

## GLAUCOCYSTIS INDICA PATEL SP. NOV. FROM INDIA

Out of 4 species of *Glaucocystis*, the colourless member of family Oocystaceae, 3 species have been reported so far from India ((PRASAD, 1961; PHILIPOSE, 1967; PATEL & ISABELLA, 1979). *G. nostochinearum* (Itzigs.) Rabehn. was only the report of its occurrence from Kerala (PRASAD, 1961; PHILIPOSE, 1967). Recently 3 species, *G. nostochinearum* (Itzigs.) Rabehn., *G. singularata* Bohlin and *G. duplex* Prescott have been collected from different parts of Gujarat (PATEL & ISABELLA, 1979). All the collections so far made by the earlier workers are as planktonic (BRUNNTHALER, 1915; SKÜJA, 1949; PRASAD, 1961; PRESCOTT, 1962; PHILIPOSE, 1967; PATEL & ISABELLA, 1979). The present material was found growing as an epiphyte on *Spirogyra* sp. in one of the road-side ditches at Gamdi near Anand. The nature of the cells, vermiform stellately arranged cyanelles (blue-green protoplasts) and the reproduction by the autospores are similar to those of *Glaucocystis* described by earlier workers (cf. PHILIPOSE, 1967). The material is deposited in Deptt. of Biosciences, Sardar Patel University, Vallabh Vidyangar, Gujarat.

### ***Glaucocystis indica* sp. nov.**

Figs. 1-7

Plants epiphytic attached by means of short stalks; solitary or in spherical, ovoid or obovate colonies composed of 2-4-8 cells. Cells ellipsoid with smooth firm wall; equatorial grooves or polar thickenings absent except in few cases with polar thickenings. Cyanelles (blue-green protoplasts) 20 or more in number radiating from the centre of the cell. Reproduction by autospores. 2-4-celled colonies seen within mother cell wall. Cells  $18-30.6 \times 9-18 \mu\text{m}$ ; 2-celled colonies  $25.2-50.4 \times 21.6-43.2 \mu\text{m}$ ; mature colonies  $52.2-79.2 \times 54-86.4 \mu\text{m}$ ; stalks  $5.4-9 \times 4.5-5 \mu\text{m}$ .

*Habitat*—Epiphytic on *Spirogyra* growing in road-side ditches at Gamdi, 17.8.1977 (No. 2904).

