of the light salmon-colored corolla. I describe the most extreme form as

Var. diffusa, n. var.—Taller, stems much more slender, 75–100^{cm} high, much branched; branches long below, very short above: leaves linear, shorter, scattered: flowers in much smaller heads, at ends of branches, and summit of stem: glandular and cellular pubescence very thick upon the calyx, bracts, and upper leaves, and sometimes the entire upper portion of plant is pubescent.—A. Isabel Mulford, *Herbarium Lake Forest University.*

Frost Plants.—Prof. Lester F. Ward's observations on the "Frost freaks of the dittany," in the Gazette for April, 1893, occasioned much interest, since the phenomena illustrate one form of the movement of water in the plant stem. I have elsewhere[1] made a lengthy review of the literature of the frost plants and take occasion to call attention to the following references which may be accessible to the readers of the Gazette.

Prof. Ward called my attention to the fact that the frost crystals of *Cunila* and *Helianthemum* were noted by Dr. Darlington.[2] The first observation of frost phenomena recorded is that of Stephen Elliot on the stem of *Conyza bifrons* (now *Pluchea bifrons*).[3] Sir John Herschel noticed a similar formation on the stalks of heliotrope and thistle.[4] Prof. John Leconte made an extended study of the frost crystals of *Pluchea camphorata* and *P. bifrons*, in 1848, along the coast of South Carolina and Georgia.[5] Prillieux in his investigations on freezing in intercellular spaces described the formation of radial ice plates by herbaceous plants.[6] These observations were duplicated by Trecul at the same time, and Sachs has given some matter bearing upon this point.[7] In a recent number of this journal Professor Atkinson gave a note recording the fact that these phenomena were seen by him in 1885–86,[8] while Professor Ward has found that the frost freaks of the dittany are a matter of common information in the locality in which his observations were made.[9]

It seems established that the frost phenomena occur on plants which have ceased growing, or are wholly dead; that the movement of the water upward through the stem and laterally is wholly physical and

[1] Quarterly Bulletin of the University of Minnesota. **2**: 30. 1894. Science **22**: 351. 1893.
[2] Flora Cestrica 350. 1837.
[3] Sketch of the Botany of South Carolina and Georgia. 322. 1824.
[4] London and Edinburgh Phil. Mag. III.—:110. 1833.
[5] Proc. A. A. A. S. 1850.
[6] Compt. rend. **70**: 405. 1870.
[7] Lehrbuch, 2 Aufl. 614.
[8] Bot. Gaz. **19**: 40 1894.
[9] Science **23**: 66. 1894.

that the frost plants show no especial differentiation of structure, so that it is probable that many plants, if they should pass through the death stage at a season offering the proper conditions of moisture and temperature would furnish "frost phenomena."—D. T. MacDougal, *University of Minnesota.*

Proposed seed collection of the U. S. National Herbarium.—The Department of Agriculture at Washington, D. C., has inaugurated a seed collection in connection with the U. S. National Herbarium which is intended to include seeds of all the species of plants obtainable, especially weeds and forage plants.

The seeds, when not too large, will be placed in flat-bottomed specimen tubes of two sizes, the smaller 5^{cm} long by 1.5^{cm} in diameter, the larger in vials of twice these dimensions. These tubes will be neatly labeled, systematically arranged, and placed in covered trays made of binder's-board. Fleshy fruits of native American plants will be put into similar bottles filled with preserving fluid. Authentic herbarium specimens of plants raised from the seeds represented, or of plants from which the seeds were obtained, will accompany the collection whenever possible.

Seeds of North American weeds, grasses and other forage plants are especially desired and the co-operation of all botanists is earnestly requested. A suitable exchange of seeds for herbarium material or the publications of the Division may be had in return if desired. In the case of weeds and forage plants a liter of seed is wished in order that sets may be prepared for distribution to Agricultural colleges.

In addition to the work above outlined the Division of Botany is about to undertake the testing of various seeds as to their purity and germinative power, for which purpose a laboratory will be fitted up and equipped after the most approved methods of American and European seed-control stations. In this laboratory and in the open air different physiological experiments connected with seed germination and development will be conducted. Histological studies may ultimately be made to determine the structure of the seeds of American weeds and forage plants, and, if possible, to elicit facts of taxonomic value. The entire work will be carried on with special regard to its economic importance, while the collection will be particularly useful for reference.

The matter has been placed in charge of Mr. G. H. Hicks, recently instructor in botany at the Michigan Agricultural College, to whom correspondence may be addressed.—Frederick V. Coville, *Botanist, U. S. Department of Agriculture.*