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METHODS OF MODELING THE AGARICACEAE

KATHRYN GILMORE

As it is practically impossible to preserve the fleshy fungi in any way to retain their original shape and color, the following plans were developed in making a collection of models for Iowa Wesleyan College.

The first necessity in making models of the Agaricaceae is, of course, the collecting of fresh specimens. The gill mushrooms may be collected throughout the open season, as representatives of certain genera, including *Agaricus*, *Panaeolus* and *Coprinus*, may be found in abundance after the early spring rains and specimens of the tough *Lentinus* are common even after the first frosts in the fall. Profitable locations for collecting include pastures, lawns and damp wooded places; and the mushrooms are found in greatest abundance during rainy seasons as they require considerable moisture for their growth. Since it is desirable to have the entire base of the stem as a means of identification it is most satisfactory simply to loosen the dirt about the stem with the fingers and to pick the specimen without using a knife or other instrument which might injure it. A covered basket lined with cotton has proved quite satisfactory for collecting purposes.

After the specimens have been collected they must be identified. Classification is comparatively simple in this family. It is based primarily on the color of the spores produced, and a spore print may easily be obtained from fresh specimens. A hole is cut in the center of a large square of paper and slipped over the stipe of the mushroom so that the paper fits up snugly against the pileus. If the mushroom is now supported in an upright position for several hours, a satisfactory spore print will appear on the paper. When the mushroom has been classified, it is helpful to copy in paints the coloring of its various parts in order that the natural tints may be accurately reproduced when fresh specimens are not available.

After this preliminary work is completed, the real process of modeling may be begun. The accompanying prints illustrate the process as it was carried on with specimens of *Entoloma strictius*.



Fig. 1

This species has rosy spores and white flesh. The top of the pileus and also the stipe are shaded with silvery gray. It may be found in grassy places, pastures, etc. Its flesh is fibrous and its stem is hollow with white fibers within. Figure 1 shows two of the fresh specimens that were used.

The mushroom is first suspended in some suitable container, frequently a tight pasteboard box, and melted paraffin is poured entirely over it. The paraffin should not be hotter than necessary lest it melt the tissues before it has hardened. The paraffin block is then allowed to solidify. Placing it in cold water will facilitate the process. When the block has thoroughly cooled and hardened, it may be slipped out of the container and cut open with a thin bladed knife so that the mushroom itself may be removed. With the ordinary mushroom, having the round pileus and central stipe, the most satisfactory cut to make first is a longitudinal one through the stipe. Then incisions may be made at the edge of the pileus and the paraffin block may be cut or broken transversely at this point. Figure 2 shows the block opened as described. It is not necessary to make the incisions in just this way, but experience has proved the convenience of so doing. The paraffin for cutting should be moderately warm, 70 to 75 degrees Fahrenheit, or it will chip under the pressure of the knife.

