EMBEDDING PLANT MATERIAL IN LIQUID SYNTHETIC RESIN[1, 2]—Plant material can be encased by embedding directly in liquid plastic, but the process consumes a great deal of time because of the necessity of killing the tissue prior to embedding it. Leaf tissue is especially difficult to embed in plastic because killing in FAA (formaldehyde, alcohol, acetic acid) that contains copper sulfate is required (Nelson, personal communication, 1963). In addition to introducing artificial coloring in the tissue, the process takes several weeks and would not be adaptable as a field method.

Another procedure, using tissue that has first been dried in silica-gel (General Biological Supply House, 1963, Turtox Service Leaflet No. 33), allows retention of natural color and shape, but when embedded directly in the plastic, the tissue develops cleared patches because of the action of the plastic upon the tissue. Thus, it would be impractical to use such a method to embed leaf tissue injured by pathogens, insects, or air pollutants; the symptoms could become confused with artifacts caused by the embedding procedure.

A relatively fast, simple, and non-injurious method has been developed for the embedding of dried leaf tissue in plastic. Dry the tissue in powdered silica-gel in a pan for 36 to 48 hours and protect the leaf tissue between a layer of "Permafilm" (Denoyer-Geppert, Chicago, Illinois)[3] adhesive and clear 1 mil Mylar before embedding in the plastic. During periods of high relative humidity, drying can be

[1]Contribution from the Soil and Water Conservation Research Division, Agricultural Research Service, USDA, in cooperation with the Laboratory of Medical Biological Sciences, Division of Air Pollution, Public Health Service, HEW.

[2]Manuscript received December 8, 1965.

[3]Trade names and company names are included for the benefit of the reader and do not infer any endorsement or preferential treatment of the product listed by the U. S. Department of Agriculture or the Public Health Service.

accomplished in a desiccator or other container that can be tightly closed. The leaves need not lie absolutely flat when drying in the silica-gel; thus, the natural undulations of the leaf material can be preserved. Air spaces in the envelope encasing the tissue do not show up over the blade although an air space may be noticeable around the leaf margin. After the leaf is anchored on the "Permafilm" adhesive (lower layer), the edges of the "Permafilm" are folded over the top layer of Mylar. This is imperative, because the "Permafilm" adhesive dissolves slowly in the liquid plastic. If the "Permafilm" is not folded over the Mylar, the plastic enters the envelope and blemishes the leaf tissue before the plastic solidifies. Another variation is to envelope the specimen in Mylar and seal the edges with clear plastic ("Scotch") tape before embedding.

Plastic of a type that dries completely through to the surface (Turtox Embedding Plastic, General Biological Supply House, Chicago, Illinois) is prepared according to the manufacturer's instructions, and the specimen to be embedded is placed in the liquid plastic with a sliding motion to avoid trapping air bubbles beneath the specimen. The best mold in which to make a casting is an aluminum cake pan coated with mold release compound.

The plastic is allowed to solidify, and a covering layer of plastic is added. When the plastic block is cured and removed from the mold, it is trimmed to remove the overlapped edges of the envelope. The trimmed edges of the block are sealed by rubbing with ethylene dichloride. If the procedure is carried out in the field, the casting can remain in the mold until it is returned to the laboratory for curing.

For certain needs, this method is better than traditional herbarium methods for preserving plant material, because the encased specimen can be handled innumerable times without fear of destruction and the natural colors of most specimens are preserved. In addition, the process is simple enough to be accomplished in the field if the collector is to be away from laboratory facilities for any length of time. GABRIEL SEIDMAN, *Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio 45226.*