ml of the enzyme solution to reduce the viscosity[3] of the substrate by 50%. Enzymatic activity was also determined colorimetrically by estimating the reducing sugars[4]. The reaction mixture was the same as that used for the viscometric method. The developed colour was read at 720 nm. The standard curves of glucose were prepared to estimate the enzyme activity.

In the present study, the optimum production of enzyme was standardized with 2 ml of substrate concentration in the presence of 1 ml of enzyme concentration at pH4.5. Moreover, a close correlation (table 1) was obtained among the differentially virulent isolates of *R. solani* with the production of the enzyme polygalacturonase. The virulent isolate recorded a miximum production of this enzyme even during the earlier period of incubation, when compared to that of the least virulent isolate R_1. Similar observation has been made earlier by Geypens[5], with various isolates of *R. solani* other than rice. The work of Weinhold and Motta[6] suggests the possible damage of cell wall before penetration of the pathogen by the cell wall degrading enzymes. The earlier detection of polygalacturonase from the virulent isolate of *R. solani* further reiterates the involvement of this enzyme in the primary armoury of the pathogen during pathogenesis. More detailed investigation of isozymes of polygalacturonase present both in culture filtrates and in host tissue may be helpful in determining the virulence of the isolates.

TABLE 1

Polygalacturonase production by the virulent (R_5) and least virulent (R_1) isolates of R. solani

Days of incubation	Least virulent (R_1)	Virulent (R_5)
Enzyme activity (Units)		
3	83	335
5	225	300
7	200	285
10	300	95
Growth (Mg dry wt)		
3	5	8
5	20	21
7	36	45
10	30	41

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ENTEROCYSTIS BENGALENSIS N.SP. (APICOMPLEXA:ENTEROCYSTIDAE) FROM *PSOCATROPOS* SP. (PSOCOPTERA) OF WEST BENGAL, INDIA.

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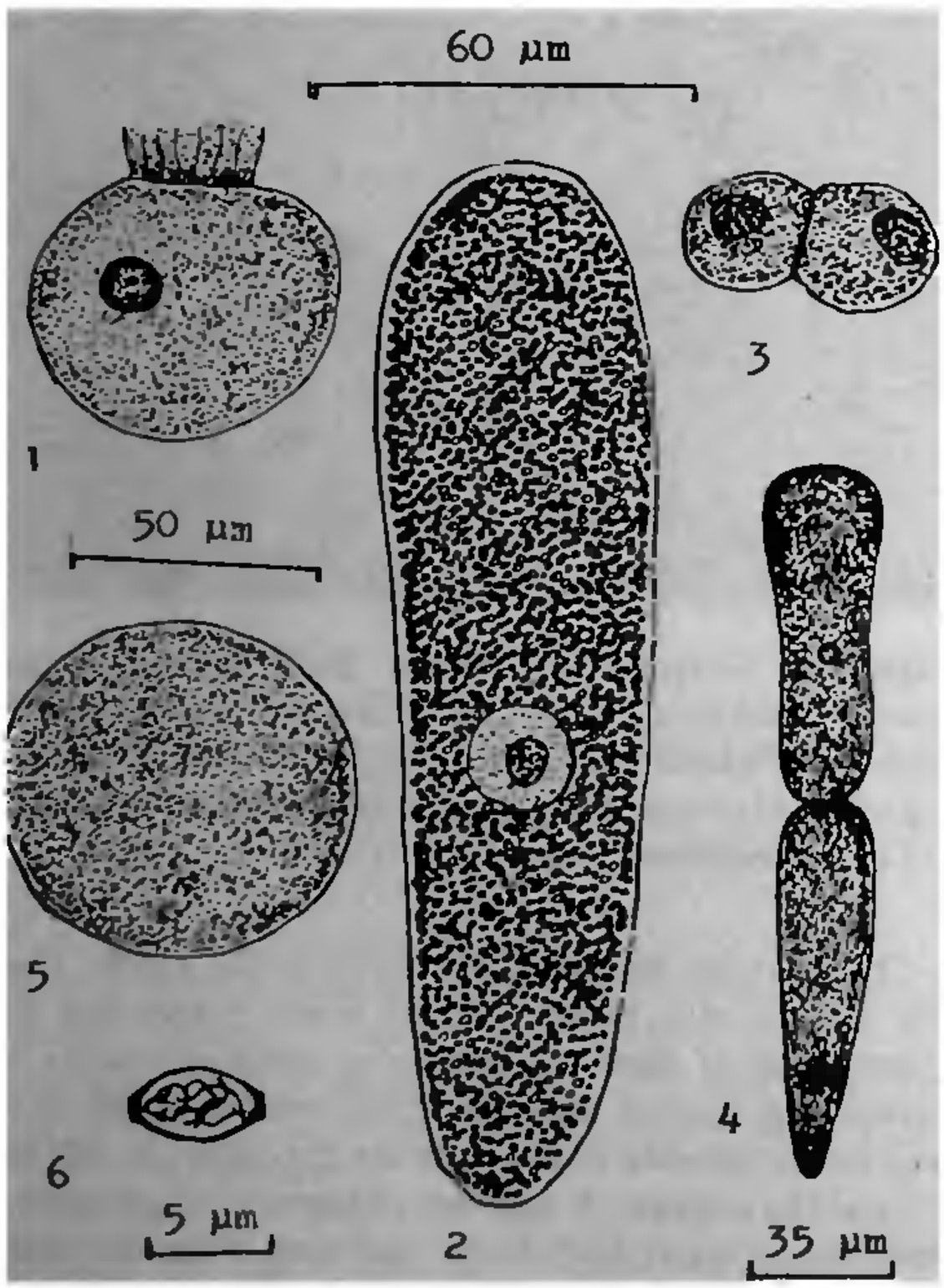
WHILE studying the parasitic protozoa of arthropods of West Bengal, India, I encountered several species of gregarines and microsporidians. This paper describes the only aseptate gregarine that I found from the midgut of the *Psocatropos* sp. (Psocoptera).

