

**DESMIDS OF SOME SELECTED AREAS OF BANGLADESH. 3. *DOCIDIUM*,  
*PLEUROTAENIUM*, *TRIPLASTRUM* AND *TRIPLOCERAS***

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**Abstract**

23 taxa belonging to *Pleurotaenium*, 2 under *Triploceras* and 1 each under *Docidium* and *Triplastrum* have been recorded in this paper from some selected areas of Bangladesh. Of these, 11 are new records for the country.

**Introduction**

This is the third paper in a series under the above title. The first and second papers with the same title have already been published in this journal (Islam and Akter 2004 and Islam and Begum 2004). The present paper includes the species belonging to *Docidium*, *Pleurotaenium*, *Triplastrum* and *Triploceras* from the same selected areas as mentioned in the above papers. The illustrated descriptions of these taxa are given below.

For materials and methods, dates and places of collections and other information see Islam and Akter (2004).

**Taxonomy**

**Class: Chlorophyceae; Order Desmidiiales; Family: Desmidiaceae**

A total of 27 taxa (*Docidium* 1, *Pleurotaenium* 23, *Triplastrum* 1 and *Triploceras* 2) have been described with diagrams and photomicrographs. Of these, 11 taxa are new records for the country (marked by \*).

**Genus: *Docidium* de Brebisson 1844 em. Lundell 1871**

Cells straight, cylindrical, smooth, or with undulate margins, 8-26 times longer than broad; circular in cross section, slightly constricted in the midregion, with an open sinus; apex usually truncate, rounded, sometimes dilated, smooth or rarely with a few intramarginal granules; base of semicell inflated, with 6-9 visible folds (plications) at the isthmus, the folds usually subtended by granules; cell wall smooth or faintly punctulate; chloroplast axial with irregular longitudinal ridges and 6-14 axial pyrenoids; zygospore unknown.

1. ***Docidium baculum* de Bréb. var. *baculum*** (Pl. 1, Figs. 4-5)

(Prescott *et al.* 1975, 102, Pl. 37, Figs. 1-4).

Cells straight, cylindrical or very slightly tapering; apex smooth, rounded-truncate, not dilated; base of semicell with single inflation, with several folds; cell length 207-210.2 µm; mid-diam. 11-14.20 µm; isthmus 8.5 µm; apex 7-10 µm.

*Specimen studied:* Collected from a ditch within the Chittagong Univ. Campus on 19 March 1989; fairly common.

**Genus: *Pleurotaenium* Nägeli 1849**

Cells straight, cylindrical, circular in cross section, not deeply constricted in the midregion, wall smooth, undulate, nodose, or spinulose; apices truncate or rounded-truncate, sometimes with granules or teeth; wall smooth or punctate, in some species with thin and thick areas, never plicate at isthmus as in *Docidium*; usually, prominent ring-like thickening on the semicells present; chloroplast with several parietal bands; pyrenoids few to many, either in the parietal bands or in the axial zone.

Although apparently similar, the *Docidium* is separated from *Pleurotaenium* chiefly by the presence of folds at the base of semicell, and by the usually smooth apices.

**\*2. *Pleurotaenium coronatum* (Bréb.) Rab. var. *fluctuatum* West (Pl. 2, Figs. 19-20)**  
(Prescott *et al.* 1975, Pl. 46, Figs. 16-17)

Cell length 269-298.20  $\mu\text{m}$ ; mid-diam. 19-21.3  $\mu\text{m}$ ; isthmus 17-18.5  $\mu\text{m}$ ; apex 14-17.1  $\mu\text{m}$ ; our material is very much smaller in size than the typical.

*Specimens studied:* Dhaka: collected from a pond near Uttara Shopping Centre, near Zia Intern. Airport, Dhaka on 6 Sept. 1989; from Khilkhhet *beel*, Dhaka on 6 Sept. 1989; Cox's Bazar: from a pond near Kalatali Shrimp Res. Inst. on 10 Dec. 1989.

**\*3. *Pl. crenulatum* Rab. var. *crenulatum* (Pl. 1, Figs. 9-10)**  
(Ruzicka 1977, Pl. 42, Figs. 7-13; Prescott *et al.* 1975 as *Pl. ehrenbergii* var. *crenulatum*, Pl. 45, Figs. 12-13).

Cell length 586-729.50  $\mu\text{m}$ ; mid diam. 51-55  $\mu\text{m}$ ; isthmus 35-38.7  $\mu\text{m}$ ; apex 29-32.25  $\mu\text{m}$ ; in outline it is like *Pl. trabecula* (Ehr.) Reinsch, but it has apical tubercles; semicells broadening again beyond the basal inflation, with sides parallel or very slightly tumid toward the apex where there is an abrupt tapering; apex truncately rounded with 5-7 tubercles; wall sparsely punctate,.

*Specimen studied:* Chittagong, collected from a ditch within Chittagong Univ. Campus on 19 March 1989.

**\*4. *Pl. doliforme* West & West var. *doliforme* (Pl. 3, Fig. 26; Pl. 4, Fig. 42)**

Cells straight, cylindrical, shape barrel-shaped, with fairly prominent median constriction; semicell with broad base and slightly attenuated apex; apex truncate, flattened with several conical (dendate) tubercles; cell wall with several transverse rings of thin and irregular to quadrangular areas; thin areas of polar region irregularly elongate; zygospore not found; cell length 277-288  $\mu\text{m}$ ; mid-diam. 48.3  $\mu\text{m}$ ; isthmus 34-37  $\mu\text{m}$ ; apex 21-27  $\mu\text{m}$ .

