

PRACTICAL GRAINING & MARBLING

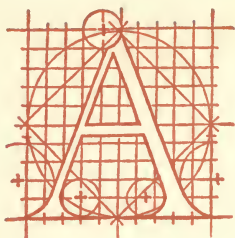
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GRAINING AND MARBLING

A Series of Practical Treatises

ON

MATERIAL, TOOLS AND APPLIANCES USED;
GENERAL OPERATIONS; PREPARING OIL
GRAINING COLORS; MIXING; RUBBING; APPLY-
ING DISTEMPER COLORS; WIPING OUT; PENCIL-
ING; THE USE OF CRAYONS; REVIEW OF
WOODS; THE GRAINING OF OAK, ASH, CHERRY,
SATINWOOD, MAHOGANY, MAPLE, BIRD'S EYE
MAPLE, SYCAMORE, WALNUT, ETC.; MARBLING
IN ALL SHADES. : : : : : :

Each Treatise is followed with Test Questions
: : : for the Student : : :

By F. MAIRE

Author of "Modern Painter's Cyclopaedia"
"Exterior Painting," "Interior Painting" and "Colors."

I L L U S T R A T E D



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PREFACE.

This is the 4th Volume of the Red series manuals. It covers a field which usually is or rather was made a separate branch of the painting business. It has become of less importance however since the white pine finishing of interiors has been replaced by that of hardwood. It is used to a great extent nevertheless and while there is less demand for the skill displayed by masters of the art of graining as existed in the past, a good general workman is incomplete that cannot do a fair to good job of graining to-day and all such should be able to do that much. A journeyman who is able to turn his hand at graining or marbling will usually be kept on the pay roll of the shop much longer than the man who can do nothing but ordinary brushwork. Marbling has been associated with graining because there is

some few things that are in common between the two; the grainer is better equipped for the doing of marbling properly than painters who are not grainers—to say the least.

Graining

LESSON I.

PRELIMINARIES.

1. It has been the custom of the author in the past to give a synopsis as it were of the manner in which the subject matter is to be treated at the beginning of each of the volumes of the red series and as he sees no reason in departing from the rule and on the contrary, very many good ones for a continuation of the custom, below will be found a few outlines of how the subject matter will be handled.

First. The tools and material required for the prosecution of the work of graining and marbling. Neither the tools nor the materials needed are very numerous, complicated nor costly.

Second. The preparing of various surfaces for graining in oil or water colors.

Third. The preparing of material for the graining of various woods in oil and water colors and the painting of the ground.

Fourth. The graining of the various woods in oil and water colors, which includes the over-graining, stippling or glazing required to bring the work to completion ready for varnishing.

Fifth. The varnishing and other methods required for the protection of the graining.

Sixth. The above outlines will also suffice for the marbling section of the manual.

Unlike general directions which can be given as to the painting of surfaces of wood, iron or brick, each of the various woods will have to be treated separately. These are a few operations which are common to all kinds of grainings—these will be given in full before proceeding to their special applications, suited to the various woods, as then the student will be more familiar with what is meant by this pre-

liminary study of the methods used in doing "wiping" for instance or "veining" in heart growths with a brush, etc.

Seventh. The varnishing is an important part of graining, which can be done in various ways to suit the kind of graining done. In this regard general directions will be given, but the kind of varnish to be used must be such as will best agree with the character of the material used in doing the graining so as to get good results from it.

LESSON II.

THE MATERIAL USED IN GRAINING.

2. The material used in graining is not numerous. The principal, as may well be supposed, is white lead to be used as a base upon which to prepare the ground tints upon which to grain.

3. The necessary colors to produce the tints required, which are: Venetian red; French ochre; raw and burnt umber; raw

and burnt siennas and lamp black—all ground in oil.

4. For the preparing of graining colors all the above colors ground in oil are used with the exception of ochre, Venetian red and lamp black, and the following additional ones which are more transparent: Ivory black and Vandyke brown. Of course this applies to the preparation of colors for “graining in oil.” To the above should be added ground whiting in oil, but this can be prepared from dry whiting in the shop as it is not usually sold in that shape.

