mens of *C. echinatum* were collected in fruit from the following stations:

Cider Mill Pond, Grafton, Mass., July 16, 1953.
Perry Pond, North Brookfield, Mass., August 11, 1953.
Muddy Pond, Oakham, Mass., July 17, 1953.
Cemetery Pond, Warren, Mass., September 18, 1953.

These specimens are deposited in the Herbarium of the Hadwen Botanical Club at the Biology Department of Clark University, Worcester, Massachusetts.

After close study of the fruiting material and reference to Dr. Fassett's paper on Ceratophyllum,[4] the sterile specimens in the Hadwen Herbarium have now been identified. It appears at this time that C. echinatum is more common in Worcester County than C. demersum. The former species has been found in 16 of the 60 towns, while the latter has been found in only 3 of the 60 towns in the county.

The fruiting specimens were found only where the plants were "rooted"[5] in the muck substrate and completely submerged. No fruiting specimens were found floating in the ponds. Usually the fruiting specimens were found growing in extensive colonies in water ranging from 14 to 30 or more inches deep. At these depths, at least some of the fruits were definitely visible from the collecting boat. By passing one's hand over the growth to move it slightly, many more fruits were brought clearly into view. Finding the fruiting specimens of Ceratophyllum is more readily accomplished if the plants remain completely submerged than if they are removed from the water.—Philip G. Meissner, clark university, worcester, massachusetts.

A Method of Mounting Pressed Flowers for Study and Preservation.—Some years ago, while I was working on the taxonomy of *Lupinus*, Professor Carl Epling of the University of California at Los Angeles, introduced me to a technique of boiling a flower in an electric baby bottle warmer, which eliminates the hazard of fire in an herbarium that might originate

[4] Fassett, N. C., North American Ceratophyllum, Communicaciones del Instituto de Investigaciones Cientificas, No. 2, March 1953, Universitas del Salvador, Central America.

[5] According to Muenscher in *Aquatic Plants of the United States*, "The roots are absent even in the seedling. The radicle does not enlarge or elongate during seed germination." p. 228–230.

from the use of an alcohol lamp. The flower was then dissected and the parts mounted on a glass microscope slide in a medium of glycerin and mucilage (Lepage's, or any other standard mucilage). The proportions of glycerin and mucilage vary with the geographic region, depending on the relative humidity, and must be worked out for each location. Start with about 1 part of glycerin to 10 parts of mucilage. Test a few drops on a slide allowing the medium to dry thoroughly. The glycerin-mucilage medium should dry to a smooth, hard texture. Too much glycerin will cause the medium to be sticky and too much mucilage will cause the medium to crack and chip loose from the slide.

The addition of hot water to the medium during the dissection of the flower makes the dissection much easier. The slides may be dried and kept as is, indefinitely, as long as they are not moved from one region of the country to another. Transporting the slides from a humid region to a dry region will require the addition of water and glycerin to prevent chipping.

The procedure is valuable from the standpoint of obtaining accurate measurements of the size and shape of the critical characters of the taxa. A set of 25 slides, or more, may be readily prepared and is desirable for the study of the amount of variation within a taxon. This method is also a means of preserving, in a useable state, the limited number of parts remaining on very old type specimens. In addition, the glycerin acts as a clearing agent, often making it possible to count the number of ovules in an ovary, in a whole mount.

With the above technique the slides cannot be attached to the herbarium sheets without the danger of adhering to the paper and destroying the dissected specimen. A coating of plastic remedies this difficulty. The following over-all procedure is one that I have adopted, using the mounting plastic described by Archer.[1] In addition, a short period of staining with Sudan IV is desirable, for those floral structures with ciliation or structures which tend to be come translucent on boiling.

1). Boil the flowers, leaving them to stand in the hot water long enough to return to their original size and shape. A detergent may be used; however, it is not desirable to distort the walls of the cells.

[1] W. A. Archer. New Plastic Aid in Mounting Herbarium Specimens. RHODORA **52**: 298. 1950.

2). Dissect the flower to show the parts in their most advantageous position.

3). Stain those floral parts with ciliation or those that are translucent, for a short time, in Sudan IV and wash thoroughly.

4). Place one flower on the slide as a whole mount, in a position that best shows the relation of the parts.

5). Allow the glycerin-mucilage medium to dry overnight or in a drying oven.

6). Put several drops of toluene on the slide and then coat the slide with the plastic used in mounting herbarium specimens.

7). Bubbles in the plastic may be removed by placing a drop of toluene above each.

8). Fragments of leaves may be pressed into the wet plastic with top and bottom surfaces free. The plastic may render the hairs difficult to see, without staining, if the leaves are completely imbedded.

If the plastic should crack in a thin area it can be readily repaired by a drop of toluene and the addition of more plastic.

Various stains have been tried, over a period of years, but most either darken the flower parts too much or they are water soluble and diffuse out into the medium of glycerin and mucilage. The extra glycerin, mucilage and stain can be washed off with hot water and the slides redried and then coated with plastic. However, thus far, Sudan IV has been found to be the most satisfactory stain, since it stains only the fats and waxes, such the material in the cuticle. The color is delicate and does not mask the ovules, rendered visible by the glycerin, but is still sufficient to make the ciliation readily visible under a microscope.

—David B. Dunn, visiting lecturer, botany department, university of minnesota, minneapolis.

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