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Kilka nowych i interesujących gatunków *Oedogonium* i *Bulbochaete* — Some New and Noteworthy Species of *Oedogonium* and *Bulbochaete*

Mémoire présenté le 21 mars 1960 dans la séance de la Commission Biologique de l'Académie Polonaise des Sciences, Cracovie

In the course of studies on epiphytic algae in the fishponds of the Experimental Farms in Landek and Gołysz (Katowice district), belonging to the Laboratory of Water Biology of the Polish Academy of Sciences, some undescribed forms of *Oedogoniaceae* were found. This paper is the second contribution on the *Oedogoniaceae* of these ponds. The ponds are filled with water from the River Vistula (Wisła) through mill races during the Spring and drained in the Autumn. The following species of *Oedogonium* and *Bulbochaete* occurred on aquatic macrophytes: *Glyceria aquatica* W., *Equisetum limosum* L., *Phragmites communis* Trin. and *Schoenoplectus lacustris* (L.) Palla.

This investigation was initiated at the Institute of Botany of the Polish Academy of Sciences, and carried to completion in the Institute of Hydrobiology, Academia Sinica, under the direction of Professor Dr C. C. Jao. The author would like to express her gratitude to the Laboratory of Water Biology for their financial support throughout the investigations and for their help in the field. She is also greatly indebted to Professor Jao for his corrections and valuable advice.

Oedogonium Jaoii M r o z i ń s k a n. sp. (Pl. I. Figs. 6—9)

Dioicum, nannandrium, idioandrosporum; oogoniis singulis vel 2 continuis, globosis vel ellipsoidali-globosis, operculo apertis, circumscissione superiore rima angusta; oosporis subglobosis, in sectione optica polari circularibus, oogonia complentibus, vel non complentibus, membrana triplici:

episporio etiamque endosporio laevi, mesosporio crasso, saepe lamelloso, longitudinaliter costato, costis granulatis 17—19, inter se transverse costulatis, interdum anastomosantibus reticulationem distinctam formantibus, regione polari reticulata disciformi, anulo circumdatis costis paucis ad anulos non attingentibus; cellulis suffultoriis elongatis; androsporangiiis 1—5 seriatis, nannandribus in cellulis suffultoriis sedentibus, antheridio exteriore, unicellulari globoso; cellula basali elongata.

Cell. veg.	9—15 μ diam.	50—61 μ long.
Cell. suffult.	23—24 μ diam.	50—51 μ long.
Oogonia	36—41 μ diam.	43—55 μ long.
Oosporae	27—35 μ diam.	29—39 μ long.
Androsp.	9—11 μ diam.	16—22 μ long.
Stip, nannandr.	7—9 μ diam.	31—34 μ long.
Antheridia	5 μ diam.	5 μ long.

Dioecious, nannandrous, idioandrosporous; oogonia 1—2, globose or ellipsoid-globose, operculate, division supreme, narrow; oospore subglobose in front view, goobose in polar view; partly or completely filling the oogonium; spore wall of three layers, outer and inner layers smooth and thin, middle layer thick and lamellose, with 17—19 longitudinal, loosely granulated ribs connected by transverse, sometimes anastomosing, lines to form coarse reticulations; polar regions disc-shaped, reticulate, surrounded by a ring most of the ribs connected with the ring; suffultory cell enlarged, androsporangia 1—5; dwarf male on the suffultory cell; single antheridium, exterior, globose, basal cell enlarged.

This new species is near *Oe. reticulocostatum* J a o and *Oe. Taylorii* J a o in the structure of the oospore, but differs from them in having distinct rings surrounding the polar regions, oospore subglobose and especially from *Oe. Taylorii*, in that the oogonia are operculate and the vegetative cells are not capitellate.

Oe. Jaoii was found in the Baginiec II pond (Gołysz Farm) in June (7., 25. VI. 1956) and July (2., 23. VII. 1956), epiphytic on *Equisetum limosum*, *Glyceria aquatica* and *Schoenoplectus lacustris*.

