thick walled, whereas in *D. flavida*, they are highly thick walled. In spite of these differences the two species are similar in many other important characters and the formation of clamp connections in every mating of conspecificity tests proves conclusively that the two species are synonymous. The differences of characters between the so called two species could be regarded as the range of variation within the same species.

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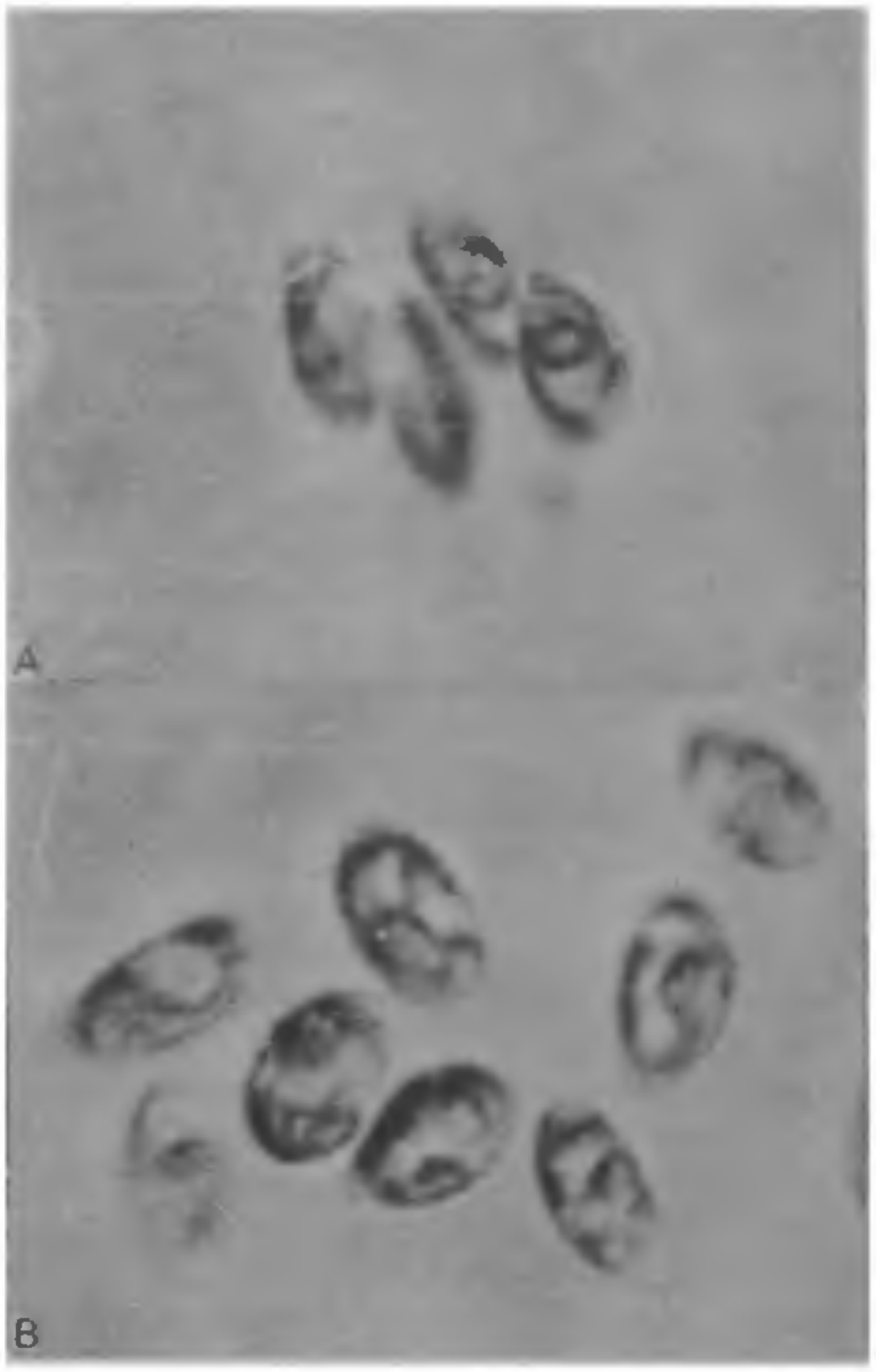

Figure 1.A Colony of *Scendesmus bijugatus* (Turpin) Kuetz. × 3200, **B.** Unicells of the same.

MORPHOLOGICAL MUTANT OF *SCENEDESMUS BIJUGATUS* (TURP.) KUETZ.