5. For graining in water colors, all the above named colors are used, but ground in water or distemper and all grainers should have a supply of raw and burnt umber and siennas, Vandyke brown and Ivory black ground in that medium. Some few grainers prefer to buy the dry ground colors and to use them from the dry state.

6. Beeswax is also used in preparing

graining colors used in oil graining. Rotten stone is useful in preparing the oil graining colors, and while not indispensable, it will be well to use it as it helps to make the "*megilp*"—the technical name which is given by the old English grainers to such oil graining combinations—work better and comb smoothly.

7. For thinners: Raw linseed oil, boiled linseed oil, turpentine, drying japan. Stale beer or vinegar for thinning distemper colors. Glycerine to be used with the above in order to retard the drying of the color too quickly at times.

8. All the colors named above are also used in marbling, with a few additional ones such as Indian reds, Prussian blue, chrome yellows. In fact any others which may come near to imitating some particular tone in any marble specimen one may wish to imitate.

9. In giving out the above lists, no description is given of the several colors men-

tioned for the reason that the student will find all these colors sufficiently well described in Vol. III of the red series, which he should procure; "Colors, what they are and what to expect from them," as it is entitled, will give him the necessary information more fully than would be possible in this manual.

QUESTIONS ON LESSON II.

2. What is said about the material used in graining and of the base?
3. What colors ground in oil are required for preparing of tints for grounds?
4. What other colors ground in oil are required for preparing "graining colors in oil?"
5. What are the colors that are needed in graining in water colors?
6. What other material is useful in grainings?
7. What are the thinners used in graining in oil or distemper?

8. What additional material is useful for marbling?

9. What is said about obtaining fuller descriptions of material?

LESSONS III. AND IV.

TOOLS USED IN GRAINING AND MARBLING.

10. *Brushes.* The brushes required for the laying on of the "ground colors" are the same as would be used for similar work in interior painting. A good oval 6-0 varnish makes a fine tool for the purpose. Some prefer the flat brush for laying on color; any good 3-inch flat brush that will lay color smoothly.

11. For "*rubbing*" in the graining colors in oil some use half worn-out, flat brushes—others again prefer the round or oval, and again some rubbers-in use a brush that has been well broke in but not worn much. It is largely a question of habit. If the "megilp" is just right, the rubber-in can take almost any kind of a

brush and rub out well with it, but the advice of using an old worn-out brush which is seen in some of the old-time books on graining should not be followed too implicitly. A half-worn brush will probably suit more "rubbers-in" than any other extremes. None of the above need illustrating as these brushes are in constant use in all paint shops. Besides a number of kinds are shown in Vols. I and II of the red series.

12. *Walnut stipplers.* This tool is a thin, flat, long bristle brush and Fig. 1 shows it to perfection. They run in width from 2 1-2 inches up to 4 inches. They

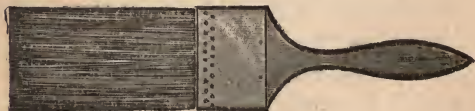


FIG. 1

are indispensable in graining such woods as black walnut and others which show up

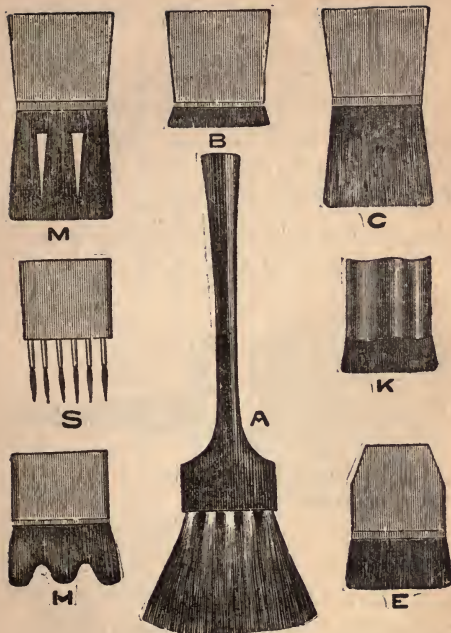


FIG. 2

a large number of coarse pores. It is also known under the name of *flogger*, the lat-

ter seemingly the more appropriate of the two.