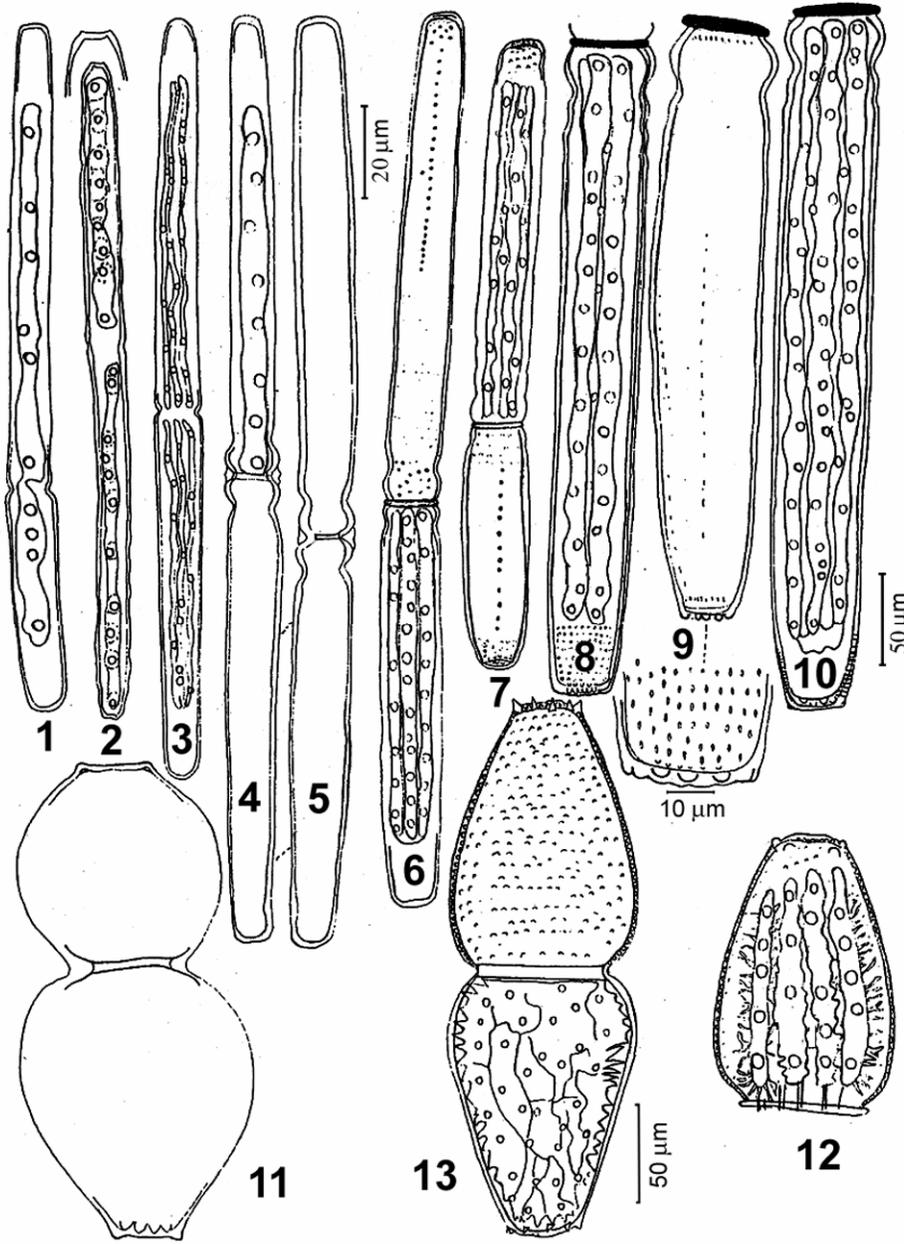


Plate 1 (Figs. 1-13)

Figs. 1-13: 1. *Pleurotaenium minutum* var. *gracile*; 2. *Pl. minutum* var. *attenuatum*; 3. *Pl. minutum* var. *minutum*; 4-5. *Docidium baculum* var. *baculum*; 6-7. *Pleurotaenium trabecula* var. *trabecula*; 8. *Pl. nodulosum* var. *nodulosum*; 9-10. *Pl. crenulatum* var. *crenulatum*; 11. *Pl. ovatum* var. *tumidum*; 12-13. *Pl. ovatum* var. *ovatum*.

*Specimen studied:* Collected from a rice-field at Sonargaon in Narayanganj district on 29 March 1989; pH 6.6; fairly common.

5. **Pl. ehrenbergii** de Bary var. **ehrenbergii** (Pl. 2, Fig. 25)

(Foerster 1982, Pl. 14, Fig. 1; Ruzicka 1977, Pl. 40, Figs. 1-10)

Cells relatively large, slightly constricted, semicells with conspicuous basal inflation and usually with 1-2 smaller swellings beyond (exception var. *undulatum*), margins of semicell slightly tapered to a rounded truncate apex with 7-10 tubercles (rounded or conical) present; wall punctate; chloroplast in longitudinal, parietal bands with several-many pyrenoids; cell length 227.2  $\mu\text{m}$ ; mid diam. 11.4  $\mu\text{m}$ ; isthmus 10  $\mu\text{m}$ ; apex 8.5  $\mu\text{m}$ .

Note: Our specimen is smaller than the typical form with thick wall and irregular shallow undulations.

