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FOR MINIATURE DIORAMAS

ALFRED LEE ROWELL



FIELDIANA: TECHNIQUE

NUMBER 8

Published by

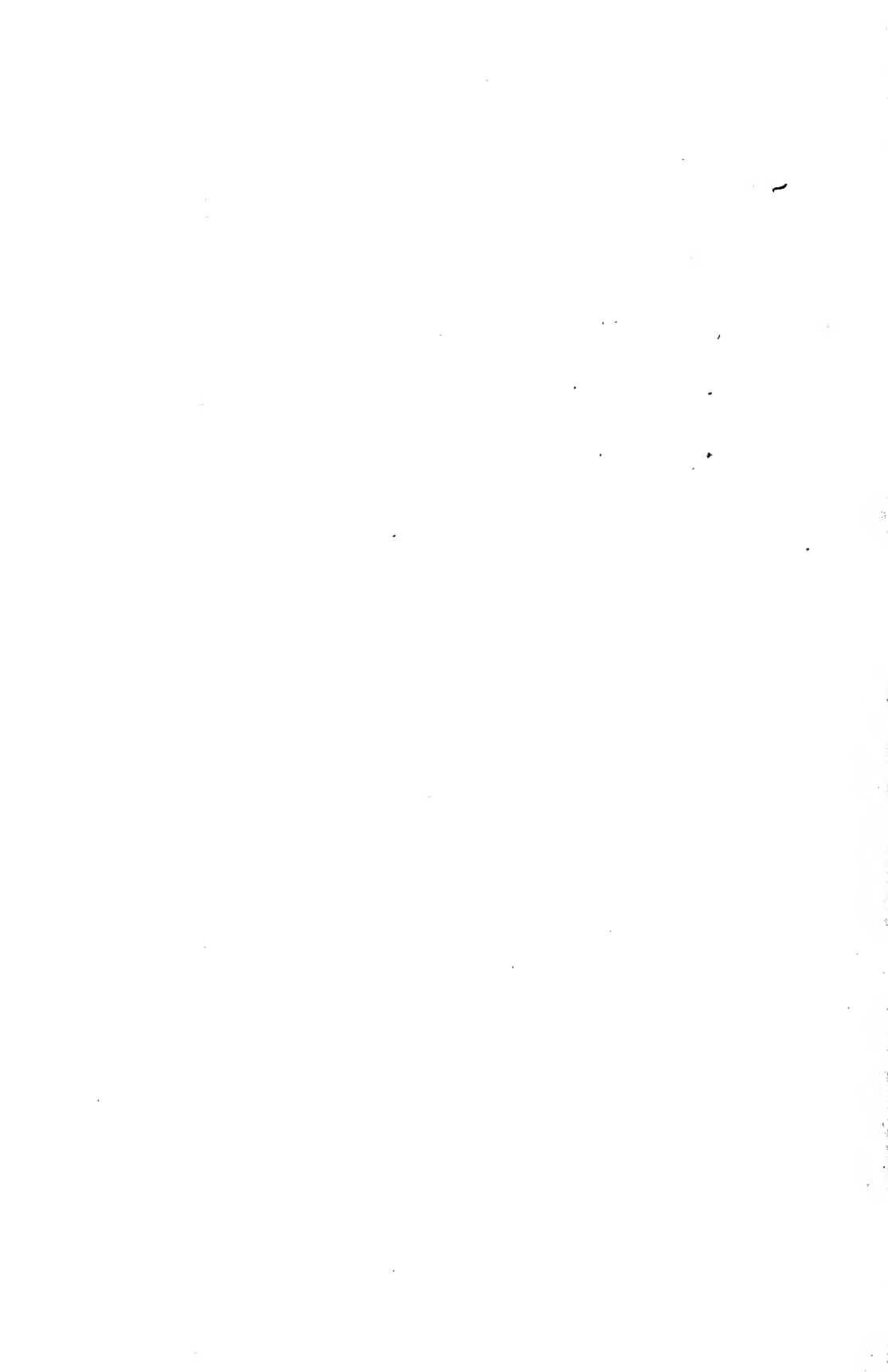
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PRINTED IN THE UNITED STATES OF AMERICA
BY CHICAGO NATURAL HISTORY MUSEUM PRESS

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A New Method of Making Foliage For Miniature Dioramas

INTRODUCTION

Probably the most difficult problem encountered in the preparation of miniature dioramas has been that of finding or making satisfactory foliage. My solution has been the development of a method of making plastic castings of foliage in one-piece open molds. The results have created a widespread interest in the process, with an increasing demand for information.

