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ON

THE MAKING OF WAX REPRODUCTIONS OF FRUITS

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THIS BOOK
and
all the work
it implies
and
foreruns
is respectfully dedicated
to
Prof.F.D.McLouth,
upon whose suggestion the
study was undertaken.

THE MAKING OF WAX REPRODUCTIONS OF FRUITS

Introduction

Early forms of wax work
Col. Brackett
Jean E. Lyon

Discussion

Choice of fruit

Surface

Type

Making of the mold

Selection of a suitable dish

Preparing the plaster

Choice of plaster

Mixing

Setting for first half

Trimming and notching

Setting for second half

Making the wax form

Melting the wax

Coloring

Best methods of mixing

Preparing mold for wax

Forming the wax

Finishing

Surface

Stem end

Blossom end

Painting

Method of applying color

Colors used

Conclusion.

THE MAKING OF WAX REPRODUCTIONS OF FRUITS

Working in wax has been a time honored accomplishment, time immemorial. Daedalus fashioned wings of wax for his unfortunate son, Icarus, our grandmothers were accomplished in the art of forming wax flowers from the pliant sheets so well known in their time, and modelling wonderful wax fruits, with which they ornamented the mantel piece and center table in the parlor. Today we have found a use for the art in furthering the scientific knowledge of fruits, their typical forms and colors, their enemies and diseases, as well as phenomenal size or development. The art is not very well known, as yet; Col. Brackett, National Pomologist, at Washington D.C., his assistant, and Jean E. Lyon, of Guelph, Ontario, are about the only ones who make a business of doing the work on a commercial scale. Of Col. Brackett's work I know but little, save the general method of procedure and materials used, with which he kindly supplied me when I took up the study of the problem, and without which I could have done nothing of any consequence in solving it. Of Miss Lyon's work, however, I have heard much, as there have been samples of it here at the college, and one of the Senior boys came here from the Agricultural College at Ontario, where she works and supplies their large horticultural museum with wax fruits of all kinds, from cherries and grapes to the finest specimens of melons. Not only does she show the outside appearance of the fruits, but she makes faithful reproductions of sections, showing the appearance of the meat, structure, and appearance of seeds.

The first important consideration in making wax fruit is the choice of the specimen, making sure that it has the points necessary to be shown. If it is to represent a certain type, all the identifying points should be correct, and the color good, though the mold may be made from one fruit and the coloring be done from another in case of necessity. In showing diseased conditions, care should be taken that the irregularity of form is taken into consideration when making the mold, that the pieces of the mold are of such shape as to admit of taking them off the wax without injury to the form.

The wax should be refined beeswax of the finest quality, hard and white. Soft wax will dent easily in handling, and is not at all satisfactory.

The mold is made of plaster paris, and order to have a good surface, it is necessary to use a good grade of dental plaster. There is considerable difference in quality, even when limited to this, and one lot I used worked so rapidly that it was almost impossible to get it mixed and into the bowl, but it gave the very best surface of all that I tried.

In choosing a dish in which to make the molds, care should be taken that the sides have sufficient slope to permit of their being removed after the plaster has set; for most objects, a rounded bottom is best. The dish should be enough larger than the fruit to allow for a layer of plaster at least half an inch thick on all sides. In order to facilitate the removing of the mold from the dish, I have found it very convenient to put a strip of strong muslin across the bottom of the bowl, leaving good hand holds at each end. This strip should be wet in soap suds, and the dish should have the inside well moistened with the suds, to prevent danger of the plaster sticking fast to the mold.

When everything is ready, the bowl soaped, the wet muslin in place, the fruit at hand and ready for use, the plaster powder is put into a dish and water added gradually but rapidly till rapid stirring has reduced all to a smooth paste about like gravy. After skimming the bubbles off the top, the mixture is poured into the bowl and the fruit plunged down into it till the line of the top of the plaster is at the largest circumference of the fruit. In about fifteen minutes the fruit will have set solid and the fruit may be removed and this part of the mold made ready for the top by trimming off any irregularities and cutting three notches for guidance in placing on the top, and assistance in keeping the two parts together while using. At first I made these notches clear across, but found that they were more effective if placed on the outer edge, and also give a better surface around the middle of the wax fruit. The edge of the mold is now carefully brushed, the stem of the fruit removed, and the fruit put back in place. A strip of strong muslin may be placed across two sides, at the outside edge, to assist in getting the molds apart, sometimes a difficult job, on account of the air pressure.