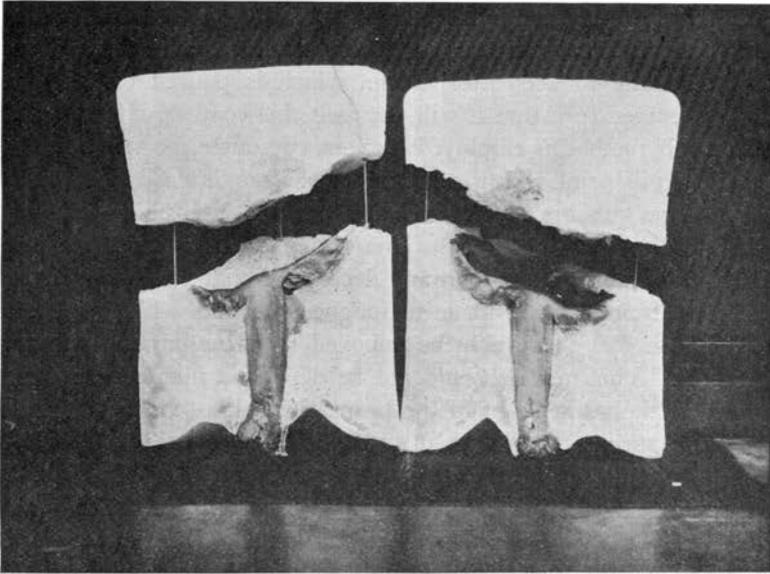


Fig. 2

After the block is opened, the mushroom itself must be removed. This is done largely with the aid of forceps and needles and is usually the most difficult part of the proceedings. If the mushroom is one of the tough genera, *Marasmius* for example, it may often be extracted whole, particularly if, before it was immersed in paraffin, its entire surface including the gills was painted with a thin oil applied sparingly by means of a camel's hair brush. The oil prevents the close adhesion of the paraffin to the mushroom flesh, and consequently the mushroom slips out of the block quite readily. However, if the mushroom is one of the softer fleshy type, *Amanitopsis* for example, the pileus will usually pull to pieces and cause considerable trouble. Especially if the gills are close, thin, and tender it is very difficult to obtain a satisfactory gill print in the paraffin. If the paraffin does enter the spaces between the gills it is in such thin sheets that to extract the gills without breaking it is practically impossible. In this case the oil treatment is of little value because even a thin coating of oil makes the gills adhere to each other in considerable numbers, leaving large spaces between the groups. The impression of such a grouping in the paraffin is entirely erroneous and to be avoided. It seems advisable where the gills are quite close and fragile to coat them, before the process starts, with a thin layer of paraffin,

which is applied along their edges by means of a camel's hair brush and which does not run down between them. Care must then be taken to keep the paraffin which is poured on later at such a temperature that it will not melt this coating off the gills. When this method is employed there is, of course, no depth to the resulting gill print. However, the mushroom is easily extracted because the gills are not imbedded in paraffin, and light markings which indicate the positions of the gill edges are secured and are often more satisfactory than any deep print that can be obtained.

Some attempts were made to toughen the gills with hardening reagents so that they might be removed from the paraffin without breaking. This process could not be depended upon because the action of the reagents upon the tissues varied so widely with the different species. Several unsuccessful endeavors were made also to find a different method of extracting the mushrooms. Destroying the tissues with chemicals proved unsatisfactory because the heat of the reaction was so great as to melt the thin sheets of paraffin between the gills. Letting the open block stand in the hope of drying out the tissue was to invite molds and mildews which covered the gill print and could not be removed without serious damage to the paraffin matrix. Even in cases where the specimen dried without molding, it cracked into pieces as it

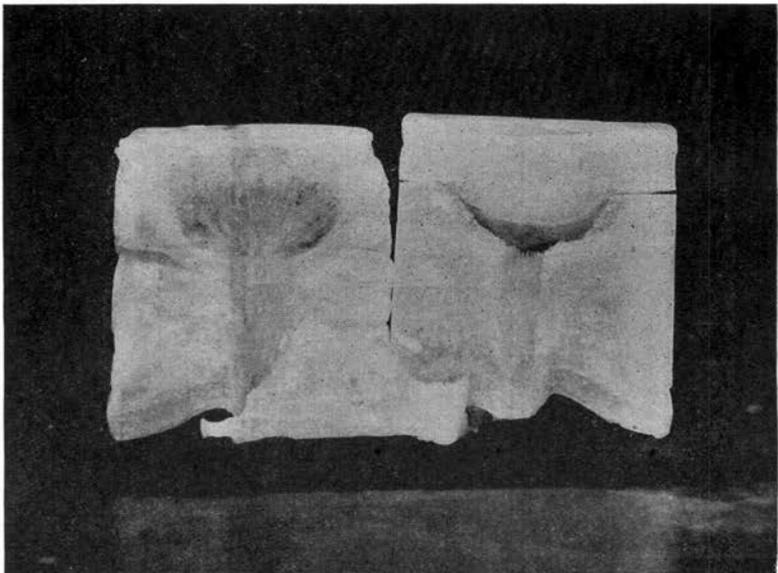


Fig. 3

dried, and the tiny dried particles could not be subjected to any treatment vigorous enough to remove them without injuring the gill print in the paraffin.

When the mushroom has been removed from the block, the empty cavity remains as shown in figure 3. If the block is to stand in this condition it must be kept cold, below room temperature, to insure the paraffin holding its shape. Usually all of the incisions in the block except the original longitudinal one are now sealed with melted paraffin, and the cavities in the two halves are filled with plaster of Paris. The plaster must be quite wet so that it will readily enter the narrow spaces left by the gills. When the plaster has set sufficiently the two halves of the block are pressed together tightly, and tied if necessary to hold them in position until the plaster hardens.