13. The "Badger blender" is an indispensable tool used in *all* distemper graining to a greater or lesser extent. It is also used in marbling. Fig. 2 shows it. This is the best shape for it; it is set in glue and has a bone head; the old form of it is also shown in A of Fig. 3.



FIG. 3

14. The "*fan overgrainer*" is a brush that cannot be dispensed with. Every kit should have several sizes of them. Fig. 4 illustrates it well. They run in sizes from 1 inch wide by half inches upward to 3½



FIG. 4

inches. Some grainers prefer to make them themselves, but little is gained thereby. They usually have to have some of their bristles cut away to suit the different purposes they are needed for. They can be clipped off with scissors much quicker than the making of one out and out. They are so cheap that one's time cannot be profitably employed in making a fan overgrainer.

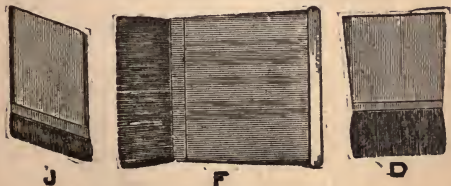


FIG. 5

15. In Fig 5 are shown a few mottlers and in Fig 4, also under letters B, C, E, K, H and M, each varying in forms so as to meet the various uses to which mottlers are adapted and to suit the various ideas of the operators.

16. A few camel pencils of various sizes, flat and sharp pointed for veining completes the list of brushes specially used for graining and marbling, to which must be added also the varnish brushes to put on the finishing varnish coats. These may be any of the numerous bristle varnish brushes fully described in Vols. I and II. It is a matter of choice and convenience, no special shape or build being necessary for these.

QUESTIONS ON LESSONS III. AND IV.

10. What kind of brushes are required for the laying on of ground colors?

11. What brushes are used for "rubbing in" graining colors in oil?

12. What is a stippler or flogger?
13. What are the badger hair blenders used for?
14. What are fan overgrainers?
15. What are mottlers?
16. What other brushes are useful in graining and marbling?

LESSON V.

TOOLS USED IN GRAINING AND MARBLING— CONTINUED.

17. The mechanical aids to graining are quite numerous and some are valuable. For the graining of many kinds of woods the devices which are shown below will finish the work completely, and in the graining of others will partially do the work, which may afterward be improved by hand work in the finishing. It is *not claimed* for these tools that they will do as good work nor as varied *as can be done* by hand, but that in the hands of one who is used to the proper handling of them they will do

better work than the average hurried up hand work that is usually seen, and which has probably had no small share in disgusting people with graining.

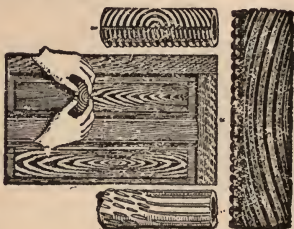


FIG. 6

18. Fig. 6 shows the three Davis rollers made of rubber. One is used in the wiping out of heart growths; another for the wiping out of champs in quartered oak and other woods, which when quartered present the same peculiarities. The last has three graded sets of indentations and are used as combs for any kind of combing where rubber combs are used.

In this lesson it is not the purpose to ex-

plain the use of the tools enumerated; this will come under its proper heading when the *modus operandi* of graining, both by hand and by the use of other helping tools will be fully detailed.

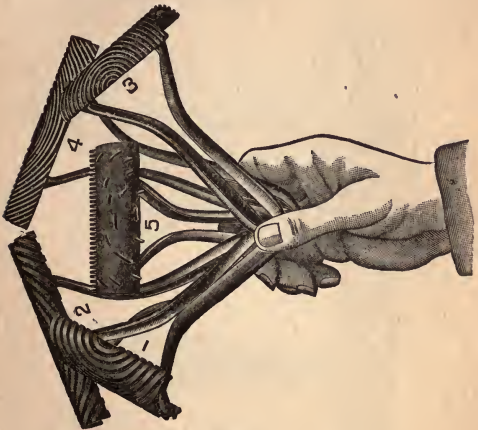


FIG. 7

19. Fig. 7 shows another rubber device, patented by the Ridgely Trimmer Co. The corrugations, as will be seen, are in halves

and are made so that by proper pressure upon the handles curves them, enabling the operator to follow indentations, and which also produces many variations upon plain surfaces.