In working with the plaster it is necessary to avoid too long stirring, as it is possible to add enough water and continue stirring past the time of the setting process, leaving it a beautiful smooth paste that will never set. I had a particularly fine grade of plaster that worked very rapidly, and completely spoiled one mold by too much water and stirring; a week afterwards it was still a soft paste. Another danger is in using dishes that have such straight sides that the mold cannot be removed after it has set. This mistake I made more than once, a hammer and chisel being called

into requisition to demolish the mold and save the dish for a fitter purpose.

The wax should be heated over water, care being taken to avoid heating it too long or too hot, as this has a tendency to make it soft. When the wax is put on to heat, the molds are filled with cold water, and before using, the water is poured out and any stray drops wiped away. While the color is heating, the ground color of the fruit is secured by adding oil paints till the shade is just right. It is quite essential that this color be just right, for it is quite difficult to get it toned up evenly all over to correct a mistake. The best way I found for mixing was to use a palette knife and a piece of smooth glass, pouring a little of the melted wax on the glass, working in the color, adding more wax, working it in, until color and wax are well mixed, then adding a little of the mixture at a time till the shade is right, which can only be determined by cooling a little wax and comparing it with the ground color of the original, sometimes even adding the other colors to get the appearance when together. The wax and molds being ready, the wax is poured into the deepest or till it fills it almost to the top, the other half is quickly set in place, then the two, being firmly held in place, are rolled and turned and moved about till the wax is well cooled. This usually takes half an hour, but varies with the size of the fruit and the amount of wax. If the moving is stopped too soon the soft wax will run to the bottom and make the thickness uneven, sometimes ruining one end.

The greatest difficulty I have had in this stage of the work is in finding a soft dent in the side when the wax is cool, some of the wax models were made over as many as six times before a perfect form was secured. One of them took a whole days work before it was perfect. Col. Brackett suggested that it might be due to superheating the wax, but I have had the same trouble when there was no possible chance of its being overheated. I thought it might be due to the formation of steam from drops of water, but later developments did not warrant such a conclusion. At first it seemed that there were no dents except in cases where the molds did not fit quite tight, and at the first movement there was a little wax lost and some air taken in, until it cooled sufficiently to stop the opening. Even this is not a satisfactory explanation, as several times there was excessive loss of wax, and I could hear the air being taken in, but the surface was perfect when cool. It might be possible that the dents were only formed when the air went in at a place where there was a strong film of wax that prevented its getting to the center, and th

center and held the wax away from the side, this keeping it in the warm air in the center, and away from the cool mold. This, however, is merely a theory, and remains to be proved. Any scum of color should be cleaned off before pouring into the mold, as it may cool on the outside and make a streaked appearance. The wax should be spread over the whole inside surface as soon as possible, as the boundary lines of different layers shows quite conspicuously, and are hard to remove. The molds should not be shaken, but rolled, at first, as shaking makes the wax frothy, and spoils the surface for a good finish.

As soon as cool the mold can be removed and the surface of the wax finished off. This finishing consists of trimming off any ragged edges around the middle, and polishing the whole surface with a cloth dipped in turpentine. The calyx end is made to look as much like the original as possible by carving with a sharp knife and smoothing with a turpene-soaked cloth on the point of a rounded stick. A stick with a cloth around it is effective in smoothing any unevenness on the sides, also. Jean Lyons uses a calyx of green cloth, but I have not yet learned how to insert it, and I really think that the other can be made to look more natural, especially as all the specimens I have used had a ripe brown calyx. In preparing the stem end, the best way I have found is to smooth down the surface, punch a hole in the center and insert a chittim twig cut at a node and used upside down. Glue is the best fastening I have found, though wax might be made to do all right if a way to make it unite with the other could be found; I was not successful in using it.