### *Latin diagnosis*

### ***Glaucocystis indica* sp. nov.**

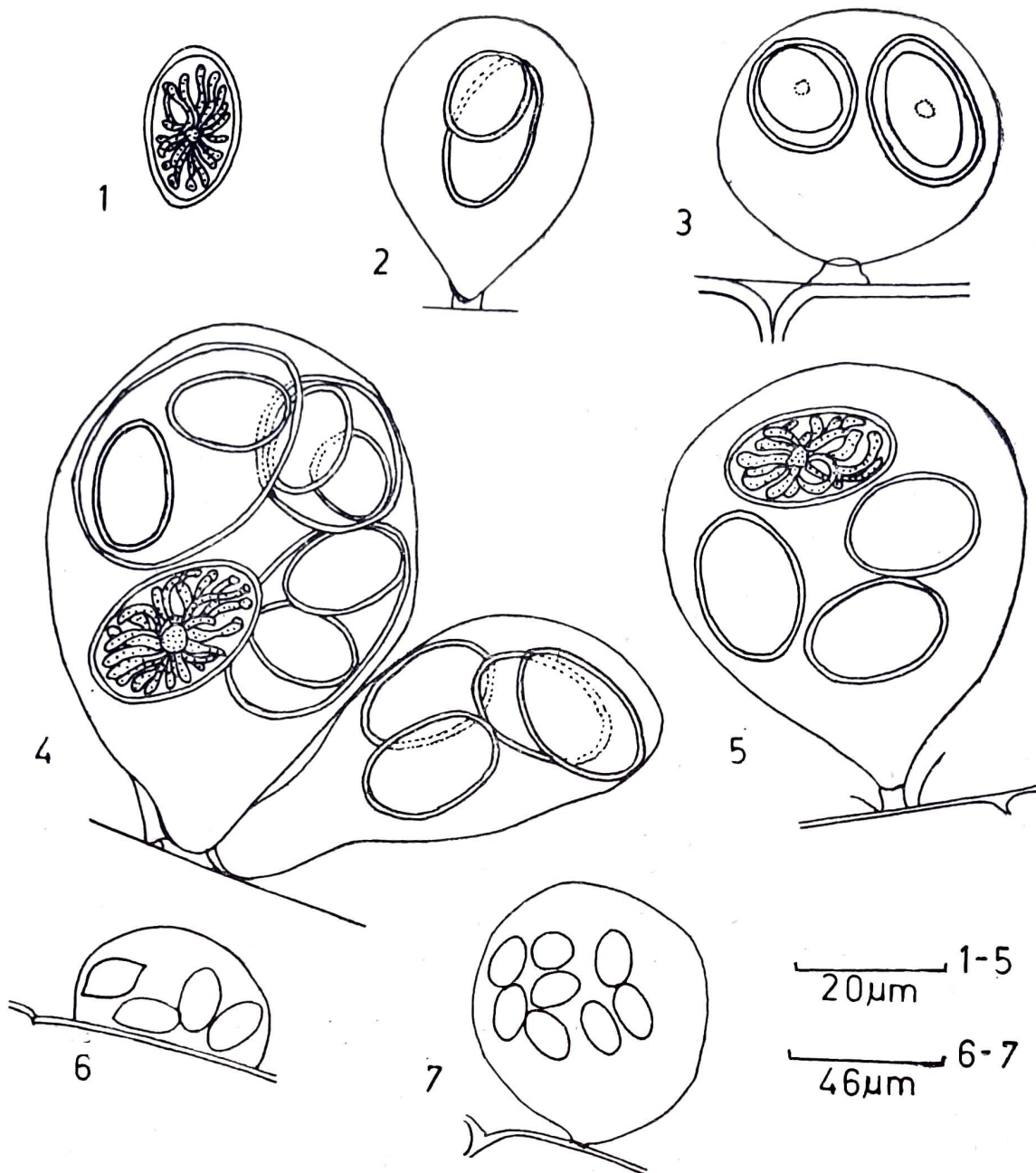
Figs. 1-7

Plantae epiphyticae per cauliculos parvos affixae; singulae aut in coloniis ovoideis obovatisve, e 2-4-8 cellulis compositis, aggregatae. Cellulae ellipsoideae, membranam levem solidam habentes; nec sulci aequatorii nec incrassationes polares praesentes, nisi raro visae. Cyanellae (protoplasti caeruleo-virides) 20 vel plures, e centro cellulae radiantes. Reproductio per autosporas. Coloniae 2-4-cellulares intra tegumentum cellulae matris visae. Cellulae  $18-30.6 \times 9-18 \mu\text{m}$ ; coloniae 2-cellulares  $25.2-50.4 \times 21.6-43.2 \mu\text{m}$ ; coloniae maturae  $52.2-79.2 \times 54-86.4 \mu\text{m}$ ; cauliculi  $5.4-9 \times 4.5-5 \mu\text{m}$ .

*Habitatio*—Plantae epiphyticae in *Spirogyra* in fossis iuxta iter colente in loco Gamdi dicto, 17-8-1977 (Num. 2904).

The present alga is considered as a colourless member of the Oocystaceae living symbiotically with a blue-green alga of Chroococcales (FRITSCH, 1935; PRASAD, 1961; PHILIPOSE, 1967). Some of the authors gave more importance to blue-green alga and considered *Glaucocystis* as a member of Cyanophyta (SMITH, 1950; PRESCOTT, 1969). SKÜJA (1949) considered it into a new division Glaucophyta between Rhodophyta and Chlorophyta.