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UNICELL formation in the genus *Scenedesmus* has been reported[2–8]. This stage is recorded as a morphological variation of the genus. Cultures of *Scenedesmus bijugatus* (Turp.) Kuetz. were subjected to varying temperature conditions of 33–35°C and 36–40°C. At 33–35°C cultures were kept under continuous illumination, with a light intensity of 2.7 K Lux, while another with an alternate light 2.6 K Lux for 8 h/d. At 36–40°C in both the sets, cultures received the light intensity of 2.7 K lux. Observations were recorded at 5 day interval for 5 weeks. On 15th day, (table 1) unicells (figure 1B) appeared in the cultures kept under continuous illumination at 36–40°C. Such cells did not appear in the set kept at alternate light and dark periods. Unicells appeared after 25 days under continuous illumination at 33–35°C. The unicells did not appear in the parallel set in alternate light and dark condition at 33–35°C. According to Trainor[3], Trainor and Hilton[4], cultures placed under a wide range of temperature and in different liquid media at diurnal illumination favoured the formation of unicells. We found that after 5 weeks, the entire population was converted into unicells. These cultures were subcultured and subjected to optimum culture conditions. Even after two years, the cultures did not revert to parental form. Cultures of unicells along with cultures of *S. bijugatus* are being maintained in alternate light and dark period of 8/16 hr at 33–35° C which are the optimum conditions for *S. bijugatus*.

Trainor[5, 7] found that addition of 1.5% yeast extract, or ammonium ions and buffered at pH 8.5

Table 1 *Growth of Scenedesmus bijugatus at constant illumination (2.7 K Lux) and varied temperature*

Time (day)	Colony count at 33–35°C		Colony counts at 36–40°C	
	% colonies	% unicells	% colonies	% unicells
Initial reading	100	–	100	–
5	100	–	100	–
10	100	–	100	–
15	100	–	19	81
20	100	–	19	81
25	83	17	19	81
30	63	37	3	97
35	42	58	–	100

produced unicells population. We grew *S. bijugatus* in Juller's solution[1], (pH = 7.8), which contained neither ammonium salt nor organic substance. Steenbergen[2] synchronized the cultures of *S. quadricauda* by light and dark cycles and found that unicell formation was light dependent morphogenesis, as it occurred in the second half of photoperiod. Besides light, temperature influences the production of unicells. Table 1 shows that unicell formation occurred earlier at 36–40°C than at 33–35°C. The percentage of unicells was 81% and 17% respectively, while the intensity of light was constant.

Trainor *et al*[8], studied the morphological variation in the species of *Scenedesmus* and found that colonies of *Scenedesmus* reproduced by 4-cell colony formation. However, the 4-cells of one division may fail to join and four unicells result. These unicells may reproduce themselves or may form 4-celled colony. For the last two years these unicells are maintained in the laboratory, which have ceased to form 4-celled colony.

The unicell cultures have been subjected to various factors along with the original culture of *S. bijugatus*. They are more resistant to antibiotics like penicillin, streptomycin and mitomycin C and tolerated UV-radiation for long duration. Penicillin concentration 3×10^6 units/100 ml was lethal to *S. bijugatus* but unicells revived at this concentration after 4 weeks. Streptomycin 0.5 mg/100 ml was lethal to *S. bijugatus* while unicells tolerated as high as 1 mg/100 ml. Mitomycin C at 9 mg/100 ml was lethal but unicells cultures were healthy at 10 mg/100 ml.

Cultures of *S. bijugatus* and unicells were exposed to UV, wavelength of 2537°A, at a distance of 5 cm for 30–180 sec with a gap of 30 sec. Unicell population withstood radiation for 150 sec whereas *S. bijugatus* turned white at the end of 90 sec.

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RECORD OF TWO NEW HYPERPARASITES OF *APANTELES TARAGAMAE* VIER. (BRACONIDAE: HYMENOPTERA), A LARVAL PARASITE OF THE BLACK-HEADED CATERPILLAR PEST OF COCONUT

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OPISINA ARENOSELLA Walker (= *Nephantis serinopa*), the black-headed caterpillar pest of coconut is attacked by several parasites and predators, some of which in turn serve as hosts for certain hyperparasites. Therefore, the efficiency of the natural enemies of *O. arenosella* as powerful biological control agents in the field, is considerably reduced. Thus Rao *et al*[1] and Dharmaraju[2] reported a *Plurotropis* sp (Eulophidae) from the cocoons of *Bracon brevicornis*, collected from the states of Kerala and Mysore. Recently Temerak[3] recorded *Pediobius bruchicida* as attacking the cocoons of *B. brevicornis* which was reported as a primary parasite of *Sesamia cretica* Led., a pest of sugarcane, sorghum and maize. *Apanteles taragamae*, another common larval parasite of *O. arenosella* is known to be attacked by four hyperparasites[1], *viz* *Aphanogomus manilae* (= *Calliceras manilae* Ashm.);