

## VAUCHERIA.

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In *Vaucheria* the branches are rather long in proportion to the main part of the plant in some cases, and in other instances rather short in this respect. The plant branches at various angles. In most of the species of *Vaucheria* in the vegetative parts this is less than a right angle as regards the facing surfaces of the main filament and its branch. A reproductive branch generally starts off at right angles to the main filament and can be recognized as a branch that will produce reproductive organs on this account. They may become at times somewhat less or greater than a right angle, according to circumstances.

The irregular branching is conspicuous in all the different species of *Vaucheria* except one. This exception is seen in *Vaucheria tuberosa*, which branches dichotomously.<sup>1</sup> The single tubular cell which is often much elongated may sometimes reach a length of 30 cm.<sup>2</sup> The water forms are generally longer than species that are to be found growing on the soil and in many cases also of a coarser nature. Since it grows frequently in tufts, especially the forms in running water, the length and extensive branching of the mass is often not at first so evident.

In the formation of the large zoöspores the end of the filament is cut off from the rest of the plant by a transverse wall. After a time, depending on conditions, the contents of the single large cell thus formed rounds itself and later escapes through the end of the cell as a single large zoöspore. Sometimes attempts to cause these zoöspores to form by flooding the plants with water, as in the case of the land forms, is very successful, but at other times this process is not attended by very great success or none at all.

The function of the above-mentioned large cell to form the large zoöspores which will reproduce the plant asexually, even though formed in the usual way, does not always do so, owing to changed or unfavorable conditions. Instances of this kind can occasionally be seen in plants that have been submerged. One unusual instance was observed by the writer as is shown by the accompanying Figure 1. The terminal cell, which was cut off in the usual way, was of normal size and shape and apparently was vigorous in every respect as was the rest of the plant. The figure here given was drawn by the aid of a camera a short time after the specimen was observed, from fresh material which had been gathered one hour before.

The unusual feature about this cell was the production of two branches from the sides. These branches were probably of different ages, as both seemed to have had equal opportunity for growth. It will be seen, however, that the branch nearest the apex of the cell is longer than the one near the base of the cell and near the transverse

<sup>1</sup> Sachs, J., *Lehrbuch der Botanik*. Vierte Auflage, 1874, p. 273.

<sup>2</sup> Sachs, J., l. c., p. 273.

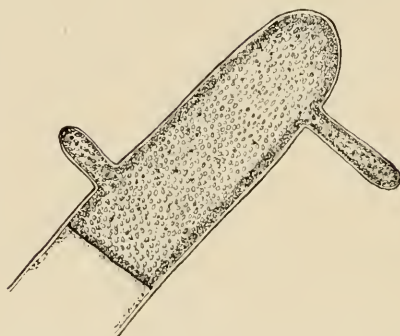


Fig. 1. Zoosporangium of *Vaucheria sessilis* with two branches x 300.

wall. Neither branch was separated from the supporting cell by a wall, as will be seen from the figure, nor later on, although the specimen was kept and observed under as favorable conditions as was possible. It will be noticed, furthermore, from the figure that the above-mentioned branches extend at right angles from the cell. This recalls the way previously described in this paper in which the branches which are to become or to carry the sex organs in this plant arise.