*Specimens studied:* Collected from a pond near Uttara Shopping Centre near the Zia Int. Airport on 6 Sept. 1989 and from a ditch near Kaliganj Railway Station, Kaliganj, Gazipur on 14 Aug. 1989; fairly common in both the collections.

6. **Pl. ehrenbergii** var. **undulatum** Schaar. (Pl. 2, Fig. 24)

(Ruzicka 1977, Pl. 40, Figs. 13-15; Prescott *et al.* 1975, Pl. 46, Fig. 18).

Cells medium to large; margins gently to symmetrically undulate beyond the basal inflation up to the middle or up to the apex; apex truncate with 4-6 (8) tubercles; cell length 295-392  $\mu\text{m}$ ; mid-diam. 17-20  $\mu\text{m}$ ; apex 11-12.8  $\mu\text{m}$ .

*Specimen studied:* Collected from a rice-field near Manikganj on 1 April 1989; pH 6.3; common in the collection.

7. **Pl. elatum** (Turn.) West & West

(Hirano 1957, Pl. 13, Fig. 3; Islam and Haroon 1980, Pl. 4, Fig. 71)

Cell length 774  $\mu\text{m}$ ; mid-diam. 58.5  $\mu\text{m}$ ; isthmus 48.5  $\mu\text{m}$ ; wall slightly undulate, with pits; median band present.

*Specimen studied:* Collected from Khilkhet *beel*, Dhaka on 6 Sept. 1989; fairly common in the collection.

\*8. **Pl. eugenium** West & West var. **eugenium** (Pl. 2, Figs. 22-23)

(Scott and Prescott 1961, Pl. 4, Fig. 3)

Cell medium-sized; semicells with evident basal inflation and diminishing undulations up to apex; apex slightly tapered, rounded-truncate with several tubercles; wall punctate; chloroplast 3-4 lateral bands; cell length 419-503  $\mu\text{m}$ ; mid-diam. 22-32.3  $\mu\text{m}$ ; isthmus 19-29  $\mu\text{m}$ ; apex 12-25.8  $\mu\text{m}$ .

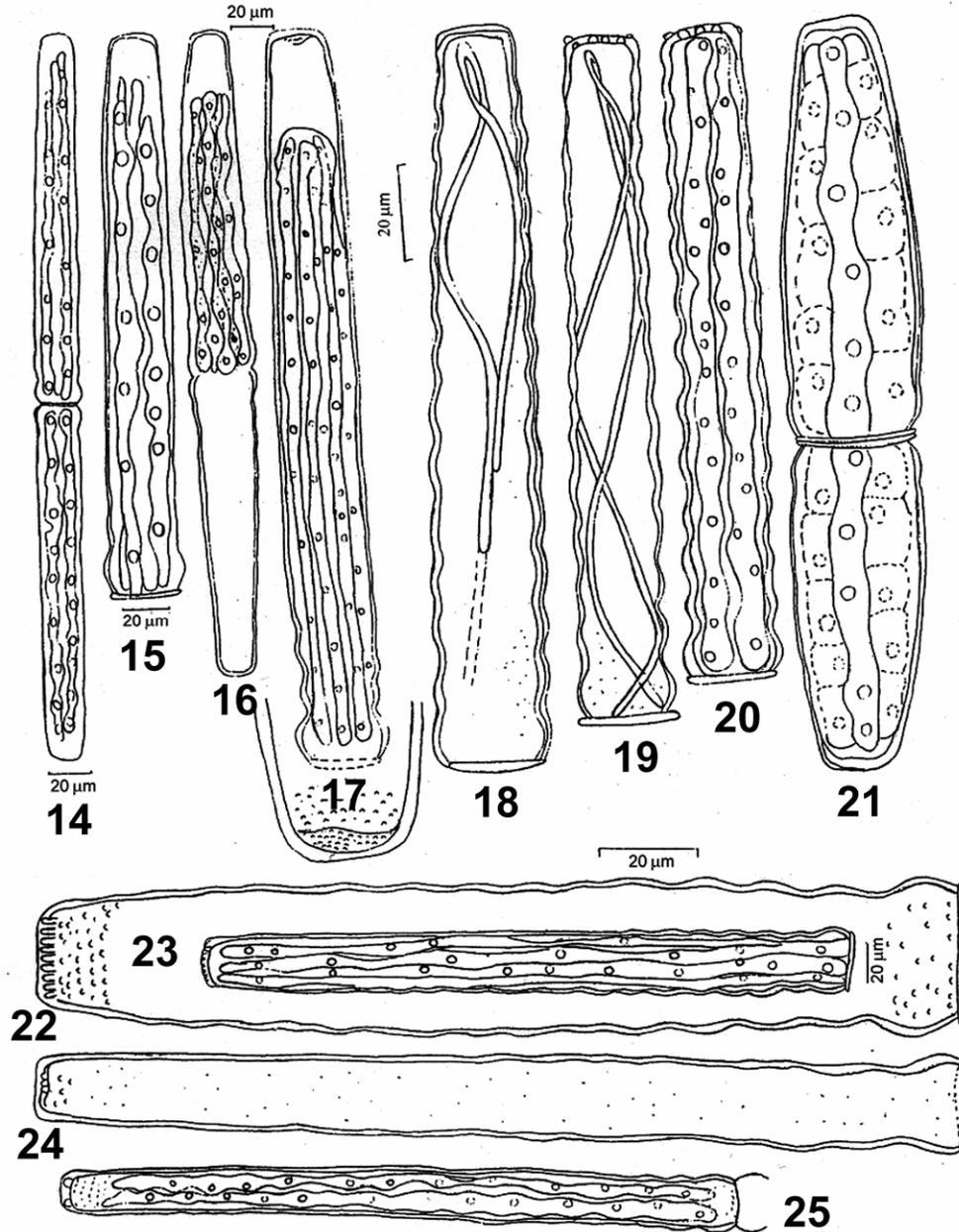


Plate 2 (Figs. 14-25)

