

Contributions to our knowledge of  
South Indian Algae—IX\*

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Delphinomonas IYENGAR GEN. NOV.

CELLS dorsiventral, plano-convex, rounded to ovate in anterior view, with a lorica; lorica dark brown in colour, with an anterior beak-like structure, with a somewhat rugose surface; protoplast nearly hemispherical, separated from the lorica except at the anterior pole; chloroplast lateral, plate-like, situated along the dorsal convex side; pyrenoid single, located mid-dorsally; eye spot present; contractile vacuoles 2, anterior; flagella 2, anterior, arising one on either side of the beak; alga swimming with a rotation of the body along the longitudinal axis, movements somewhat irregular. Reproduction not observed.

Monotypic: *D. hemisphaerica* Iyengar sp. nov.

*D. hemisphaerica* IYENGAR SP. NOV.

Lorica 6-7  $\mu$  broad and 9-11  $\mu$  long; protoplast 4-6  $\times$  6-7.5  $\mu$ ; eye-spot median; flagella as long as the body.

Forming a green scum in a muddy water pool, Chepauk, Madras 22-1-1955; also on 7-10-1957.

Type: Text-figures 1, 2.

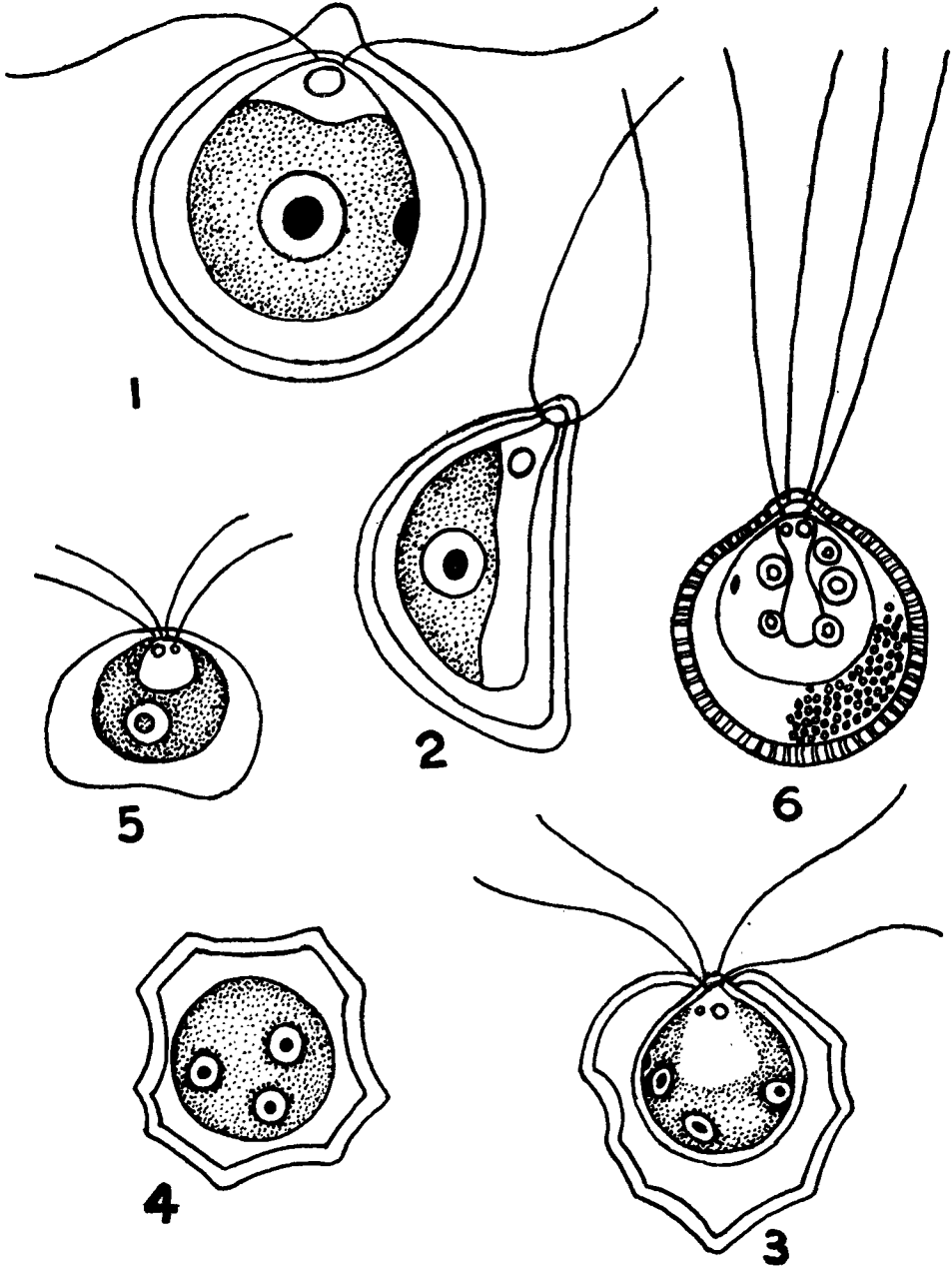
This genus resembles *Coccomonas* but differs from it in the dorsiventral shape of the alga and in the lateral laminate chloroplast.