Figs. 1-7, *Glaucocystis indica* sp. nov.—Fig. 1. Single cell showing the nature of cell contents (cyanelles). Fig. 2. 2-celled colony. Fig. 3. 2-celled colony showing autospore formation. Fig. 4. 2 colonies; one 4-celled colony and the other with 3 daughter colonies and a single mature cell within the present colony. Figs. 5-6 : 4-celled colonies. Figs. 7. 8-celled colony.

Fine structure of *Glaucocystis nostochinearum* shows that the host plant (*Oocystis*?) has rudimentary flagella and unusual type of plasmalemma reminiscent of that of dinoflagellates and no features of Chlorophyceae are seen (cf. FOGG *et al.*, 1973). Cyanelle is named as a new species *Skujapelta nuda* in the family Skujapeltaceae in the order Chroococcales (HALL & CLAUS, 1967). As it was not possible to culture the present form and to study in detail, it is retained at present as the member of Chlorococcales.

In the number of cyanelles and the polar thickenings in some cases, the present alga is related to *G. singularata* Bohlin collected from Burma (SKÜJA, 1949). The present form is distinguished from it by the absence of small equatorial grooves. The polar thickenings are not frequently observed. The cells of *G. duplex* Prescott are with two stellately arranged cyanelles per cell (PRESCOTT, 1962). More number of cyanelles, presence of polar thickening occasionally and larger dimensions are the characters distinguishing it

from *G. nostochinearum* (Itzgs.) Rabenh. Hence, the present taxon is described as a new species, *G. indica* sp. nov.

The author expresses his sincere thanks to Prof. R. Croasdale, Department of Biological Sciences, Hanover, New Hampshire-03755, U.S.A. for rendering the latin diagnosis.

#### REFERENCES

- BRUNNTHALER, J. (1951). "Protococcales" in A. Pascher's *Die Süßwasserflora Deutschlands, Österreichs und der Schweiz*, Heft 5, Chlorophyceae, **2** : 52-205, Jena.
- FOGG, G. E., STEWART, W. D., FAY, P. & WALSEY, A. E. (1973). *The Blue-green Algae*. Academic Press, London.
- FRICTSCH, F. E. (1935). *Structure and Reproduction of the Algae*. Vol. I : 791 pp., Cambridge.
- HALL, W. T. & CLAUS, G. (1967). Ultrastructural studies on the cyanelles of *Glaucocystis nostochinearum* Itzigsohn. *J. Phycol.*, **3** : 37-51.
- PATEL, R. J. & ISABELLA, GEORGE (1979). Chlorococcales of Gujarat, India. *Vidya, J. Guj. Univ.*, **22**(1) : 1-9.
- PHILIPSE, M. T. (1967). *Chlorococcales*. I.C.A.R., New Delhi.
- PRASAD, B. N. (1961). *Glaucocystis nostochinearum* (Itzigs.) Rabenhorst in India. *Bull. bot. Soc., Univ. Saugar*, **13**(1-2) : 44-45.
- PRESCOTT, G. W. (1962). *Algae of the Western Great Lakes Area* : 946 pp., Wm. C. Brown Co., Dubeque, Iowa.
- PRESCOTT, G. W. (1969). *The Algae, a Review* : 436 pp. Thomas Nelson & Sons Ltd., London.
- SKÜJA, H. (1949). Zur Süßwasser algaen-flora Burmas. *Nova Acta Reg. Soc. Sci. Upsal.*, Ser. 4, **14**(5) : 1-188.
- SMITH, G. M. (1950). *Freshwater Algae of the United States*. 2nd Edn.: 719 pp., New York & London.

R. J. PATEL

*Department of Biosciences, Sardar Patel University  
Vallabh Vidyanagar-388120  
Gujarat, India*