FIG. 8



FIG. 9

20. Figs. 8 and 9 are handled corrugated quarter-round rubber grainers.

These are especially handy in graining floors, also in getting into corners where the others cannot readily be made to fit up to the jointing of the two corners. These are also made by the above-named firm; as well as the following:



FIG. 10

21. Fig. 10 shows a rubber graining comb with graduated sized teeth, which is frequently desirable as the work shows a more natural lessening of the width of the veining from the heart outward.

22. Fig. 11 shows graduated widths steel combs in three sizes of teeth, fine, medium and coarse. These are used in plain oak combings, etc.

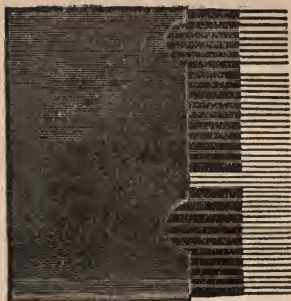


FIG. 11

23a. An artificial rubber thumb made from a piece of rubber about $\frac{1}{2}$ an inch wide at the end, which is then bevelled to a sharpe edge, and is frequently used by men who have never been able to use their natural thumb in wiping out.

23b. The check roller shown in Fig. 12 is a series of notched metal disks which are joined together. The projecting parts of the disks are brushed over with distemper color and the roller revolved over such parts of the work where the operator de-

sires to show weather checks, which are so often seen in oak.

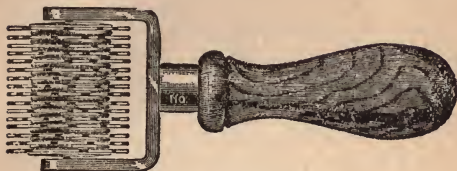


FIG. 12

24. Last but not least, an abundant supply of soft cotton rags to use in connection with wiping out and in cleaning up tools.

QUESTIONS ON LESSON V.

17. General remarks on tools used in graining.

18. What are rubber graining rollers used for in graining?

19. What is represented by Fig. 6?

20. What is represented by Fig. 7?

21. What do Figs. 8 and 9 represent?

22. What is represented by Fig. 10?

23a. What is said of the steel combs, Fig. 11?

23b. What is the check roller used for, Fig. 12?

24. What is an artificial rubber thumb?

25. What is said about the use of rags?

LESSON VI.

GENERAL OPERATIONS USED IN GRAINING.

26. Graining, as it has been hinted at already, has many operations which are common to the many kinds of wood imitated, the variations being the result of the difference in their application. Therefore it is well to give a general description of these, so that there will be no need of repeating them each time that the particular graining of different woods is presented. All that will be necessary will be to refer to the general directions given here.

27. The first operation for all kinds of graining is the painting of the *grounds*. In order that the superstructure should be

lasting, the foundation must be good and appropriate to the character of the work being done or else trouble in the shape of cracking will be pretty sure to follow. If the woodwork is new and has not been painted before, it will be easy enough to lay this foundation rightly.

28. The wood should be well primed with raw linseed oil and white lead after the covering over with shellac varnish of all resinous and sappy parts in order to stop their coming through the paint coats. The second coat should be made from white lead colored up to something near the color of the finishing tint desired for the ground. This should be thinned with half raw linseed oil and half turpentine; it should be put on middling heavy after having first gone over the nail holes, cracks, loose joints, etc., with putty. The last coat should be put on stout, but well rubbed out and should be mixed from white lead tinted to the exact shade wanted for the graining ground.

It should be thinned with one-fourth raw linseed oil and three-fourths turpentine. In cold weather or damp, non-drying weather it may be well to add just a trifle of drying japan, in order to insure the good drying of the several coats of paint, and it will be hardly needed to add that no coat of paint shall be placed upon the other until the former one has completed its drying. Three coats usually suffice to give a good, solid ground for graining.

