

# New genera of primitive green flagellata from Hongkong and Sao Paulo, Brazil.

by

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## Abstract

Three new genera of primitive green flagellata are described: **Protochroomonas**, **Angulomonas** and **Protoaceromonas**, belonging to Fam. Pyramydomonadaceae Pascher, Ord. Polyblepharidales and Class Volvocineae. One new species of the first named genus, two new species of the second and three new species of the last-named genus are described and illustrated together with a key to the genera.

## Materials

The collecting localities (and the abbreviations used in this paper) of the material studied and the dates of collection were:

Habitat I (Hab. I): Sao Paulo, Brazil, Parque do Estado, in temperate swamp; col. B. Skvortzov. 20 May 1966.

Habitat II (Hab. II): *Ibid*, on surface of the soil with a growth of *Oscillatoria*; col. B. Skvortzov. 2 May 1966.

Habitat III (Hab. III): *Ibid*, on surface of soil with polluted spring water; col. B. Skvortzov. 17 May 1966.

Habitat IV (Hab. IV): Aberdeen, Hongkong, in a rivulet; col. S.T. Chan, 16 March 1966.

## Key to genera

- I. Cell naked, with a spinulose or rugose periplast; flagella 2, connate; cells of varying shapes

Genus 1: **Protoaceromonas**

- I. Cell naked, periplast with spines or wrinkles 2a. Flagella 2, connate; cells triangular or ellipsoid in front view but much depressed, short lanceolate, trapezoid or reniform in lateral view.

Genus 2: **Angulomonas**

- 2b. Flagella 2, very remote from one another never connate.

Genus 3: **Protochroomonas**

## Description of genera and species

- I. **Protoaceromonas** gen. nov.

Monades solitariae, libere natantes, vix vel paulo applanatae, metabolicae. Periplastus tenuissimus vel nullus, rugosus vel minute spinosus, luteolus vel hyalinus, stigma vel vacuolam contractilem includens. Flagella 2, connata, fere  $1\frac{1}{2}$  cellulis longiora, similia natantia; chromatophora parietalia ut videtur, viridia, insignia cum pyrenoidibus nudis; motu rotanti, rapidissimo.

Differt ab *Angulomonas* gen. nov. periplasto rugose vel spinuloso et a *Protochroomonas* gen. nov. flagellis connatis.

Typus generis: *Protoaceromonas spinosa* sp. nov.

Cells solitary, freely swimming, hardly or little flattened, metabolic. Periplast slender or none, rugose or minutely spinose, yellowish or hyaline. Flagella 2, connate, almost  $1\frac{1}{2}$  longer than the cell, similar, swimming. Eye-spot or contractile vacuole present. Chromatophores apparently parietal, green, large, with naked pyrenoids; movement rapid, rotational.

Differs from *Angulomonas* gen. nov. by its rugose or spinulose periplast and from *Protochroomonas* gen. nov. by its connate flagella.

Species 3. Distribution: Hongkong, Brazil.

### Specific Key

1. Cell suborbicular in outline, angled, anteriorly depressed, 5–6–7  $\mu$  long; periplast slender, rugose or spinulose; eye-spot or contractile vacuole present.

1. **P. spinosa** Hab. I

2. Cell suboval, 12–13  $\times$  7–8  $\mu$ ; periplast rugose; eye-spot not present.

2. **P. rugosa** Hab. III

3. Cell orbicular, naked, rugose or denticulate, 9–10  $\mu$  in diam.; contractile vacuole not seen.

3. **P. orbicularis** Hab. IV

1. **Protoaceromonas spinosa** sp. nov. Figs. 1 and 2.

Cellula ambitu suborbicularis, angulata, anteriore depressa, periplasto tenuissimo rugoso vel minute spinoso, 5–6–7  $\mu$  longa cum stigmatibus vel vacuola contractilibus: Hab. I. Legit B. V. Skvortzov. Holotypus — S. P.

2. **Protoaceromonas rugosa** sp. nov. Fig. 3.

Cellula subovalis, periplasto rugoso; stigmatibus nullo; 12–13  $\times$  7–8  $\mu$ : Hab. II. Legit B. V. Skvortzov. Holotypus — S. P.

3. **Protoaceromonas orbicularis** sp. nov. Fig. 4.

Cellula orbicularis, nuda, rugosa vel minute dentata, 9–10  $\mu$  in diam.; vacuola contractilis non visa: Hab. IV. Legit B. V. Skvortzov. Holotypus — S. P.