The process is not yet fully developed, and its use is constantly producing changes in procedure; nevertheless, I have decided to make it available in its present state of maturity. The following set of notes is offered, pending further developments and the publication of a more detailed description.

MATERIALS USED IN CASTING FOLIAGE

Original molds may be carved in any material suitable for carving, but molds used for casting plastic materials must be resistant to the solvent used in the plastic. Molds can be reproduced from the original, by regular casting methods, in metal, plaster, or any other solvent-resisting material.

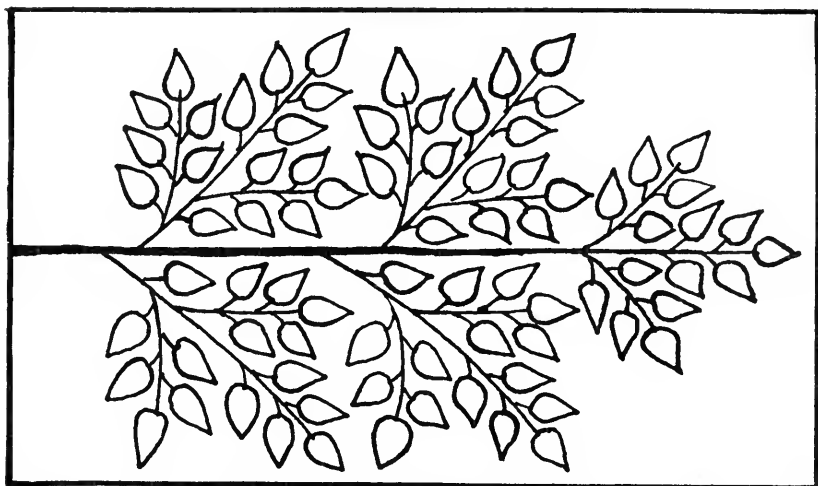
Plaster molds for casting plastic should be impregnated with any of the plastic solutions available for that purpose, provided the impregnating material is not affected by the solvent used in casting. Untreated plaster molds dry slowly and soak up separator.

Metal molds may be engraved and/or made by the electroplating process from originals of metal, plaster, wax, or plastic.

Plastic molds of catalin have been found extremely satisfactory to use, and they are easily carved, either with rotary cutters and burs or with hand tools and scrapers. Unless a very large quantity of foliage is needed probably it will be more economical and more satisfactory to carve the additional molds from catalin than to cast them.

Cellulose nitrate (celluloid) dissolved in butyl acetate is the material used in making the casts. The mixture should have the consistency of thick cream. Artists' oil color is added, gradually and sparingly, to obtain the desired color.

A *separator* coating of water-soluble material is applied to the mold to prevent the casting material from adhering to it. Ordinary



LAYOUT FOR MOLDS.

mucilage can be used for this purpose, but the gum arabic solution given below is more satisfactory. Immediately before applying the separator, a new plastic or metal mold should be cleaned with a detergent to remove all traces of oil and thus insure a uniform coating on all parts of the mold. This uniform coating is essential for a successful cast.

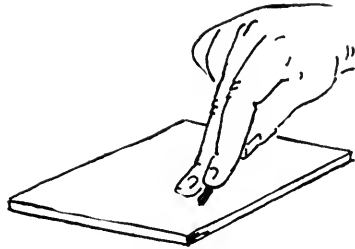
FORMULA FOR SEPARATOR

(All quantities by volume)

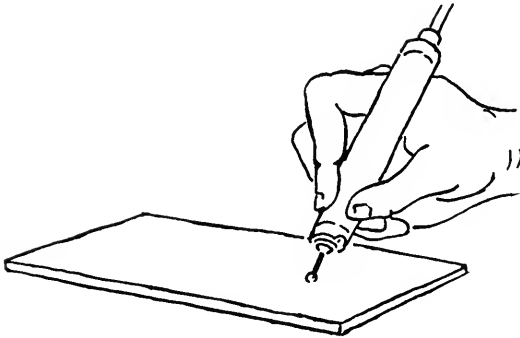
- 15 parts of gum arabic, powdered.
- 15 parts of water.
- 10 parts of alcohol (grain, denatured, or wood).
- 3 parts of molasses.