Figs. 14-25: 14-16. *Pleurotaenium trabecula* var. *trabecula*; 17. *Pl. trabecula* var. *elongatum*; 18. *Pl. repandum*; 19-20. *Pl. coronatum* var. *fluctuatum*; 21. *Pl. trabecula* var. *crassum*; 22-23. *Pl. eugenium* var. *eugenium*; 24. *Pl. ehrenbergii* var. *undulatum*; 25. *Pl. ehrenbergii* var. *ehrenbergii*.

*Specimen studied:* Collected from a crop-field at Rajbari, Comilla on 15 July 1989; water pH 6.5; common.

9. **Pl. kayei** (Arch.) Rab. var. **kayei** (Pl. 3, Figs. 28-29, Pl. 4, Fig. 40)  
(Scott and Prescott 1961, Pl. 5, Fig. 10; Islam 1970, Pl. 1, Figs. 5-6).

Cells cylindrical with distinct median constriction; each semicell broader at the base, gradually and slightly tapering toward the apex; marginal wall undulate up to the base of apex and with 5-ring-like whorls of spiny outgrowths present from the base of semicell up to below the apex; apex slightly flat, truncate with a ring of 10-12 spines, more or less horizontally spreading; cell length 270-329  $\mu\text{m}$ ; mid-diam. without spines 45-51.6  $\mu\text{m}$ , with spines 61-76  $\mu\text{m}$ ; isthmus 29-32.3  $\mu\text{m}$ ; apex without spines 25-32.3  $\mu\text{m}$ , with spines 38-51.6  $\mu\text{m}$ .

Note: Our form differs from the typical by its broader apex and the apical spines are more or less horizontal instead of slightly vertical.

*Specimen studied:* Collected from a shallow pond opposite the Uttara Shopping Centre, near the Int. Airport, Dhaka on 30 Sept. 1990; abundant in the collection.

10. **Pl. minutum** (Ralfs) Delp. var. **minutum** (Pl. 1, Fig. 3)  
(Islam 1970, Pl. 4, Figs. 5-6)

Cells small, straight, cylindrical, with a very slight constriction at the isthmus; base of semicell slightly or not at all swollen, barely tapered to the apex, which is truncate with rounded angles and without tubercles; wall smooth or finely punctate; chloroplast mostly single with an axial row of pyrenoids (3-15); cell length 164.72  $\mu\text{m}$ ; mid-diam. 10  $\mu\text{m}$ ; isthmus 5.7  $\mu\text{m}$ .

*Specimen studied:* Collected from a ditch near Kaliganj Railway Station, Gazipur on 12 Sept. 1989 by Azam; common.

- \*11. **Pl. minutum** var. **attenuatum** Krieger (Pl. 1, Fig. 2)  
(Prescott *et al.* 1975, Pl. 3, Fig. 14)

This variety differs by its abruptly tapering apical region; cells small, cylindrical, up to 12-14 times longer than broad; apex rounded-truncate or slightly retuse; cell-length 143.5  $\mu\text{m}$ ; mid-diam. 7-10  $\mu\text{m}$ ; isthmus 5.7; apex 2.9  $\mu\text{m}$ .

*Specimen studied:* Collected from a rice-field near Kaliganj Railway station on 4 November 1989; pH of water 6.6. Here it is smaller than the typical.

- \*12. **Pl. minutum** var. **gracile** Krieger (Pl. 1, Fig. 1)  
(Prescott *et al.* 1975, Pl. 39, Figs. 9-10)

Cells slender, apex rounded-truncate, basal inflation very slight; cell length 156.2  $\mu\text{m}$ ; mid-diam. 8.5-11.4  $\mu\text{m}$ ; isthmus 8.5  $\mu\text{m}$ ; apex 5.6-7.1  $\mu\text{m}$ .

*Specimen studied:* Collected from a ditch near Kaliganj Railway Station, Gazipur on 12 Sept. 1989.

13. **Pl. nodosum** Bailey var. **borgei** Gronbl. (Pl. 3, Figs. 31-32)

(Islam 1970, Pl. 5, Fig. 15; Ruzicka 1977, Pl. 44, Figs. 7,8)

The variety with the nodes disjunct, separated by the straight sections of the wall; usually 6 or 8 nodules at each ring; cell length 238-271  $\mu\text{m}$ ; mid-diam. 45-51.6  $\mu\text{m}$ ; isthmus 19-25.8  $\mu\text{m}$ ; apex 25.8.

*Specimens studied:* Collected from a pond opposite Uttara Shopping Centre, near the Zia Int. Airport, Dhaka on 30 Sept. 1990; also from Sonargaon, Narayanganj and Khilkhet *beel*, near Zia Int. Airport, Dhaka, common.

\*14. **Pl. nodulosum** de Bary var. **nodulosum** (Pl. 1, Fig. 8)

(Ruzicka 1977, Pl. 42, Fig. 1)

Cells 8-14 times longer than broad; walls of semicells smooth or undulating from a moderate basal inflation to a tapering apical part; apex smooth, rounded or rounded-truncate with tubercles; wall punctate or scrobiculate; cell length 599-619.20  $\mu\text{m}$ ; mid-diam. 42  $\mu\text{m}$ ; isthmus 25-29  $\mu\text{m}$ ; apex 29.1  $\mu\text{m}$ ; median band present.