29. As much of the graining done is over old painted work, there is always an element of uncertainty as to the results. If the woodwork has been painted only a few times, it will be easy enough to bring it to a good finish by the application of two good coats of ground color, where turpentine predominates, so that it will not be too glossy. If the woodwork has been painted a great number of times it will be useless to try to paint grounds over it, as then it will be apt to blister. It will be better to

burn it off or get it off by using some of the paint removers, after which the painting of the ground may proceed as directed for new woodwork.

30. It also happens that graining is resorted to in order to hide the dark effect produced on cheap varnishes by age in the natural finish used over yellow pine, etc. It will be much safer to remove it with varnish remover, if many coats have been applied over it, which is usually the case. If it has only had three or four coats, the woodwork should be gone over thoroughly to remove as much of it as possible with steel wool, and afterward two good coats of ground color given it. The first one should be a trifle thinner than would be given over old painted work.

31. There is a rule for the proper tinting of ground which will always give good results if followed up carefully. It is this: No matter what wood one tries to imitate, either in its natural finish tone or in an imi-

tation of one which has been stained to an unnatural color, always have the ground tint: *as light as the lightest part of the wood which shows through.* This will be the right tint for the graining of that wood.

32. It is refreshing sometimes to hear the discussions that take place among grainers as to the proper ground tints for various woods. No cut and dried rule can be given. The one given in paragraph 31 is as good or better than any. There is so much variation in the natural specimens themselves that no one nor two near-by tints would fill the bill. For this reason no ground tints will be shown in this manual. Under the several woods will be given the general tone of the ground by name only, as, for instance, the general ground tone for graining oak is a light buff, varying from a cream to a decided buff, according to the finished effect wanted.

QUESTIONS ON LESSON VI.

26. What is said of the general operations by which graining is done?

27. What preparations are necessary for the painting of grounds?

28. How is new wood to be grounded?

29. How is old painted work to be grounded?

30. How is old varnished work to be treated for grounding?

31. What is the general rule to be followed in preparing the ground work for any given wood?

32. What else is said regarding tinting the ground colors?

LESSON VII.

PREPARING OIL GRAINING COLORS.

33. Again here is another one of the many operations necessary for graining upon which grainers are very far from being unanimous as to the proper way that it should be done. It will be best to note

what is expected of a graining color, and afterwards to prepare them according to these requirements, irrespective of any cut and dried formulas, as when these requirements are complied with it does not matter so very much about the material that is used in doing so. It will be well to say that these graining colors are best known to old time English grainers under the name of "*megilp*," in order that there may be no misunderstanding as to the kind of graining color that is meant.

34. A good "*megilp*," or graining color, should possess the following qualities:

1st. It should be clear toned without muddiness.

2d. It should be very transparent.

3d. It should be heavy enough to brush out well, so that it may be combed and its edges remain clean cut without running.

35. The first requisite of "clearness and richness" in the umbers, siennas, ivory blacks and Vandyke browns ground in oil,

which are used to prepare the megilp, is not so very difficult to obtain when the goods of well-known color firms are employed, but the second requisite, while it belongs to a stronger or lesser degree to all the colors enumerated, is far short of that which is required in a graining color.

36. To obtain the proper degree of thinness required, all the above colors would have to be thinned with linseed oil and turpentine far beyond that consistency which it is required to carry in order that it may be wiped and combed with well defined edges which do not run or blur. Therefore some perfectly transparent material must be added to it in order to give it this consistency. The material used for this may be rotten stone or whiting, or both, or china clay, or better, silicate earths—any transparent earth with no coloring of its own. Some grainers use putty thinned down with oil, but that is not so good as whiting, as the putty may be made of anything and the

oil used in preparing it may be injurious to the durability of the graining.

37. Some of the old-time grainers used to prepare what may be called "stock megilp," a portion of which they added to the oil colors as needed. Wm. E. Wall says of it "that the formula is this: Take 8 ounces of sugar of lead and 8 ounces of rotten stone, grind them together as stiffly as possible in linseed oil; then take 16 ounces of white beeswax, melt it gradually in an earthen pitkin, and when it is fluid pour in 8 ounces of spirits of turpentine; mix this well with the wax, and then pour the contents of the pitkin on the grinding stone to get cold. When cold grind the rotten stone and sugar of lead with the wax and turpentine and it will form an excellent megilp, which if kept in a jar with a mouth wide enough to admit a palette knife and secured from dust will keep almost any length of time."