Combine the water, alcohol, and molasses, then add the gum arabic, making a thorough mixture and being especially careful that there are no lumps containing dry gum arabic. If possible, let the mixture stand for 24 hours or more before using it. For use, thin it down to the consistency of light varnish with a mixture of 3 parts of water to 2 parts of alcohol and strain if necessary to remove lumps

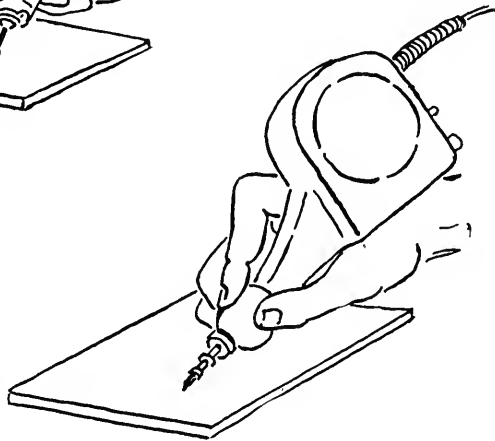
Hand Gravers
for leaves & stems



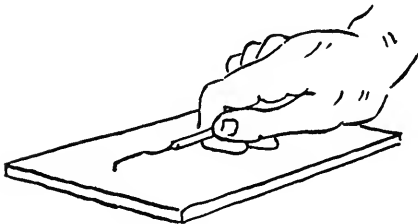
Rotary Cutters
for leaves &
heavy carving



Vibrating Tools
with special cutters
for leaves & stems



Hand Scrapers
for stems, lines, &c.
Dentists' discarded tools
make good ones



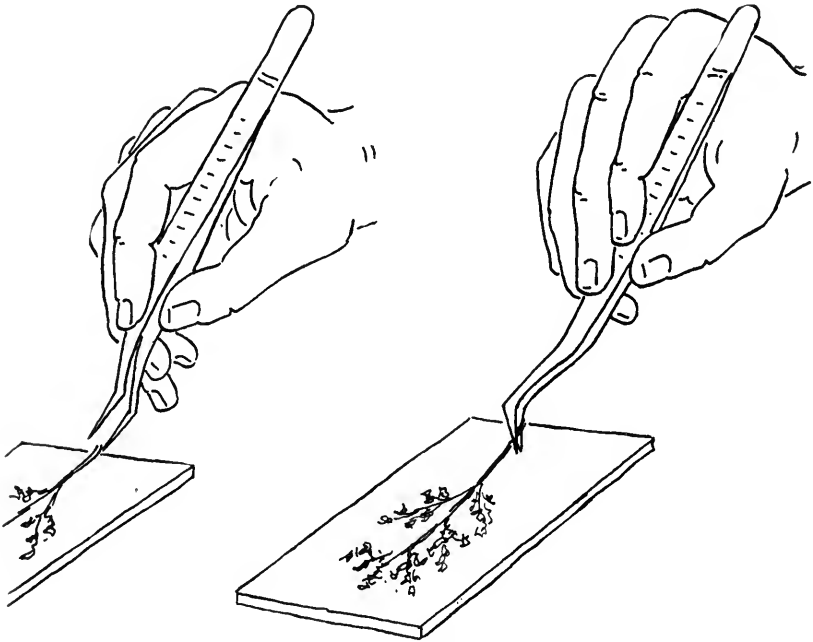
METHODS OF CARVING THE MOLD.

and foreign matter. Keep in a tightly closed container when not in use. The addition of a wetting agent will facilitate the application of the separator.

If the powdered form of gum arabic is not available, use any other form by weight, at the rate of $\frac{3}{4}$ oz. avoirdupois for 1 oz. liquid or 30 cc.

CASTING PROCEDURE

(1) Cover the mold with the separator, being careful to obtain a uniform coating. The method of application and the brush used



THE CAST IS REMOVED, AFTER IT HAS BEEN SOAKED IN WATER.

are the same as for a light coat of varnish. This is the most important single step in the whole procedure; unless a smooth clean coating is obtained over the entire casting surface, it will be impossible to make successful casts.

(2) Dry the mold and the separator *thoroughly*.