*Specimen studied:* Collected from a ditch within Chittagong Univ. Campus on 19 March 1989; common.

15. **Pl. ovatum** Nordstedt var. **ovatum** (Pl. 1, Figs. 12-13, Pl. 4, Fig. 41)

(Prescott *et al.* 1975, 127, Pl. 48, Figs. 16-17; Scott and Prescott 1961, Pl. 6, Figs. 1-2)

Cells medium-sized, very broad, 3-4 times longer than broad; semicells broadly oval and convex in their lateral margins, without a basal inflation; wall straight or concave immediately below the apex; apex rounded-truncate, with 5 or 6 tubercles; wall punctate; cell length 245-271  $\mu\text{m}$ ; mid-diam. 83-96.8  $\mu\text{m}$ ; isthmus 54-61.3  $\mu\text{m}$ ; apex 32-35.5  $\mu\text{m}$ ; apex with a crown of spines.

*Specimen studied:* Collected from a shallow pond opposite Uttara Shopping Centre near the Zia Int. Airport, Dhaka on 30 Sept. 1990; common in the collection.

16. **Pl. ovatum** var. **inermius** Moeb.

(Islam and Haroon 1980; Pl. 24, Fig. 325; Scott & Prescott 1961, Pl. 6, Fig. 4)

Cells less broader than the typical; cell length 258  $\mu\text{m}$ ; mid-diam. 77.5  $\mu\text{m}$ ; isthmus 32.3  $\mu\text{m}$ ; apex 25.8  $\mu\text{m}$ .

*Specimen studied:* Collected from a rice-field, Sonargaon, Narayanganj on 29 March 1989; common in the collection.

\*17. **Pl. ovatum** var. **tumidum** (Mask.) West, G.S. (Pl. 1, Fig. 11)

(Groenblad and Croasdale 1971, 8, Pl. 1, Fig. 13; Foerster 1964, Pl. 2, Fig. 14)

This variety is much broader than the typical, semicells almost circular or broadly ovate; at least 6 dentate tubercles are present at the apex; cell length 225.7  $\mu\text{m}$ ; mid-diam. 96-109.7  $\mu\text{m}$ ; isthmus 58  $\mu\text{m}$ ; apex 32-35.5  $\mu\text{m}$ .

*Specimen studied:* Collected from a rice-field at Sonargaon, Narayanganj on 29 March 1989; common.

\*18. **Pl. rectum** Delp. var. **rectum** (Pl. 4, Figs. 33-34)

(Ruzicka 1977, Pl. 37, Fig. 3)

Cell cylindrical, straight, slender, tapering slightly and evenly from basal inflation to a truncate apex; no extra swelling beyond the basal inflation; cell length 303-329  $\mu\text{m}$ ; mid-diam. 19-21.30  $\mu\text{m}$ ; isthmus 17.1  $\mu\text{m}$ ; apex 11-12.8  $\mu\text{m}$ ; wall smooth, apex simple without tubercles; chloroplast with one row of pyrenoids.

*Specimens studied:* Collected from roadside ditch, Paglapir, Rangpur on 1 June 1989 and also from a ditch within Chittagong Univ. Campus on 19 March 1989; fairly common.

19. **Pl. repandum** (Wolle) Krieger (Pl. 2, Fig. 18)

(Islam and Haroon 1980, Pl. 4, Fig. 59; Prescott *et al.* 1975, Pl. 41, Fig. 10)

Cells medium-sized; semicells only slightly tapered from base to apex, basal inflation slight, margins undulate up to the truncate apex; wall punctate; cell length 306.8  $\mu\text{m}$ ; mid-diam. 22.8  $\mu\text{m}$ ; isthmus 17.1  $\mu\text{m}$ ; apex 15.7  $\mu\text{m}$ . It is smaller than the typical.

*Specimens studied:* Collected from Khilkhet *beel*, Dhaka city, on 6 January 1990; also from a ditch near Railway Station, Kaliganj, Gazipur on 14 August 1989.

20. **Pl. trabecula** (Ehr.) Näg. var. **trabecula** (Pl. 1, Figs. 6-7; Pl. 2, Figs. 14-16)

(Prescott *et al.* 1975, Pl. 40, Figs. 1-2; Ruzicka 1977, Pl. 38, Fig. 9)

Cells medium-sized, straight, cylindrical, basal inflation of semicells slight but definite, with 1-3 swellings beyond it; semicells usually a little swollen in the mid-region and slightly tapered to apex; apex truncate with rounded angles without any tubercle; wall punctate or smooth; chloroplasts show 3 or 4 lateral bands; with scattered pyrenoids; cell length 316-516  $\mu\text{m}$ ; mid diam. 19-32.3  $\mu\text{m}$ ; isthmus 16-25.8  $\mu\text{m}$ ; apex 12-22.6  $\mu\text{m}$ .

