenidia. The end segments are telescoped. The entire body is padded with stiff bristles and also a coat of thin hairs. The shape and locomotion are a perfect adaptation to the ectoparasitic mode of life.

We are thankful to the authorities of the Zoological Survey of India for identification of the parasites and to Dr. P. J. Deoras for valuable suggestions.

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