(3) Fill the mold by spreading the casting material (semi-liquid celluloid) over the surface with a spatula and stroking back and forth a few times to obtain an even coating, without bubbles. Remove as much of the excess material as practicable from the surface. If a wooden spatula is used the mold will not be damaged.

(4) Allow the plastic to dry for 30 minutes or longer after each fill.

(5) Fill the mold again one or more times if and as required, the number of fills depending on (a) the depth of the mold, (b) the consistency of the plastic, and (c) the desired stiffness of the cast.



AFTER THE CEMENT HAS BECOME "TACKY," WIRES ARE APPLIED TO THE STEMS OF THE CASTS.

(6) Wet the surface of the mold thoroughly with butyl acetate and allow it to remain wet for a few seconds to soften the film of surplus plastic on the surface. Slight scrubbing with a cloth may be necessary. Generous use of solvent will save time and energy.

(7) While the surface of the mold is thoroughly wet with solvent, the loosened film should be immediately rinsed off by holding



THE FINISHED CASTS ARE ASSEMBLED INTO CLUSTERS TO FORM BRANCHES.

the mold over a pan of water in which a cloth has been immersed, and sluicing the dripping wet cloth over the mold a few times to carry the plastic and solvent into the water. If the water is allowed to stand for a few minutes after the molds are rinsed, it can be skimmed before dumping it down the drain. This will avoid trouble with the plumbing. If surplus plastic remains on some part of the

mold after rinsing, apply solvent and repeat the water rinse on that part only.

(8) Wipe the mold lightly with another cloth to remove excess water and to finish the cleaning. Prolonged soaking or vigorous scrubbing after wetting the mold will damage or spoil the cast, so this part of the procedure should be done quickly and without too much pressure.

(9) Dry the cast for 30 minutes or longer.

(10) Place the mold in water, or face down on wet paper or cloth, and soak it until the separator underneath the cast absorbs water and softens, releasing the cast. This may take anywhere from 30 minutes to 3 hours. If the cast does not loosen, either the mold has undercuts or other defects, or the separator was not properly applied.

(11) Remove the cast from the mold. To prevent warping, place it between two thicknesses of wire screen. Rinse off the separator and allow the cast to dry for at least 4 hours.

(12) Strengthen the central stem of the mold by applying stems of cotton-covered wire (magnet wire, coil wire), preferably double-covered. A satisfactory cement for this purpose is Acryloid B 72. Use toluol or xylol for thinner. After applying the cement allow the wire to stand for perhaps three minutes to become "tacky," before applying it to the cast.

Note: As a variation of 11 and 12, on larger casts apply the stems to the cast before soaking out the molds. Use care to avoid smearing the face of the mold and the cast with cement.

(13) The foliage as cast is flat. Shape it by using heat in any of the following methods: (a) plunge it into hot water, 180-212° F., the temperature being governed by the stiffness of the cast; (b) use a jet of steam or hot air; (c) use a hot tool.

(14) Fasten the projecting bases of the stems together to form branches, clumps of foliage, etc.

M A T E R I A L S

Gum arabic. Any water-soluble gum or adhesive may be substituted, but the formula must be adjusted accordingly.

Molasses.

Cellulose nitrate, which may be obtained in the form of celluloid shavings from Frederick Post and Company, 3650 North Avondale Avenue, Chicago 18, Illinois. Place the granulated cellulose nitrate in a container (having a tight

cover) and pour in butyl acetate until it comes almost to the top of the cellulose. This mixture should be about the right consistency; if it is too thin, add more cellulose. Use butyl acetate for thinner and for cleaning molds.

Artists' oil colors for tinting the cellulose. Very small amounts are required. Mix the color into a small amount of cellulose nitrate solution, then add this mixture to the full amount of the solution.

Acryloid B 72, which is made by Rohm and Haas, Washington Square, Philadelphia 5, Pennsylvania. For thinner use toluol or xylene (xylo).

For molds use catalin, plaster of Paris, or metal.

A satisfactory impregnating material for plaster molds is Plaspreg, sold by Furane Plastics, Inc., 719 West Broadway, Glendale 4, California.

A good wetting agent is Perma-Flex Mold Dressing, made by the Perma-Flex Mold Company, 243 North 5th Street, Columbus 15, Ohio. Use one part for the separator formula as given.



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