This is well and good for professionals,

but it will hardly appeal to the ordinary grainer. He can grind up a little whiting and rotten stone and melted beeswax in turpentine and add enough to his color to answer his purpose.

With the present system of buying all colors as near ready for use as possible, color manufacturers prepare special oil graining colors ready for use by simply thinning. They come ready for all sorts of woods, and where the color is not just the shade wanted, the operator can easily add the one that is lacking to bring it to the right tone.

QUESTIONS ON LESSON VII.

33. What is said in a general way about preparing graining colors, or megilp?

34. What are the requisites necessary to make a good graining color in oil?

35. What is said about the transparency of the colors used in preparing graining colors?

36. What substances may be added to colors to produce more transparency?

37. How may stock megilp be prepared for future use?

LESSON VIII.

MIXING GRAINING COLORS IN DISTEMPER, RUBBING IN, ETC.

38. When the colors have been properly ground in water or in distemper, as they are usually called, it is but little trouble to thin them out for use with stale beer or vinegar. Many grainers prefer to use dry colors when they have been finely dry ground, and they work as well as the distemper colors. They are much more economical to use, and for that reason will always be preferred if for no other. Some, however, are hard to mix up dry and it is preferable to buy these ground in distemper, as, for instance, Vandyke brown and ivory black.

39. It frequently happens during warm weather that the color dries so fast that

the operator cannot possibly finish his work while the color is in a right condition, so he must resort to some means to prevent this hasty drying. The addition of glycerine will retard it for a good while, as glycerine is a good absorbent of water.

40. To prevent this rapid drying of graining colors in distemper many means are used, some too complicated and really no better than the one named in the preceding paragraph; wetting the wood with water into which a little sugar has been dissolved is another means to the same end. Afterward use the regular distemper mixture over it.

RUBBING IN.

41. This is the name that is given to the operation of laying on the oil megilped color previous to the graining. The professional grainer usually has a helper who works ahead of him and "rubs in" the color, while he follows him up with the wip-

ing or combing. When the color is mixed and thinned just right there is no difficulty in its application. The brush should be any good, partly worn, or at least well broke in oval, or flat paint brush. In the flat the 3-inch size will be found the most convenient.

42. It was said in the preceding paragraph that the application of the rubbing-in coat presented no difficulties, but the proviso inserted relative to the color being properly mixed means what it says, for if it is not, trouble will surely follow. If the color is too thin and oily the operator will find it hard work to smooth it evenly. If it has been made more transparent by the proper megilping, the color will brush out evenly, and a full brush of color can be carried to the work. The operator should run over the mouldings of the upper panels, and if he has enough color on his brush, also the lower ones; then he should brush out the panels themselves, helping himself to the

surplus color on the mouldings; then the short middle stiles, then the lock rail, upper and lower rails, then the end stiles, finishing up with the door edges last.

43. What a "rubber in" should not do is to try to *skin* his color on. Many are afraid to carry more than half an inch of color from the pot to the work, seemingly afraid they can't manage it with a full brush, but that is a very poor way and if pains are taken to distribute the color along the panel mouldings first, its distribution will be much more even than if put on by *skinning*. It will take only about two dip-pings to do the side of an ordinary door, and it will be in just the shape that the grainer wants it. On the other hand again, he must not put it on too heavy, as the edges will not wipe clean, and if too oily will even run and show up ragged at the edges.

QUESTIONS ON LESSON VIII.

38. How should graining colors be mixed for distemper work?

39. What may be added to the thinner to prevent the color drying too quick?

40. What else is useful in retarding the drying of the distemper graining color?

41. What is meant by the operation of rubbing in?

42. How is the graining color applied?

43. What is it that the "rubber in" should not attempt to do?

LESSON IX.

GENERAL DESCRIPTION OF GRAINING OPERATIONS

—CONTINUED.

APPLYING THE DISTEMPER COLORS.