*Note:* This species shows wide range of structure in shape and size. Sometime, some semicell may be curved or swollen or undeveloped. Wall may be thick, rough or warty. A much smaller form (L. 244.3  $\mu\text{m}$ ; m.d. 17.1  $\mu\text{m}$ ; isthmus 14.20  $\mu\text{m}$ ; apex 8  $\mu\text{m}$ ) has been found in Manikganj collection (Pl. 2, Fig. 15)

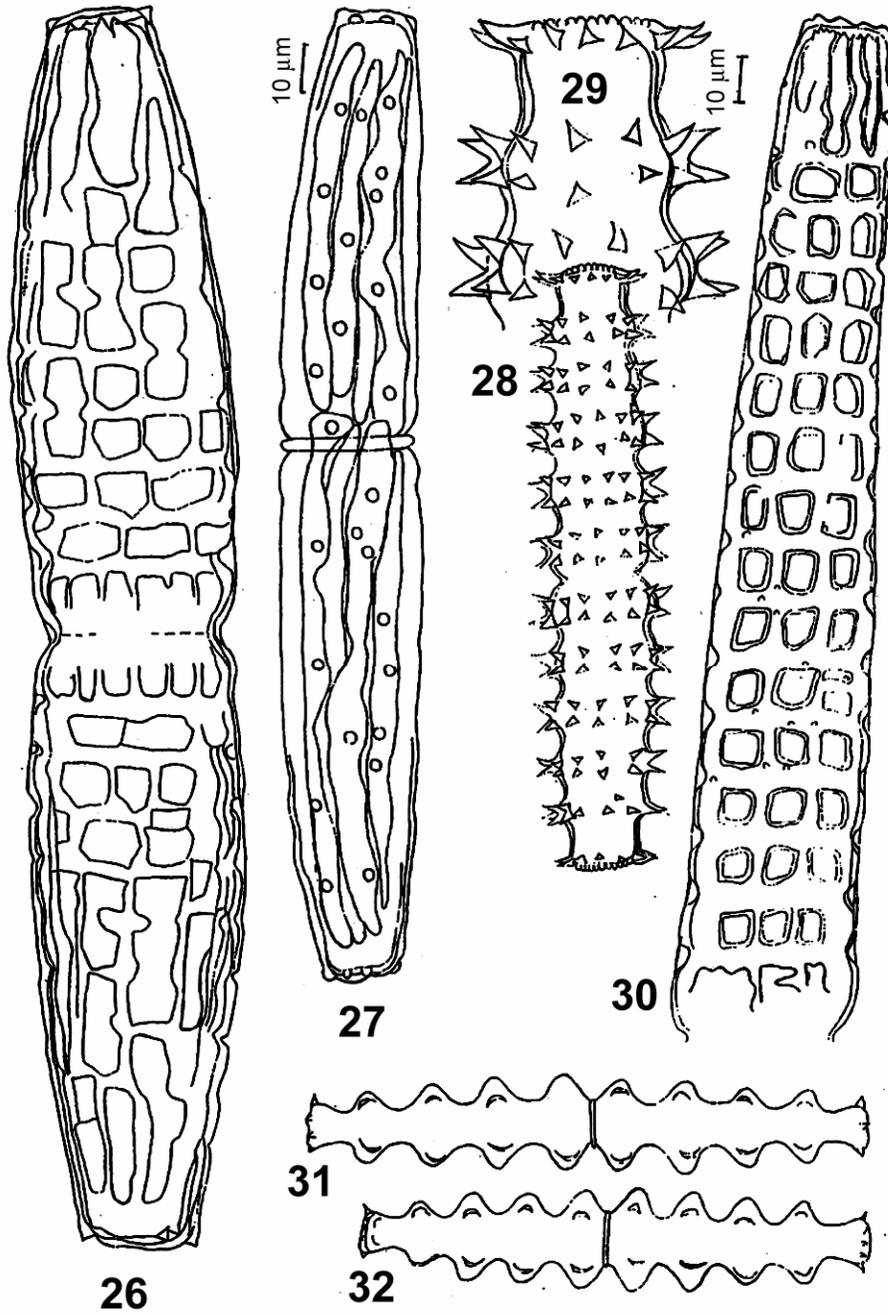


Plate 3 (Figs. 26-32)

Figs. 26-32: 26. *Pleurotaenium doliforme* var. *doliforme*; 27. *Pl. truncatum*; 28-29. *Pl. kayei* var. *kayei*; 30. *Pl. verrucosum* var. *verrucosum*; 31-32. *Pl. nodosum* var. *borgei*.

*Specimens studied:* Collected from a pond opposite Uttara Shopping Centre, Dhaka on Sept. 1989; from a road side ditch, Paglapir, Rajgpur on 1 June 1989; from a rice-field near Manikganj on 1 April, 1989; from a ditch within Chittagong Univ. Campus on 19 March 1989; from Khilkhet *beel*, Dhaka on 6 Sept. 1989; and from a pond near Railway Station, Kaliganj, Gazipur on 4 Nov. 1989; One of the most common desmid species in these areas.

\*21. **Pl. trabecula** var. **crassum** Wittrock (Pl. 2, Fig. 21)

(Prescott *et al.* 1975, Pl. 40, Figs. 13-14; Ruzicka 1977, Pl. 38, Figs. 6-7)

Cells medium-sized, stout; no, or only one swelling beyond the basal inflation; semicell may be broader above the midregion but tapering toward the plain truncate apex, wall somewhat thickened and punctate; cell length 164-167.5  $\mu\text{m}$ ; mid-diam. 26-28.5  $\mu\text{m}$ ; isthmus 19-22.8  $\mu\text{m}$ ; apex 14.2  $\mu\text{m}$ ; our specimen is smaller than the typical.

*Specimens studied:* Collected from a rice-field near Manikganj on 1 April, 1989; from a rice-field near Kaliganj Railway Station, Gazipur on 4 Nov. 1989; and from Khilkhet *beel*, Dhaka on 13 Nov. 1989; common in these collections.

