Wildflowers

THE BULLETIN OF THE BOTANICAL SOCIETY OF W. PA.

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Robert F. Bahl, Sec.
401 Clearview Ave.
Pittsburgh, Pa., 15205
(412) 921-1797

Dodecatheon meadia
by Isabel Teare

FEBRUARY MEETING

Monday, February 8, 8:00 P.M., at the Potting Shed of Phipps Conservatory, Schenley Park.

Our speaker will be Sister Mary Joy Haywood, Ph.D. of Carlow College Biology Dept. She received her Doctorate at Michigan State Univ. in Plant Pathology and Botany; Master's at Louisiana State Univ.; Bachelor's at Carlow College. She is a Research Associate at Kansas State Univ., and in summer does wheat research at the Ft. Hayes Agricultural Experimental Station.

Subject: Diseases of Economic Plants.

TRILLIA

Most of these publications will be available at the February and March meetings. Members' price is given. Non-members' price is slightly higher.

Yearbook. 1904-05. History, members, constitution, and activities. (Out of stock)

Publication 1. 1910-11. Pteridophytes of All. Co., Fungal Flora of Pgh., Glenshaw. (31pp - 20¢)

Publication 2. 1911-12. Botany in High School, Plant Plant Diseases in Pgh. (32pp - 20¢)

Publication 3. Ferns of All. Co. (130 pp, 57 plates and figures - $2.00 - out of stock)

Trillia 4. 1913-15. Weeds of W. Pa., Pymatuning, Hartstown, Ohiopyle (70pp - 40¢)

Trillia 5. 1915-19. Trees and Shrubs of Schenley Park, Early Travelers in W. Pa., Hawthorns of W. Pa. (114pp, 2 plates - $1.00)

Trillia 6. 1919-21. Coloring Matter of Plants, Shadbushes. (57pp, 1 plate - 75¢)

Trillia 7. 1921-23. Conservation, biography. (58pp, 1 plate - 75¢ - out of stock)

Trillia 8. 1923-25. Bibliography, Pa. Plants, Shrubs and Vines of Pa., Early Travelers, Ferns of Ligonier. (82pp, 1 plate, 1 chart - $1.00)

Trillia 9. 1925-30. Carex in Pa., Phylogeny of Ericales, Origin of Cultivated Plants. (106pp, 1 chart - $1.00)

Trillia 10. 1931-36. 50-year History, Plant Geography, 20 Gilled Mushrooms, Buxbaumia Moss. (148pp, 14 plates - $1.25)

Trillia 11. 1936-46. Flora of All. Co., Rare Plants, Medicinal Plants, Raccoon Creek Flora. (212pp - $1.75)

Trillia 12. 1946-63. Vascular Additions, National Flower, Rare Plants of W. Pa. (167pp, illustrated - $1.75)

(Tim Manka)

ADDENDUM

In last month's bulletin, we told you that the chairman of our Program Committee is Mary Lou Brown. We have learned that we have a co-chairman, Esther Allen.

ECOLOGICAL AND ANATOMICAL STUDIES OF A PLANT BUCCANEER

We continue with Forrest L. Piehl's treatise on Aureolaria virginica, false-foxglove...

Results: By critical excavation and washing of roots, delicate connections to host plants were detected. Although every root in the plots was examined under magnification, haustoria were found primarily on woody plants, particularly oaks, and including blueberry and a legume. Surprisingly, in addition to those on hosts, self-connections were also discovered to its own roots in three forms -- haustorial attachment to the same plant ("autoparasitism") and also to other plants of the same species ("intraspecific parasitism") and simple grafts. Root grafts in herbaceous plants are essentially unknown according to recent work by Australian researchers. Haustorial connections to its own roots numbered 1,663 or 71% and those to oak 596 or 25.5% of the 2,341 total haustoria examined.

Haustorial counts of attached connections for individual, medium-sized plants ranged from 225 to 716, averaging 468, per plant; however, even more existed which were detached in the excavation and not counted.

For ten random roots all haustoria, attached and detached, averaged 5.1 per cm. of root length. Haustorium size (diameter) ranged from 0.25 to 5.0 mm., with a mean of 1.5 and a mode of 1.0.

Data on the horizontal distribution of haustoria showed them most numerous in the 5-10 cm. zone away from the base of the stem (the plant's "center") for host connections, and in the 0-5 cm. zone for those on its own roots.

Studies of their vertical distribution showed the vast majority (99.6) in the top 5 cm. of soil, placing them with respect to the soil profile near the bottom of the "A" horizon and barely into the top of the "B" horizon.

Based on root volume, oak presented the greatest mass of roots in the plots with 64%, non-hosts followed with 29%, while Aureolaria had only 7% of the total volume.

Morphologically scanning electron micrographic studies show that the haustorium is a bulb-like root modification which has a surface similar to the rest of the root system. Other parts of the plant, such as leaves, stem, and floral parts appear to be like other autotrophic plants and show no modifications toward parasitism as have the roots.

Anatomically, through the combined methods developed in part for this work -- clearing scanning electron microscopy of sectioned material, hand sectioning, and paraffin sectioning and staining -- haustoria were found to have distinct zonation of tissues into epidermal, cortical, and vascular regions and a characteristic vascular structure unique within the plant's root system.

The cortex is exemplified by tiers of cells filled with starch grains and xylem elements show reticular wall thickenings and circular end perforations.

(to be continued next month)