
Review

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maximum concentration of natural waters is so small, in comparison with that of the cell-sap, that it is considered doubtful whether it plays any rôle in initiating reproduction.

The author also gives good reasons for the view that, in the Zygnemales, the respective occurrence of lateral conjugation, scalariform conjugation, and aplanospore production, are hereditary rather than the result of environmental conditions.

Transeau, E. N. "Hybrids among species of *Spirogyra*." *American Naturalist*, **53**, 1919, pp. 109–119, 7 figures.

Transeau's observations afford the most complete data on hybridisation in *Spirogyra* that have as yet been published. Hybrids are described between *S. communis* and *S. varians* and between *S. varians* and *S. porticalis*. As in the case of previous records, the form and markings of the resulting zygospores are found to be determined altogether by the female gamete. According to the author this is due to the fact that the male is completely engulfed by the female gamete, so that it is the cytoplasm of the latter that lies at the surface. The fusion nucleus however contains factors for all the various characters of the two species concerned in the cross and, when reduction occurs, these factors are segregated in various combinations in the final spore nucleus. This segregation becomes obvious in the first generation, the hybrid zygospores giving rise to filaments which exhibit their hybrid character. It has not been possible to demonstrate this by cultures, but apparent hybrid forms have been found intermingled with filaments that were crossing and with filaments of the two parent species that were conjugating normally. Thus in material containing *variens* crossing with *communis* there were present, apart from the typical forms, one combining the dimensions of *communis* (22 μ) with the laterally inflated sporiferous cell characteristic of *variens*, and another combining the dimensions of *variens* (33 μ) with the non-inflated sporiferous cells of *communis*. In the case of the hybrids between *variens* and *porticalis*, where the points of difference between the parent-species are more numerous, the number of hybrid-forms is correspondingly greater, all the eight possible combinations being actually found.

Moore, G. T. "Algological Notes. II. Preliminary List of Algae in Devil's Lake, North Dakota." *Ann. Missouri Bot. Gard.*, **4**, 1917, pp. 293–303.

Elmore, C. J. "Changing Diatoms of Devil's Lake." *Bot. Gaz.*, **65**, 1918, pp. 186–190.

The algal flora of Devil's Lake (30 miles long and over 5 miles wide at its broadest part) is of especial interest owing to the steadily increasing salinity of the water as a result of the continual shrinkage that is taking place; the water-level sank 16 feet between 1830 and 1889 and 14 feet from 1883 to 1912. The water, which is distinctly brackish to the taste, contains about 1 per cent. of solids, but their proportions are quite different to those of sea-water, sulphates and chlorides being the most important constituents. Whilst the lake formerly contained large numbers of fish, the stickleback (*Eucalia inconstans*) is now the only form present.

Excluding Diatoms and Peridineae, Moore records only 47 species (belonging to 33 genera) of Algae, of which the Myxophyceae make up about one-half. A doubtful *Pandorina* is the only member of Volvocales and a sterile *Mougeotia* the only Conjugate recorded. With the exception of *Spirulina nordstedtii*, a characteristic marine form, however, all the species present are freshwater ones, the specimens of which moreover do not differ in any appreciable respect from ordinary freshwater individuals. Along the shore *Ulothrix zonata*, *Cladophora kuetzingiana*, and *Enteromorpha prolifera* are not uncommon. The paucity of the flora is no doubt to be related to the increasing salinity of the water and here, as else-