\*22. **Pl. trabecula** var. **elongatum** Cedergren (Pl. 2, Fig. 17)

(Prescott *et al.* 1975, Pl. 40, Figs. 10-11; Ruzicka 1977, Pl. 38, Fig. 9)

Cells relatively long, 19-28 times longer than broad; 1 or 2 slight swellings beyond the basal inflation; apex truncate with rounded angles; wall punctate; cell length 645-735  $\mu\text{m}$ ; mid-diam. 42  $\mu\text{m}$ ; isthmus 32.3  $\mu\text{m}$ ; apex 25.8  $\mu\text{m}$ ; slightly smaller than the typical.

*Specimen studied:* Collected from a pond near Kalatali Shrimp Res. Inst. Cox's Bazar on 10 Dec. 1989.

23. **Pl. truncatum** (Bréb.) Nägeli var. **truncatum** (Pl. 3, Fig. 27; Pl. 4, Fig. 43)

(Prescott *et al.* 1975, Pl. 48, Figs. 1-4; Ruzicka 1977, Pl. 43, Figs. 1-3)

Cells large, 6-9 times longer than broad, semicells swollen beyond the basal inflation, margins convex and tapering to the apex; apex truncate with rounded angles and with several rounded tubercles; wall punctate; cell length 211  $\mu\text{m}$ ; mid-diam. 27  $\mu\text{m}$ ; isthmus 23  $\mu\text{m}$ ; apex 18  $\mu\text{m}$ ; our specimen is smaller than the typical.

*Specimen studied:* Collected from a rice-field at Sonargaon, Narayanganj on 19 June 1989; common in the collection.

24. **Pl. verrucosum** (Bailey) Lundell var. **verrucosum** (Pl. 3, Fig. 30)

(Prescott *et al.* 1975, Pl. 50, Figs. 13-16)

Cells medium-sized; semicells cylindrical with slight basal inflation and slightly tapered toward truncate apex with 5 or 6 tubercles; wall with 10-17 circles of

quadrangular thinner areas, which are smaller and irregular in the basal circle and elongated in the apical region; cell length 432  $\mu\text{m}$ ; mid-diam. 33  $\mu\text{m}$ ; isthmus 26  $\mu\text{m}$ ; apex 20  $\mu\text{m}$ .

In our form apical dentations are not pointed and the semicells are gradually narrowed from base to apex.

*Specimen studied:* Collected from a pond opposite Uttara Shopping Centre near Zia Int. Airport, Dhaka on 6 Sept. 1989; common.

#### **Genus: *Triplastrum* Iyengar & Ramanathan 1942**

Cells small, cylindrical, usually single, solitary but rarely remain attached at the poles, median constriction shallow; semicell base slightly inflated, above which margins are parallel but concave just below the polar end; apex truncated and inflated; inflated portion forming 3 (rarely 4) lobes, each terminated by a short tooth/spine; each semicell with 2 (rarely 3) stellate or variable number of longitudinal ridges with 1 or 2-3 pyrenoids; wall smooth or punctate; zygospore broadly elliptical with undulate margin (not found in all species).

#### **25. *Triplastrum abbreviatum* (Turner) Iyen. & Ramana. (Pl. 4, Figs. 36-39)** (Islam 1980, Figs. 19, 36-41)

Cells small, median constriction shallow, apex inflated, 3-lobed, lobes short, not divergent, each with 2-3 short spines; each semicell with 2 stellate chloroplast with a central pyrenoid each; cell length without spines 62-74  $\mu\text{m}$ , with spines 65-77  $\mu\text{m}$ ; mid-diam. 9-10  $\mu\text{m}$ ; apex without spines 10.3  $\mu\text{m}$ ; with spines 11-14.3  $\mu\text{m}$ ; isthmus 8.3-9.3  $\mu\text{m}$ ; very rare in the collection.

*Specimen studied:* Collected from Khilkhet *beel* near the Zia Int. Airport, Dhaka on 6 January 1990.

*Note:* This rare species was reported earlier from Narayanganj district by Islam (1980) which was little bigger in size than the present one, otherwise there is no difference between these two collections.

#### **Genus: *Triploceras* Bailey, J.W. 1851**

Cells elongate, subcylindric, with little or no incision at the isthmus, and slightly tapered to the apex; lateral margins undulate with 9-15 whorls of mammillate protuberances, each bearing either a simple or bifid spine or an emarginate verruca; apex variable, flat or concave, bearing 2-4 short, diverging, spine-tipped processes, and with 2 additional spines often present on small tumors between or just below each pair of processes; chloroplast axial, with longitudinal lamellae, and an axial row of pyrenoids; conjugation rare.