After the plaster has set, the paraffin is melted from around it by means of hot water. If the block is allowed to stand in hot water the plaster becomes heated and disintegrates. The most satisfactory scheme seems to be to run a continuous stream of hot water over the block. The paraffin can, of course, be retrieved by cooling the water in which it is melted and can be used repeatedly.

When the paraffin is melted off, the cast is ready for the finishing. This includes plastering and cutting imperfect parts, and

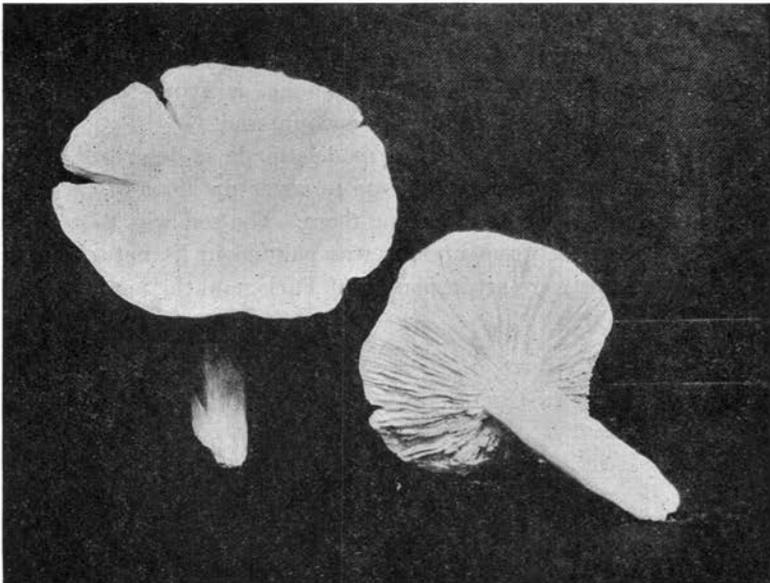


Fig. 4

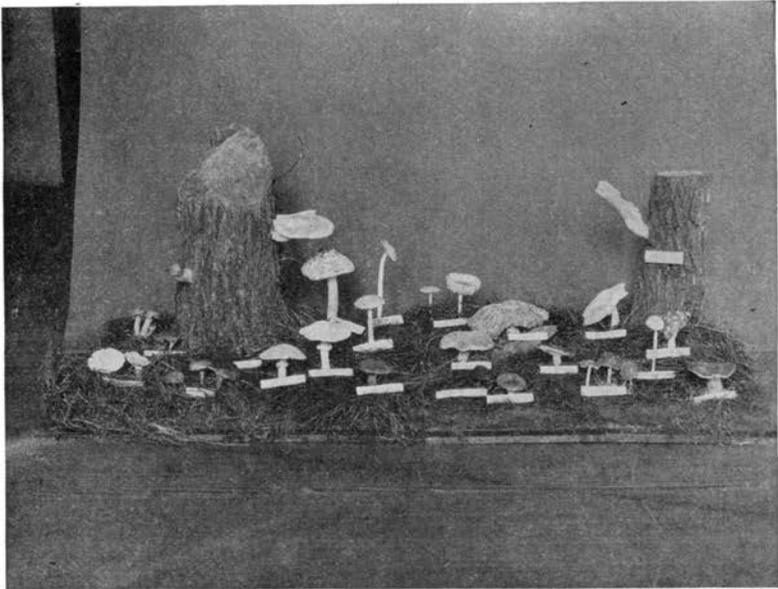


Fig. 5

painting in the original colors. The painting may be done with oil paints thinned with gasoline to give the desired flat finish. Figure 4 shows the models of *Entoloma strictius*. The one on the left had been painted before the picture was taken, but not the other. It is estimated that the time required to complete one model after the collecting has been done, is from four to five hours, if no serious difficulties are encountered.

Figure 5 shows a collection of models made as described above. Two actual stumps and enough sod to cover the floor of the exhibition case were used in mounting them. The sod was thoroughly dried and then the grass upon it was painted in its natural color. The mushrooms were set in plaster of Paris, and the name of each was affixed to it.

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