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William D. Creasy
State University of Iowa

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The Use of Gelatin Capsules in Artificial Pollination

By WILLIAM D. CREASY

In a recent attempt to effect controlled pollination of large numbers of small flowers of the genus *Scrophularia*, some study was given to methods of avoiding accidental crosses. After trying a number of materials, gelatin capsules were found so satisfactory for this purpose that it seems desirable to record the method for the benefit of other workers.

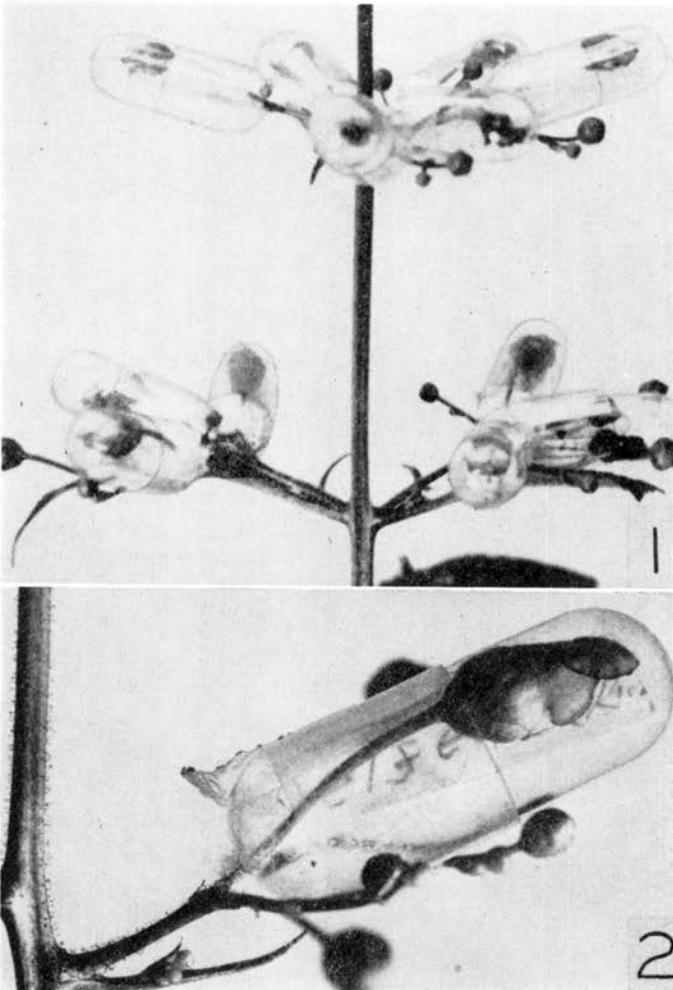
The capsules used by the writer were number 000. These appear to be the largest ones made for human use and, to give an idea of their size, are listed by the manufacturers, Ely Lilly and Company, Indianapolis, Indiana, as holding 12 grains of Quinine Sulphate each. They are approximately 1 centimeter in diameter, $2\frac{1}{2}$ centimeters in length when closed (their length can be extended considerably), and weigh approximately 2 decigrams each. This light weight enables an average peduncle to support one with ease and an average inflorescence to support several (Figure 1). Their price approximates one-half cent each, and they may be bought at most drug stores. Other sizes are available, ranging in size down to number 5 which is listed as holding $\frac{3}{4}$ of one grain of Quinine Sulphate. If, on the other hand, larger flowers are to be pollinated, the mammoth capsules employed by veterinarians could be used.

The best method of applying one of these capsules is as follows. While the two parts are together clip the closed end of the lid (larger half) with a sharp pen knife. This will cause a small hole to chip out at the apex and with practice the size of the hole may be controlled very accurately. Next, open the capsule and split the lid with the point of the knife from its edge to the hole in the apex. If the point of the knife is not used the capsule may chip badly, depending somewhat on the moisture content and temperature of the air. This being done, a small bit of cotton may be pulled loosely into the hole with a pair of fine tweezers. This prevents injury to the peduncle, admits air, and further, discourages small insects that might creep up the peduncle. This half of the capsule is then sprung open, the flower entered into it with the peduncle fitting into the hole made at its apex. After the actual pollination is completed the other half of the capsule containing the data tag is slipped into this larger half and the two parts sealed firmly in place by a piece of Scotch tape (Figure 2). The capsule may be placed over the flower at the time of removal of the stamens

if desirable and after maturation of the pistil be easily opened again to effect pollination. The two plants being studied by the writer, *S. marylandica* L. and *S. lanceolata* Pursh, are protogynous and if enclosed just as the flowers are about to open, clipping of the stamens and pollination could be done at the same time.

Excellent results were obtained by the writer using the above means of isolating flowers for pollination. However, most of this work was done in the plant house and it must be borne in mind that gelatin capsules readily dissolve in water and are not desirable for use outside unless protected. If capsules are coated with lacquer by dipping or spraying and allowed to dry well before using, their resistance to water is increased and considerable water in the form of spray is necessary to bring about their collapse.

DEPARTMENT OF BOTANY
STATE UNIVERSITY OF IOWA
IOWA CITY, IOWA
ADDRESS: CALVIN, W. VA.



Explanation of Plate 1.

Figure 1. Part of an inflorescence of *Scrophularia marylandica* L. supporting several gelatin capsules.

Figure 2. Close up of a single capsule containing a flower.