Oedogonium reticulosporum M r o z i ń s k a n. sp. (Pl. I. Figs. 1—2)

Dioicum, macrandrium; oogoniis 1—5 continuis, globosis, subglobosis vel ellipsoidali-globosis, poro superiore apertis, oosporis globosis vel depresso-globosis, oogonia fere complentibus; membrana triplici: episporio et endosporio laevibus, mesosporio reticulato, reticulationibus diametro variantibus; cellulis suffultoriis tumidis parvis; cellula basali elongata; antheridiis 1—3; spermatozoidiis binis divisione horizontali ortis.

Cell. veg. plantae fem.	15—36 μ diam.	98—135 μ long.
Cell. veg. plantae masc.	17—19 μ diam.	78—189 μ long.
Oogonia	63—75 μ diam.	64—101 μ long.
Oosporae	57—69 μ diam.	56— 72 μ long.
Antheridia	17—18 μ diam.	8— 19 μ long.
Cell. suffult.	31—44 μ diam.	96—126 μ long.

Dioecious, macrandrous, oogonia 1—5, globose, subglobose or ellipsoid-globose; pore superior; oospore globose or depressed globose; nearly filling the oogonium; spore wall of three layers: outer and inner layers smooth, middle layer reticulate, mesh variable in diameter; suffultory cell slightly enlarged; basal cell elongate; antheridia 1—3; sperms 2, division horizontal.

This new species is near *Oe. Tiffanii* A c l e y and *Oe. suborbiculare* J a o. It differs from both in having a reticulate middle spore wall and from the first in the ellipsoid-globose shape of some of the oogonia. Moreover, *Oe. suborbiculare* has capitellate vegetative cells.

Oe. reticulosporum was found in the Książok Rudzicki pond (Landek Farm) in August (18. VIII. 1957) and September (5. IX. 1957), epiphytic on *Glyceria aquatica*, *Equisetum limosum* and *Phragmites communis*.

Oedogonium sodiroanum Lagerheim (Pl. I. Fig. 3)

Specimens found in this territory have antheridia situated not only below or above the oogonium (subhypogynous and subepigynous) but also immediately below it (hypogynous), and 1—6 antheridia in series. The upper part of the filament, as in the specimens described by Tiffany (1930), is twisted in a characteristic way and consists of series of 4—9 antheridia alternating with one (or two) vegetative cell. The supermatoids arise by vertical division, lying either close or obliquely, as was noticed in antheridia forming the end of a filament. The oogonia of these local forms are slightly longer than those described by Tiffany (1930). The full data of the local form are:

Vegetative cells	11—24 μ diam.	66—113 μ long.
Oogonia	40—46 μ diam.	70— 86 μ long.
Oospores	38—43 μ diam.	56— 71 μ long.
Antheridia	13—20 μ diam.	6— 13 μ long.

This species was found in the Książok Rudzicki pond (Landek Farm) in June (25. VI. 1959). epiphytic on *Equisetum limosum*.

It has hitherto been reported only from South America (Equador) and North America (Michigan).

Oedogonium tapeinosporum Wittrock f. *fowlingense* Jao (Pl. I.
Figs. 4—5)

Specimens found in this territory differ only slightly from these described by Jao (1937). They have somewhat larger oogonia and oospores. The full data are:

Vegetative cells	4—6,5—(9,4) μ diam.	17—24—(26,9) μ long.
Oogonia	17—21 μ diam.	15—24 μ long.
Oospores	16—20 μ diam.	11—14 μ long.
Suffultory cells	6—10 μ diam.	21—24 μ long.

This form was found in the Księżok Rudzicki pond (Landek Farm) in June (19. VI. 1957) and July (1., 18. VII. 1957), epiphytic on *Glyceria aquatica*, *Equisetum limosum* and *Phragmites communis*.

It has hitherto been reported only from China (Jao 1937, 1940, 1942) and France (Bourrelly 1957).

Bulbochaete Gutwińskii Mrozińska n. sp. (Pl. II. Fig. 10)

Dioica, nannandria, gynandrospora, oogoniis subdepresso- vel depresse subquadrangulari-globosis, patentibus, sub androsporangiiis sitis, dissepimento cellularum suffultoriarum mediano vel paullum supra medium posito; mesosporio reticulato, reticulationibus plus minusve circularibus et diametro variantibus, minute granulatis, mesosporio sulco circumdato; androsporangiiis 1—2 cellularibus, epigynis vel sparsis; nannandriis in oogoniis sedentibus; antheridio interiore.