The hosts were collected from the animal room, dissected in 0.5% NaCl solution and examined under a microscope. Smears of the infected midgut contents were made on slides and fixed in Schaudinn's or Bouin's fixatives and subsequently stained with Heidenhain's haematoxylin. The gametocysts, isolated from the hindgut of the host, were kept in the moist chamber for further development. The liberated oocysts were examined with Lugol's iodine under the oil immersion lens. All measurements (given in μm) are the mean with the range within parenthesis (total number of individuals measure = n).

The earliest form was an aseptate, small, spherical or ovoid body with a round nucleus; it was attached to the midgut epithelium by a depression (sucker?) on its surface (figure 1). These forms were later released into the midgut lumen and transformed into elongate gamonts. Mature gamonts were aseptate and elongated with a round anterior end tapering gradually towards the posterior end (figure 2); they were 90 (49–140) × 24.6 (14–42) (n=25). The nucleus was spherical with an ovoidal nucleolus, situated near the centre or anterior region and rarely in the posterior part of the gamonts; it was 8.4 (4.7–16.3) (n=25) in diameter. The cytoplasm of live specimens appeared deep brown and contained large spherules; it was covered by a clear pellicle. Locomotion was by streaming movement of the protoplasm followed by

gliding. Early associations were very rare (figure 3). Ocassionally, caudo-frontal syzygy of two fully grown gamonts was found in the midgut (figure 4); the two individuals together measured 149 (103–211) ($n=3$) in length. The primite was cylindrical with a bulb-head anterior end and a round or truncated posterior end with slightly concave sides. The satellite was cylindro-conical or lanceolate and slightly longer than the primite. Spherical, thin-walled gametocysts, 63.5 (58–74) ($n=6$) in diameter, were encountered in the hindgut (figure 5). Only one of those that were placed in the moist chamber developed successfully. Oocysts and some residual cytoplasm were liberated by simple rupture of the gametocyst wall at about 100 h. The oocysts were ellipsoidal with truncated and thickened ends; they measured 6 × 4 and contained filiform sporozoites (figure 6).



Figures 1–6 Camera lucida drawing of the various stages in the life history of *Enterocystis bengalensis* n. sp. **1.** Fully grown gamont attached to midgut epithelium. **2.** Fully grown gamont from the midgut lumen. **3.** Very early association from the midgut lumen. **4.** Syzygy of two fully grown gamonts from the midgut lumen. **5.** Gametocyst from the hindgut lumen. **6.** Oocyst with truncated ends.

Host: *Psocatropos* sp.; Location in Host: Midgut and Hindgut; Locality: Naihati, West Bengal, India.

The salient features (*e.g.*, the shape and nature of the syzygy stage and of the oocysts) of the present gregarine were those of the genus *Enterocystis* Tsvetkov[5]. Levine[4] recently recognised 8 valid species of *Enterocystis* of which *E. ensis* Tsvetkov, 1926; *E. ephemerae* (Frantzius) Desportes[3], 1963; *E. palmata* Codreanu[2], 1940; *E. racovitza* Codreanu, 1940; *E. rhithrogenae* Codreanu, 1940; *E. fungoides* Codreanu, 1940 and *E. grassei* Desportes, 1963 were in Ephemeroptera and *E. hydrophili* (Foerster) Baudoin and Maillard[1], 1972 in Coleoptera. The shape of the primite of the present species, however, is far from close to that of the previously described species. Moreover, its host *Psocatropos* sp. (Psocoptera) also belongs to a different insect order than the ephemeropteran and coleopteran hosts of the other already described species. The gregarine is, therefore, considered to be a new species for which the name *Enterocystis bengalensis* n. sp. is proposed. The specific name *bengalensis* is given after the locality of the host.

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HISTOPATHOLOGY OF LIVER OF *BUFO MELANOSTICTUS* INFECTED BY *ANISAKIS* SP. LARVAE (NEMATODA)

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Effects of *Anisakis* sp. larvae (nematoda) on the liver of common toad *Bufo melanostictus* have been