### II. *Angulomonas* gen. nov.

Monades solitariae, libere natantes, non metabolicae, ambitu fere triangulares, ventraliter applanatae; periplastus distinctus cum vacuola contractilis; chromatophorum pallide viride, parietale, perforatum granulosum; pyrenoides praesens vel nulla; stigma nullum; nucleus centralis; flagella 2, natantia.

Differt a *Phyllocardium* Korsch. cellulis ambitu triangularibus a *Protoaceromonas* gen. nov. cellulis ventraliter applanatis.

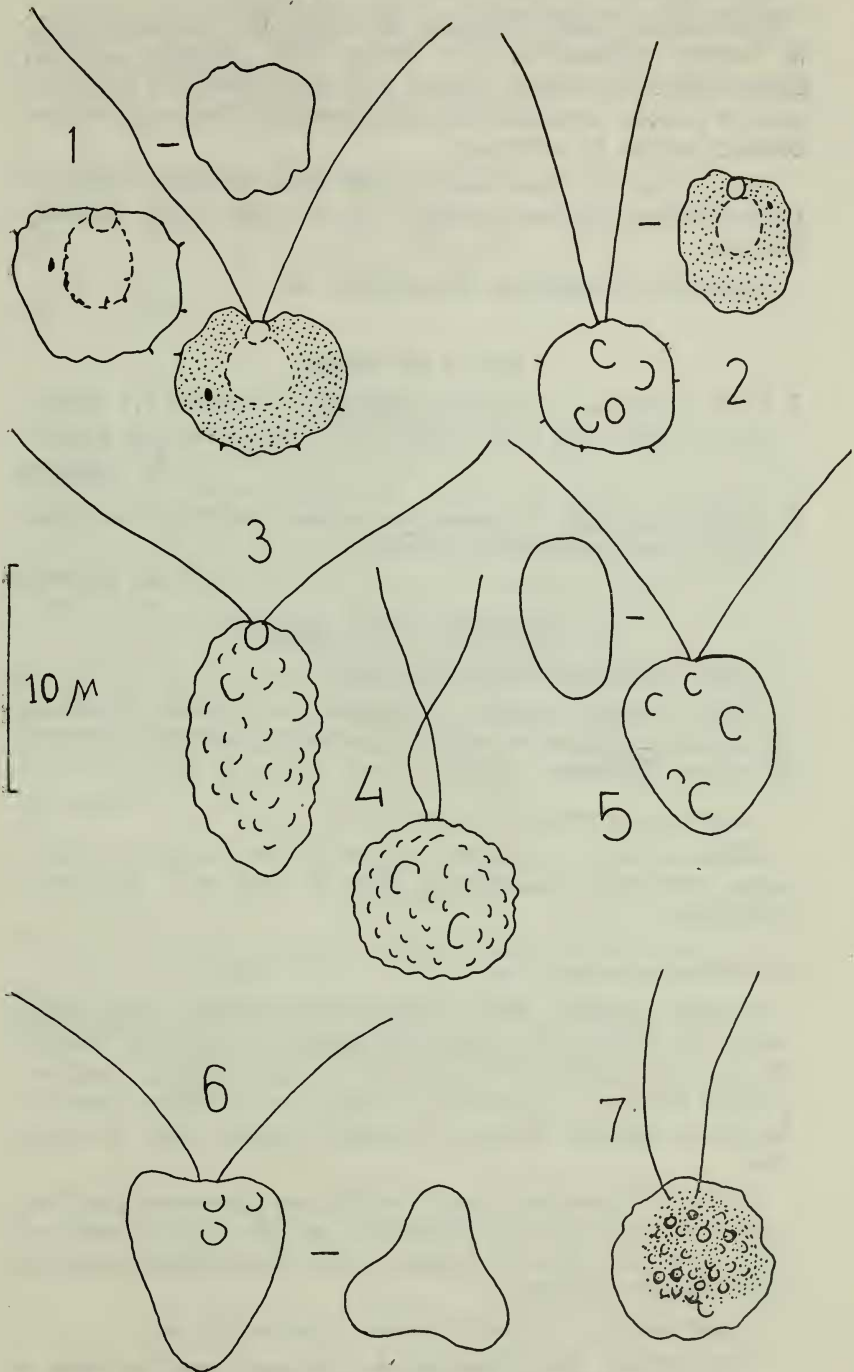


Fig. 1 and 2. *Protoaceromonas spinosa* gen. et sp. nov.  
 3. *Protoaceromonas rugosa* sp. nov.  
 4. *Protoaceromonas orbicularis* sp. nov.  
 5. *Angulomonas triquetra* gen. et sp. nov.  
 6. *Angulomonas stagnalis* sp. nov.  
 7. *Protochroomonas granulata* gen. et sp. nov.