*Delphinomonas* IYENGAR GEN. NOV.

Cellulae dorsiventrals, plano-convexae, rotundae vel ovatae aspectu frontali, loricae, lorica fusca antice rostellata et plusminusve rugosa;

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† A monograph on Indian Volvocales is in press for some time. In that volume a number of new taxa by the late Prof. Iyengar have been included. To avoid losing priority some of them are being published here.



Figures 1-2. *Delphiomonas hemisphaerica* Iyengar gen. et sp. nov. (after Iyengar, Orig.  $\times 3,000$ )  $\times 8.75/9.5$ . 1. front view; 2. side view.

Figures 3-4. *Pyramidococcus indicus* Iyengar gen. et sp. nov. (after Iyengar Orig.  $\times 3,000$ )  $\times 6.5/7.0$ . 3. Cell front view; 4. Cross section of the cell.

Figure 5. *Melomonas hemisphaericus* Iyengar (after Iyengar Orig.  $\times 2,400$ )  $\times 3.5/3.75$ .

Figure 6. *Fortiellopsis madraspatensis* Iyengar (after Iyengar, Orig.  $\times 3,000$ )  $\times 3.5/3.75$ .

protoplastus fere hemisphaericus, separatus antico polo excepto a lorica; chloroplastus lateralis, platiformis, situs dorsali latere convexo; pyrenoides singula, mediodorsali locata; stigma adest; vacuolae contractiles duae, anticae orientes ex utraque facie rostri; alga natans rotundo-corpore per longitudinalem axem, motibus aliquantum irregularibus. Reproductio non observata.

Monotypic: *D. hemisphaerica* Iyengar sp. nov.

*D. hemisphaerica* IYENGAR SP. NOV.

Lorica 6–7  $\mu$  lata et 9–11  $\mu$  longæ; protoplastus 4–6  $\mu$   $\times$  6–7.5  $\mu$ ; stigma mediana aequans corpore longitudine.

Formans viridem spumum in stagnolimoso, Chepauk, Madras, 22-1-1955; vel 7–10–1957.

Genus similis *Coccomonas* sed differt dorsiventrali formæ algae et chloroplasto laminato laterali.

*Pyramidococcus* IYENGAR GEN. NOV.

Protoplast separated widely from the lorica; lorica 4-sided in apical view and obpyriform in side view; protoplast papillate; quadriflagellate, flagella at its anterior end; contractile vacuoles 2, situated immediately below the flagella; protoplast containing a single nucleus; chloroplast cup-shaped, with one or more pyrenoids; eye spot present.

Monotypic: *P. indicus* Iyengar sp. nov.

*P. indicus* IYENGAR SP. NOV.

Lorica 20  $\mu$  long, 15–18  $\mu$  broad; flagella as long as the cell; protoplast 12  $\mu$  diam., spherical; eye spot bright red, small, oval, situated a little above the middle; pyrenoids many.

In muddy water pool, Chepauk, Madras, 30–8–1940.

Type: Text-figures 3, 4.

*Pyramidococcus* IYENGAR GEN. NOV.

Protoplastus late separatus a lorica ex quattuor lateribus composita aspectu frontali et obpyriformi aspectu laterali, papillatus antice quattuor flagellis; contractiles vacuolae duae, positae infra flagella; nucleus singulus in protoplasto; chloroplastus cupulatus, cum una vel duabus pyrenoidibus; stigma adest.

*P. indicus* IYENGAR SP. NOV.

Lorica 20  $\mu$  longa, 15–18  $\mu$  lata; flagella plusminusve aequantia cellulam longitudine; protoplastus 12  $\mu$  diametro, sphaericus; stigma scarletina, parva, ovalis, posita pæuxillum insuper medio; pyrenoides multae adsunt.

In stagno limoso, apud Chepauk, Madras, 30–8–1940.

Type: Text-figures 3, 4.

*Melomonas* IYENGAR GEN. NOV.

Cells quadriflagellate; lorica obcordate, granulate; protoplast rounded, distinctly removed from the lorica; chloroplast present; contractile vacuoles 2, anterior; reproduction not observed.

Monotypic: *M. hemisphaerica* Iyengar sp. nov.

*M. hemisphaerica* IYENGAR SP. NOV.

Characters same as the genus; papilla absent; chloroplast cup-shaped, pyrenoid single; eye spot median; cells 8.6  $\times$  11.3  $\mu$ .

Roadside rain water pool, Walajah road, Triplicane, Madras, 5–5–1958.

Type: Text-figure 5.

*Melomonas* IYENGAR GEN. NOV.

Cellulae quadriflagellatae; lorica obcordata, granulata; protoplastus rotundus distincte separatus a lorica; chloroplastus adest; contractiles vacuolae duae, anteriores; reproductio non observata.

*M. hemisphaerica* IYENGAR SP. NOV.