Everything is now ready for the color, the most difficult problem of all. Ordinary oil paints are used, thinning when necessary with turpentine. If there are any comparatively large surfaces to cover with an even tint, like the red cheek of a Red Cheeked Pippin, I have found that the easiest way to spread the color is with the palm of the hand, applying a very thin coat and letting it dry, giving as many more as necessary to make the shade deep enough. In some specimens there was a second ground color under the red of the colored cheek, and this was most easily put on in the same way. It is not difficult to get the nice shading from one color to another by using one over another in this way. In the red striped apples where the stripes are a conglomeration of dots, little and big, the easiest way to get the effect was by using the brush very dry and dabbing it on with the end, allowing the bristles to spread out in all directions and give a scattered application of the paint. If a spot has too much paint, a touch with the finger will lighten it. As to what colors to use, each fruit is a separate problem and must be

worked out by itself. The shades change very materially with the degree of ripeness, and if the ground color is made one week and the final color put on three weeks later, the effect will not be the same as if it were finished at once. Even the spots change with age. I found crimson lake, deepened if necessary, with a touch of blue or black, was a good apple red. Chrome orange, applied very lightly with the palm gave just the right blush to the cheek of a light yellow apple supposed to be a Banana, and raw sienna, smoothly applied, supplied the proper tint for the Newtown Pippin. The dots are a study in themselves, Sepia, white with a touch of cadmium, raw sienna and white, burnt sienna and white with a touch of blue; have all been used with varying success in getting the different effects. To get the green tint around the calyx, sap green toned down with a little red or sepia has been effective. The bloom on fruit is not always the same color, but on the specimen I tried, I got the effect with white toned down with blue and sepia, applied very lightly with the palm, just the merest touch, after the other color was all on. This is ticklish business, and may spoil all the work that has gone before, so I seldom attempt it. A gloss like that found on well polished apples, may be given by applying a light spray of ordinary fixative such as is used in the charcoal drawing work. This is made of white shellac cut in alcohol, and must be used sparingly, as too high a polish is not desirable in an attempt to get a natural apple. One of Jean Lyon's apples that Prof. Lewis has is highly polished and another is a very rough surfaced, scaly looking one, that shows the brushmarks in order to give the thick-skinned, tough look. As the calyx of all the apples I used had turned a ripe brown, sepia and sienna were used there. One advantageous point in the study of this work, if the color gets spotted, a cloth dipped in turpentine will clear it all off and give a clear surface for another start.

In conclusion it might be well to state the economic value of such work as this. For preservation of types it is superior to the newer color photography, for a study of diseases it is invaluable, as the characteristic appearance may be sent as a warning into uninfected districts with no danger of carrying the infection, the appearance may be studied in school, and studies made from year to year will prove valuable as a comparison. A little work has already been done here at the college showing the effect of cross pollination on coloring; there still remains a great work in that line. For reproduction of unusually large specimens, it is invaluable, and by means of this the prize winners could be kept from year to year and compared for relative merit and development. Its value in an agricultural school

cannot be estimated, and it is destined to eventually find its place. At Guelph, the O.A.C. of Canada, the collection of wax fruits is the largest known, and is one of the principal assets of the Horticultural department. There is a broad field for work here in this school, and it will be done as soon as some one can do it well enough to fill the place. As an educational factor in public school work it would be infinitely valuable in teaching the products of strange lands; mere pictures do not carry the message that the lifelike appearance does to the childish mind. Commercial clubs, when they learn of it, could use it very successfully in keeping the best fruit of the region on exhibition the whole year round. Fanciers of special types would not have to depend upon the memory or description to compare their success from year to year, they could have every success before them, summer and winter alike. The work is in the infancy that looks forth to a great future.

EXHIBITS

Exhibit A.

Plaster molds showing the general appearance and method of putting together

- 1.&2 are halves of a successful mold of good plaster.
3. is of a fine grade plaster
4. is of a coarser grade. The gray appearance and coarse surface indicate the quality.

Exhibit B.

Wax reproductions of apples, showing some of the problems that have been successfully solved, and others that still have considerable room for improvement. Others were undertaken, but not solved sufficiently well for exhibition.

The apples are, in order of size,

Banana

Red Cheeked Pippin

Newtown Pippin

Duchess

Unknown

Baldwin