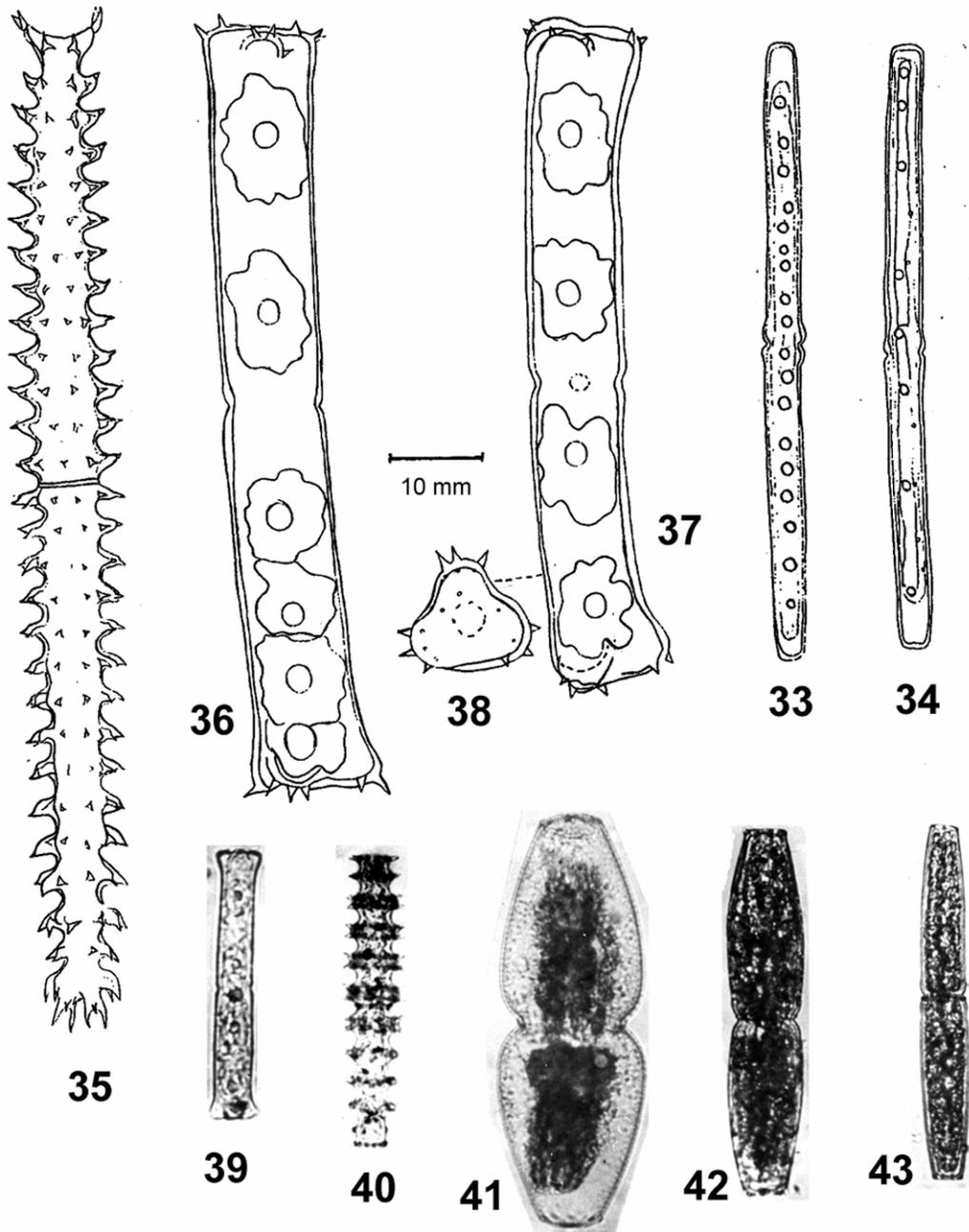


Plate 4 (Figs. 33-43)

Figs. 33-43: 33-34. *Pleurotaenium rectum* var. *rectum*. 35. *Triploceras gracile* var. *undulatum*. 36-39. *Triplastrum abbreviatum* (37. a cell little curved near the poles; 38. top polar view; 39. photomicrograph of a cell); 40. *Pl. kayei* var. *kayei*; 41. *Pl. ovatum* var. *ovatum*; 42. *Pl. doliforme* var. *doliforme*; 43. *Pl. truncatum*.

**26. *Triploceras gracile* Bailey var. *gracile***

(Prescott *et al.* 1975; Pl. 51, Figs. 7-14; Islam 1970, Pl. 2, Fig. 3; Islam and Haroon 1980, Pl. 4, Figs. 52-53).

Same as the genus; semicell slightly tapered from base to apex; mammillate protuberances, each bearing a single, stout spine; spines in upper whorls directed upward, in lower whorls, outward; apex divided into 2 (or 3) short processes, each tipped with paired, rarely single, short spines; cell length without spines 283-322  $\mu\text{m}$ ; with spines 303-360  $\mu\text{m}$ ; mid-diam. without spines 16-19.4  $\mu\text{m}$ , with spines 25-32.3  $\mu\text{m}$ ; apex without spines 13  $\mu\text{m}$ , with spines 19-26  $\mu\text{m}$ ; a larger form.

*Specimens studied:* Collected from a rice-field at Sonargaon, Narayanganj on 29 March, 1989 and from a pond opposite Uttara Shopping Centre, Dhaka on 17 Feb. 1990; common.

**27. *T. gracile* var. *undulatum* Scott & Prescott****(Pl. 4, Fig. 35)**

(Islam 1970, Pl. 2, Fig. 2; Scott and Prescott 1961, Pl. 6, Fig. 9)

It differs from the above variety by its undulate wall; cell length without spines 432-445  $\mu\text{m}$ , with spines 451-471  $\mu\text{m}$ , mid-diam. without spines 25-32.3  $\mu\text{m}$ , with spines 45-51.6  $\mu\text{m}$ ; apex without spines 19-19.4  $\mu\text{m}$ , with spines 41-45.2  $\mu\text{m}$ ; larger than the typical.

*Specimens studied:* Same as the above one and also from a rice-field at Manikganj on 1 April 1989 and from a rice-field at Kaliganj, Gazipur on 14 Aug. 1989; common.

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