Typus generis: *Angulomonas triquetra* sp. nov.

Cells solitary, freely swimming, not metabolic, almost triangular in outline, flattened on the ventral side; periplast distinct; chromatophore pale green, parietal perforated, granulose; pyrenoids none or present; contractile vacuole present; eye-spot none, nucleus central; flagella 2, swimming.

Differs from *Phyllocardium* Korsch. in its triangular cells, and from *Protoaceromonas* gen. nov. in its cells being ventrally flattened.

Species 2. Distribution: Brazil. Hab. II.

#### Key to the species

1. Cells triquetrous in outline, ellipsoid in transverse (?) section, more or less acute at both ends, 5–6  $\mu$  long; pyrenoids present.
  1. **A. triquetra**
2. Cells triquetrous, in transverse section almost three angled, 9–10  $\mu$  long; pyrenoids indistinct.
  2. **A. stagnalis**

#### Description of the Species

1. *Angulomonas triquetra* sp. nov. Fig. 5.

Cellula ambitu triquetra, in sectione transversali ellipsoidea, apice utrinque plus minus acutis, 5–6  $\mu$  longa: Hab. II. Legit B. V. Skvortzov. Holotypus — S. P.

2. *Angulomonas stagnalis* sp. nov. Fig. 6.

Cellula triquetra, in sectione transversali fere triangulata, 9–10  $\mu$  longa, pyrenoidibus indistinctis: Hab. II. Legit B. V. Skvortzov. Holotypus — S. P.

#### III. *Protochroomonas* gen. nov.

Monades solitariae, libere natantes, non applanatae, cum vacuola contractili; periplasto nullo vel tenuissimo, minute rugoso; chromatophorum parietale, granulosum pallide viride, granulum, granulis amylaceis; pyrenoides et stigma nulla; nucleus centralis; flagella 2, natantia, similia,  $1\frac{1}{2}$  monade longiora, inter se remote sita.

Differt a *Mesostigma* Lauter. cellulis non applanatis, periplasto tenuissimo vel nullo et a *Caecomonas* gen. nov. Fam. *Heteromastigiaceae* Korsch. Class *Volvocineae* (vide manuscriptum authorum 1955) flagellis similibus.

Typus generis: *Protochroomonas granulata* sp. nov.

Cells solitary, free swimming, not flattened; periplast none or slender and minutely rugose; chromatophore parietal, pale green, with paramylaceous granules; pyrenoids and eye-spot absent; vacuoles contractile present, nucleus central; flagella 2, swimming, similar, remotely seated from each other,  $1\frac{1}{2}$  times longer than the cell.

Differs from *Mesostigma* Lauter. in non-flattened cells, periplast being thin or absent, and from *Caecomonas* gen. nov. ms. in flagella being similar.

Species 1. Distribution: Brazil. Hab. I.

1. *Protochroomonas granulata* sp. nov. Fig. 7.

Cellula 8–9–10  $\mu$  in diam.; flagella 2, remote sita, natantia. Hab. I. Legit B. V. Skvortzov. Holotypus — S. P.

Cell 8–9–10  $\mu$  in diam., flagella 2, very remote from one another, swimming.

### Acknowledgements

This study was made in the Cryptogamic Section of the Botanical Institute, Sao Paulo, Brazil. The author expresses his gratitude to the Director of the Institute, Dr. Alcides Ribeiro Teixeira, and to the leaders of the Cryptogamic Section, Dr. Oswaldo Fidalgo, Dr. Joao Salvador Furtado, Dr. Carlos Eduardo de Mattos Bicudo, and the Secretary Marlene Ocana Orlando for facilities in carrying out this work. The material from Hongkong was received in 1966 for cultivation and study through the kindness of Dr. R. C. Stephens and Dr. T. Widdowson of the Department of Botany, University of Hongkong. The author thanks Mr. H. M. Burkill and Dr. C. X. Furtado of the Singapore Botanic Gardens for help in editing this paper.

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