Cell. veget.	22—26 μ diam.	77—115 μ long.
Oogonia	68—74 μ diam.	50—57 μ long.
Oosporae	63—67 μ diam.	48—54 μ long.
Androsporangia	14—18 μ diam.	12—13 μ long.
Nannand.	13—14 μ diam.	26—35 μ long.

Dioecious, nannandrous, gynandrosporous; oogonium subdepressed or subquadrangular, depressed-globose, patent, below androsporangium division of suffultory cell median or submedian; mesospore reticulate, reticulations finely granulate, mesh more or less circular and varying in diameter; mesospore with an equatorial suture dividing the spore into subequal upper and lower parts; androsporangia 1—2, epigynous and scattered; dwarf male on oogonium; antheridium interior.

This species was found in the Księżok Rudzicki pond (Landek Farm) in June (19. VI. 1957; 25. VI. 1959), July (1., 18. VII. 1957), August (18. VIII. 1957) and September (5. IX. 1957), epiphytic on *Glyceria aquatica*, *Equisetum limosum* and *Phragmites communis*.

Bulbochaete verrucoso-reticulata Mrozińska n. sp. (Pl. II. Fig. 11)

Dioica, nannandria, gynandrospora; oogoniis subdepresso- vel depresso subquadrangulati-globosis, patentibus, sub androsporangiiis sitis; dissepimento cellularum suffultoriarum mediano vel paullum supra medium; mesosporio verrucoso-reticulato, sulco circumdato; androsporangiiis 1—2 cellularibus, epigynis vel sparsis; nannandriis in oogoniis sedentibus; antheridio interiore.

Cell. veget.	22—26 μ diam.	52—89 μ long
Oogonia	65—69 μ diam.	51—59 μ long.
Oosporae	61—66 μ diam.	50—54 μ long.
Androsporangia	16—17 μ diam.	16—16 μ long.
Nannandr.	14—15 μ diam.	27—29 μ long.

Dioecious, nannandrous, gynandrosporous, oogonium subdepressed or subquadrangular, depressed-globose, patent, below androsporangium; division of suffultory cell median or submedian; mesospore verrucose-reticulate, with an equatorial suture dividing the spore into approximately equal parts; androsporangia 1—2, epigynous and scattered; dwarf male on oogonium; antheridium interior.

The species was found in the Książok Rudzicki pond (Landek Farm) in July (18. VII. 1957), August (4., 18. VIII. 1957) and September (5., 17. IX. 1957), epiphytic on *Glyceria aquatica*, *Equisetum limosum* and *Phragmites communis*.

STRESZCZENIE

Autorka podała szczegółowe opisy czterech gatunków *Oedogonium* i dwu gatunków *Bulbochaete* znalezionych w stawach Gospodarstw Doświadczalnych w Landeku i w Golyszu (Województwo Katowickie) należących do Zakładu Biologii Wód PAN.

Jako gatunki nowe opisała: *Oedogonium Jaoii*, *Oe. reticulocostatum*, *Bulbochaete Gutwiński* i *Bulb. verrucoso-reticulata*.

Gatunki. *Oedogonium sodiranum* Lagerheim i *Oe. tapeinosporum* Wittrock f. *fovingense* Jao z Polski nie były dotąd podawane, a znane są na świecie z nielicznych tylko stanowisk.

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EXPLANATION OF PLATES

Plate I

Figs. 1—2: *Oedogonium reticulosporum* Mrozińska n.sp.: Fig. 1. part of a female filament with five oogonia; Fig. 2. part of a male filament with series of antheridia.

Fig. 3. *Oedogonium sodiroanum* Lagerheim, part of a filament with an oogonium and series of antheridia.

Figs. 4—5. *Oedogonium tapeinosporum* Wittrock f. *fowlingense* Jao: Fig. 4. part of a filament, showing two series of oogonia; Fig. 5. part of a filament, showing the hemispherical basal cell.

Figs. 6—9. *Oedogonium Jaoii* Mrozińska n.sp.: Fig. 6. oospore in polar view; Fig. 7. oospore in front view; Fig. 8. part of a filament with two oogonia and four dwarf males on the swollen suffultory cell; Fig. 9. part of an androsporogial plant with androsporangia.