Characteres simulantes generi; papilla absunt; chloroplastus cupulatus; pyrenoides singula; stigma mediana; cellulae 8.6  $\times$  11.3  $\mu$ .

In stagno aque pluvialis secus viam, Walajah Road, Triplicane, Madras, 5–5–1958.

Typus: Text-figure 5.

*Fortiellopsis* IYENGAR GEN. NOV.

Cells with a lorica; lorica thick, calcareous, rough, finely punctate, dark brown, with four anterior thickenings and four grooves with flagellar openings, protoplast ovate to rounded retracted from the lorica except at the anterior; chloroplast cup-shaped, with 2-many pyrenoids; eye spot present; contractile vacuoles 2, anterior; flagella 4, anteriorly placed, emerging through separate pores alternating with the anterior prominences; nucleus single, slightly lateral. Reproduction not known.

Monotypic: *F. madraspatensis* sp. nov.

*F. madraspatensis* IYENGAR SP. NOV.

Cells ovate to rounded, 16–20  $\mu$  diam.; protoplasts 10–12  $\mu$  diam.; flagella about 1½ to 2 times as long as the body; lorica reddish brown, finely punctate.

Forming a light green water bloom in roadside puddle near Thousand Lights, Madras, 13–8–1952.

Type: Text-figure 6.

This alga differs from *Fortiella* in the four flagella emerging from four different openings and not from a single opening. It bears the same relationship to *Fortiella* as *Tetratoma* Bütschli bears to *Carteria*.

*Fortiellopsis* IYENGAR GEN. NOV.

Cellulae loricatae; lorica crassa, calcarea, aspera, subtiliter punctata, fusca, quattuor anterioribus spissescensibus et quattuor sulcis cum flagellibus aperturis; protoplastus ovatus vel rotundus, retractus a lorica exceptus antice; chloroplastus cupulatus, 2-multis pyrenoidibus; stigma adest; vacuolae contractiles duae, anticae; flagellae quattuor, antice positae emergentes ex poris separatis alternantibus anticis prominentiis; nucleus singulus leviter lateralis. Reproductio non observata.

Monotypic: *F. madraspatensis* sp. nov.

*F. madraspatensis* IYENGAR SP. NOV.

Cellulae ovatae vel rotundae, 16–20  $\mu$  diametro; protoplasti 10–12  $\mu$  diametro; flagella plusminusve semel aut bis corporis longitudine; lorica porphyrea, subtiliter punctata.

Formans viridem spumum in stagno per viam apud Thousand Lights, Madras, 13–8–1952.

Typus: Text-figure 6.

Differt a *Fortiella* in eo quod quattuor flagella emergunt separatim ex quattuor diversis aperturis. Affinis ad *Fortiellam* sicut *Tetratoma* Bütschli ad *Carteria*.

*Fortiellopsis* belongs to the Coccomonadeae. The cup-shaped chloroplast in the type species has 3–4 pyrenoids. Mucilage is seen between the protoplast and the shell and this mucilage appears to be very finely striated.

The tiny red eye spot is median. Flagella come out through separate apertures in the shell as in *Dysmorphococcus*. Unlike the latter genus the present is quadriflagellate and not biflagellate.

*Schilleriomonas* DESIKACHARY GEN. NOV.

Cells single, free swimming, somewhat metabolic, with a truncated anterior and a rounded posterior, more or less adpressed; flagella 4, inserted asymmetrically at one end of the anterior; asymmetrical in front side view, but laterally symmetrical; periplast thin; chloroplast light green to nearly colourless, basin-shaped, often apparently forming a single peripheral plate; pyrenoid, contractile vacuoles and eye spot not observed.

Monotypic: *S. adriatica* (Schiller) comb. nov. (= *Cymbomonas adriatica* Schiller, J. 1926. Die planktonisches Vegetationen des adriatischen Meeres, B. Chrysomonadina, Heterokontae, Cryptomonadina, Eugleninae, Volvocales-I, Systematischer Teil. *Arch. Protistenk.* 53: 114, pl. 5, figure 55).

*Schilleriomonas* DESIKACHARY GEN. NOV.

Cellulae singulae, natantes, aliquot metabolicae, anticae tunicatae et postice rotundae plusminusve appressae; 4-flagellatae, asymmetricae aspectu frontali, symmetricae aspectu laterali; periplastus gracilis; chloroplastus glaucus vel incoloratus, crateriformis saepe formans singulum peripheralem discum; pyrenoides, contractiles vacuolae et stigma non observata.

Typus: *S. adriatica* (Schiller, J.) comb. nov. (= *Cymbomonas adriatica* Schiller, J. 1926, *Arch. Protistenk.* 53: 114, pl. 5, figure 55).

*Cymbomonas adriatica* differs from other species of the genus in the flagella being not inserted in an anterior furrow but in being unilaterally inserted.

*A Correction*

[Iyengar's record in his "Contributions to our knowledge of South Indian Algae—VIII", *Proc. Indian Acad. Sci.* 81B, 29–60 (1975) is that of *Chlorangiospsis epizooitica* Kors. and not *Chlorangiochloris epizooitica*].