The two remaining species, *L. Dalhousieanum* (Spring) and *L. Selago* (L.), are, to some degree, intermediate types. The phloem in *L. Dalhousieanum* shows both types, strap-shaped and centric. In the branches the structure becomes simpler. There are two narrow strips of xylem, with an intermediate strip of phloem, so that a prominent row of sieve-tubes occupies the very centre of the stelic cylinder. *L. Selago* in its structure is modified on that of *L. clavatum*. An interesting feature of *L. Selago* and *L. squarrosus* is the occurrence of root-structures running through the stem. These consist of steles containing a crescent-shaped mass of xylem, with protoxylems towards each tip, while the concave portion is filled up with phloem. A characteristic sclerenchymatous sheath surrounds the stele. In *L. Selago* these root-structures are found even above the point where the stem branches, but in *L. squarrosus* they have fused with the central cylinder before branching occurs.

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REPRODUCTION IN DICTYOTA DICHOTOMA.—1. *Dictyota* is an annual. In this country it germinates during the summer, remains small during the winter, grows very rapidly in June, and begins to form its reproductive cells in July.

2. The tetraspores are produced throughout the season, and all stages may be found together on the same plant. The sexual cells, however, show a remarkable periodicity. The formation, maturation, and liberation of each crop occupies a fortnight, the interval between two spring-tides. The sori are formed during neap-tides, and the cells are liberated during or immediately after the highest spring-tides.

3. When liberated the oospheres are not invested with walls. In this condition they strongly attract the antherozoids, become fertilized, and at once start germinating. The plantlets are similar to those figured by Thuret as resulting from the germination of the tetraspores.

4. If not fertilized the eggs lose the power of attracting antherozoids, they form walls, and, as already described by Thuret and Bornet, they germinate parthenogenetically. After one or a few divisions, sometimes accompanied by formation of a rhizoid-rudiment, the process stops and the plantlets die.

5. Towards the close of the season some sori fail to mature within

the usual period, and the crops become less regular; the same effect is brought about during very cloudy and cold summers.

6. The same conditions bring about sterilization of certain of the sexual cells. Thus, patches of cells within the antheridial sori fail to divide. Cells at the margins of female sori remain barren, so that the usually borderless sori acquire partial or even complete borders.

7. There are strong reasons for concluding that the factor which determines the maturation and liberation of the sexual cells, and the fertilization of the oospheres, is the amount of the illumination to which the plants are subjected.

8. The cytology of the reproductive cells will be described as far as it has been made out.

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CHANGES IN THE GLAND-CELLS OF DROSERA PRODUCED BY VARIOUS FOOD-MATERIALS.—The work is an extension of that previously undertaken by the authoress, an account of which has already appeared in 'Quart. Micro. Journ.,' vol. xxxix.

In the experiments now described, leaves were fed with egg-albumin, globulin, peptone, fibrin, milk, nuclein, nucleic acid, and calcium phosphate, the histological changes in the gland-cells being noted in each case.

The results to be described were obtained with fixing-fluids, widely differing in their chemical constitution.

Egg-albumin. The basophil cytoplasm becomes pink, and is reduced in twenty to thirty hours to a mere vestige. After two days it commences to recuperate, and ultimately becomes again basophil. The changes in the nucleus comprise—(1) those of the nuclear chromosomes, (2) those of the nuclear plasm, and (3) those of the nucleoli. In the resting-cell the nuclear chromatin is scanty, but immediately after feeding it commences to increase, till in twenty to thirty hours large segments are formed as in mitosis. During recuperation the segments again diminish. The eosinophil nucleoli are large in the resting-cell; they diminish after feeding in direct proportion to the increase of the basophil chromatin, and finally enlarge when the chromatin-segments diminish.

Peptone is absorbed much more rapidly than egg-albumin, and produces in one hour changes similar to those effected by egg-albumin in twenty to thirty hours.

Williams, J. Lloyd. 1898. "Reproduction in Dictyota dichotoma." *Annals of botany* 12, 559–560. <https://doi.org/10.1093/oxfordjournals.aob.a088710>.

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