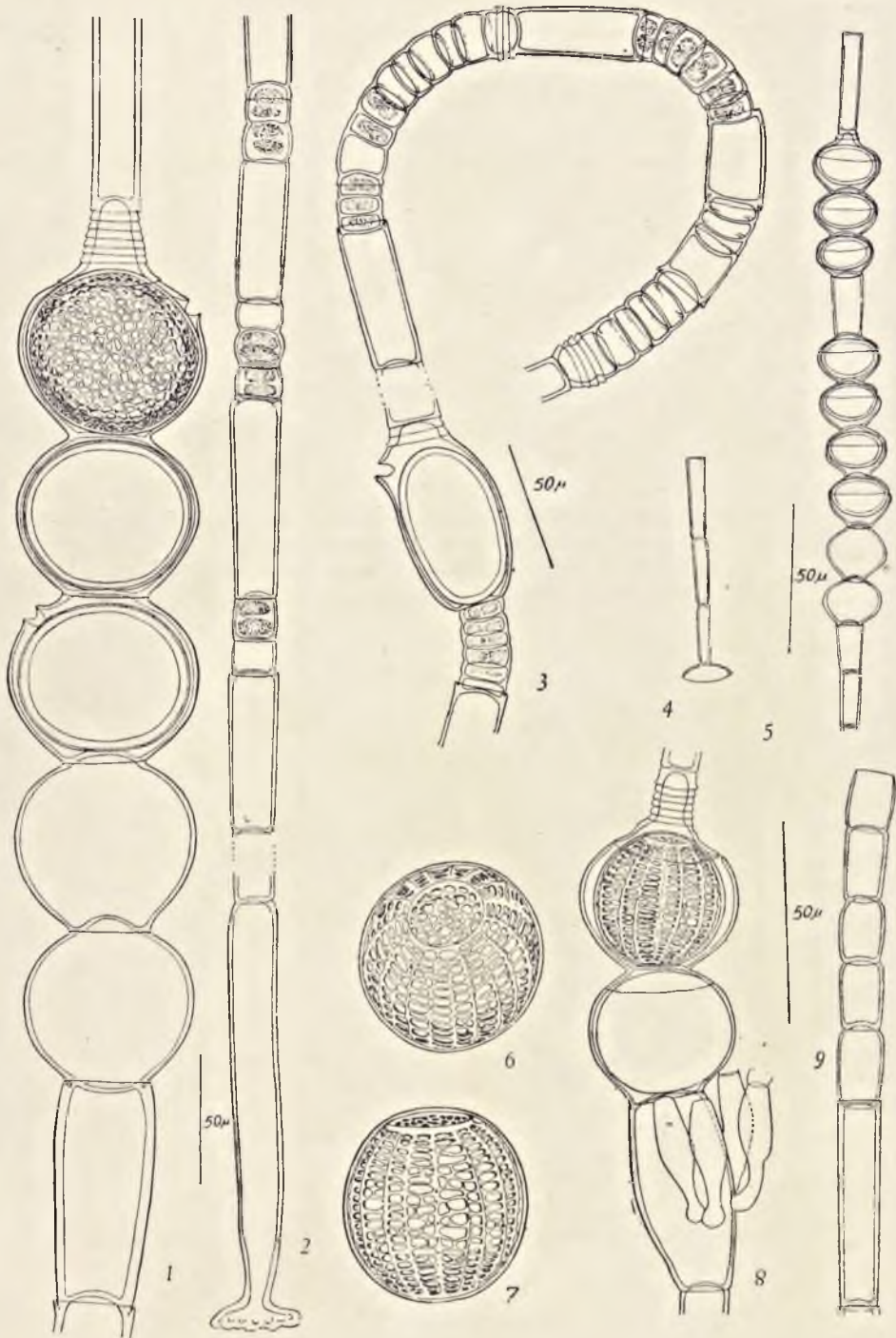


Plate II

- Fig. 10. *Bulbochaete verrucoso-reticulata* Mrozińska n.sp. part of a filament, showing an oogonium with mature oospore.
- Fig. 11. *Bulbochaete Gutwinskii* Mrozińska n.sp. part of a filament, showing an oogonium with a mature oospore.

