Conjugation between *Spirogyra ternata* Ripart and *Spirogyra Fuellebornii* Schmidle

J. Z. KADLUBOWSKA

The conjugation between various species of *Spirogyra* is a very rare one. The first mention of interspecific conjugation of *Spirogyra*, namely *Spirogyra majuscula* and *Spirogyra protecta*, was made by Bessey (cited according to Oltmanns). Andrews mentions a conjugation of *Spirogyra crassa* with *Spirogyra communis*, and Transeau mentioned a conjugation of *Spirogyra varians* and *Spirogyra communis* (cited according to Woronichin). In Kolkwitz's "Zygnemales" (Kolkwitz, Krieger 1944) we find an illustration representing the conjugation of *Spirogyra majuscula* and *Spirogyra calospora*.

In the material collected the 27-th May 1962 in the pond at Marysin III (Łódź) in the vicinity of the Pensioners' Home, two species of *Spirogyra* were determined: *Spirogyra ternata* Ripart and *Spirogyra Fuellebornii* Schmidle. Both these species are new for the Polish flora (Kadłubowska 1964). In the pond of Marysin these *Spirogyra* appeared as well in the vegetative as in the conjugating stadium. Apart from filaments conjugating regularly — i. e. ♀ filaments of *Spirogyra ternata* with ♂ filaments of *Spirogyra ternata* (Fig. 1) and ♀ filaments of *Spirogyra Fuellebornii* with ♂ filaments of *Spirogyra Fuellebornii* (Fig. 2) — conjugation between filaments *Spirogyra ternata* and *Spirogyra Fuellebornii* (Fig. 3) was also observed. Such an interspecific conjugation was found in several filaments.

According to Krieger (Kolkwitz, Krieger 1944) *Spirogyra Fuellebornii* belongs to the section "Nitida", but *Spirogyra ternata* belongs to the section "Dubia". Filaments of *Spirogyra* collected in the pond near Marysin III had the following properties:

	<i>S. ternata</i>	<i>S. Fuellebornii</i>
1. Width of vegetative cells	54—60 μ	40—45 μ
2. Number of chromatophores	3—4	2—4
3. Receptive cells	inflated	not inflated distinct
4. Conjugating tubes	indistinct formed by the inflation of the cell wall	narrowed at the base, dilated at the end
5. Zygospores	55—65 μ $\times$ 70—90 μ	45—50 μ $\times$ 70—80 μ

Fig. 1. Conjugation of *Spirogyra ternata*.

Fig. 2. Conjugation of *Spirogyra Fuellebornii*.

It was ascertained that, during the conjugation only filaments ♀ of *Spirogyra ternata* unite with ♂ filaments of *Spirogyra Fuellebornii*. This conclusion is based on the observation of a normal course of conjugation of filaments of *Spirogyra ternata* where receptive cells inflate distinctly. The inflation appears already when conjugating tubes are formed. In the observed interspecific conjugation *Spirogyra ternata* cells are distinctly inflated. The conjugating tubes of both *Spirogyra* species have kept distinct specific properties. Namely, the conjugating tube of *Spirogyra ternata* cells is broad, indistinct, formed by the inflation of the cell wall; while the conjugating tube of *Spirogyra Fuellebornii* is distinctly

Fig. 3. Conjugation between *Spirogyra ternata* and *Spirogyra Fuellebornii*.

shaped, narrowed at the base and dilated at the end. In the observed process of conjugation we could not observe the generation of zygotes, because the *Spirogyra* filaments were attacked by fungi and bacteria. The precise determination of the *Spirogyra* species was made possible thanks to the finding of regularly conjugating *Spirogyra ternata* and *Spirogyra Fuellebornii*.

Materials concerning the above researches are to be found in the Museum of the Department of Taxonomy and Geography of Plants of the University of Łódź.

Department of Taxonomy and Geography of Plants
University of Łódź, Łódź, Poland

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Koniugacja między *Spirogyra ternata* Ripart a *Spirogyra Fuellebornii* Schmidle

Streszczenie

W materiale pobranym dnia 27 maja 1962 roku ze stawu w Marysinie III (Łódź) obok Domu Rencistów wyróżniono dwa gatunki skrzętnic: *Spirogyra ternata* Ripart i *S. Fuellebornii* Schmidle. W stawie w Marysinie skrzętnice te występowały zarówno w stadium wegetatywnym, jak i w stadium koniugacji. Oprócz nitek koniugujących w prawidłowy sposób, a więc ♀ nitki *S. ternata* z ♂ nitkami *S. ternata* (fot. 1) oraz ♀ nitki *S. Fuellebornii* z ♂ nitkami *S. Fuellebornii* (fot. 2) zaobserwowano koniugację między nitkami *S. ternata* i *S. Fuellebornii* (fot. 3). Tę międzygatunkową koniugację stwierdzono u kilkunastu nitek. W czasie koniugacji łączą się wyłącznie ♀ nitki *S. ternata* z ♂ nitkami *S. Fuellebornii*. Wniosek ten oparto na obserwacji prawidłowego przebiegu koniugacji *S. ternata*, w którym nabrzmiewają komórki przyjmujące, natomiast podczas koniugacji *S. Fuellebornii* komórki przyjmujące nie nabrzmiewają. W zaobserwowanym procesie koniugacji nie zauważono niestety powstania zygot, gdyż skrzętnice zostały zaatakowane przez grzyby i bakterie.