44. A good-sized brush may be used for the laying of the distemper colors, but they are not absolutely necessary. A sponge is even more frequently used, especially when the character of the wood is to be shaped

by the use of the sponge as the color is being laid on. It is hardly worth while to say that the man who does the graining must be his own "rubber in" in distemper work. The name itself is dropped for this class of work; the person applying it must be able to do the shaping as he goes along, excepting for "stippled" woods, when it may be well to have some one to help, especially if the color dries fast; he can then follow the helper closely and then there will be no trouble from that cause.

45. The color itself may be thickly or thinly thinned—it will all depend upon the kind of surface one is working upon, and also upon the kind of graining being done. Some grainers must have stale beer for a thinner, but others will do as good work who never use any, and such use vinegar somewhat diluted for that purpose. The proper thing is to have the color of the right working condition for the particular job. The kind of thinner does not matter so

much so that it has tack enough to hold the color, so the colors will not run together when brushed over in the varnishing afterward.

46. The use of the *check roller* usually is the first operation done in graining woods which show weather checks. The proper way to use them is to fill a 3-inch fan overgrainer with the distemper color which comes nearest to the ideas of the grainer in showing up what he desires to produce. This fan overgrainer is laid upon the face of the check roller flat, and a few turns are given in order to spread, when it is ready to do its duty. Checks while they look all right in some oak work, are usually rather scarce in nature, and it is an easy thing to overdo them in the imitation. A few in well-chosen locations will look infinitely better than an oversupply. As overdoing nature is a fault which applies in all the other operations used in graining, it will be well to guard the student against this defect

right at the beginning. Let him bear in mind that all graining will look better *underdone* than *overdone*, no matter what wood one tries to imitate.

47. *Stippling* is another operation which is used chiefly upon open grained woods or woods which show fine or coarse pores all over their surfaces, such, for instance, as black walnut in the dark woods and chestnut in the lighter ones. Some pretty effects are also made by partial very fine stipplings over certain parts of woods. As the particular graining of each wood will be related these effects will be noticed under their proper headings. The application of the distemper color (the only proper one) has already been noted. The operator doing the stippling must hurry his work with the flogger or stippler (see Fig. 1) before the color commences to dry, or the stippling will not be uniform. He at no time must let the brush rest upon the work, but must hit the surface and let it rebound

back, and be ready to strike again, being careful that the stippling proceeds evenly, and that the porousness indicated be as near equal all over as possible. It is not a very difficult operation, but one minute of actual work with the flogger will teach more to the student as to how it should be done than an hour of description will.

QUESTIONS ON LESSON IX.

44. How should the distemper colors be put on?

45. What is said of the thinners used in distemper work?

46. How should the check roller be used?

47. How is the stippling done?

LESSON X.

WIPING OUT IN GRAINING.

48. *Wiping out* is the name given to the operation in graining whereby some of the color is removed, as in champs or flakes

in quartered oak, for instance, or else where the veining in heart growth is also removed and the remaining dark color not removed forms the veining. This operation is mainly used in graining oak in oil, but is not confined to that alone by any means, nor to oil graining alone, either. Many grainers who know "how" wipe out water or distemper work and it looks well, too.

49. To do the "wiping" the operator takes some soft cotton rags, folding a couple of thicknesses together, and using the thumb inside of it he draws it gently wherever he desires to remove any of the color; by drawing gently on the cloth it will wipe out the color cleanly, and always present a clean face to the fresh color. Under no consideration should the grainer permit himself to keep on using a soiled part of the cloth, as it is sure to show up streaky and dirty. Many persons for good reasons sometimes cannot use their thumbs in wiping, and such resort to the artificial one de-

scribed in paragraph 23. While this has not the sensitiveness of the natural organ, by practice one can use it to do very good work.

50. *Combing.* The operation known as "combing" may be performed by the use of combs of various material, such as steel combs; leather combs, which are simply sole leather upon the ends of which have been cut out with a knife square teeth of such size as is desired; rubber combs, which are somewhat upon the same order and which can be bought ready made, each fitted into a wooden handle as shown in Fig 10. This, however, shows one with graduated teeth which is very useful for many purposes. Any of the above are better adapted for certain kinds of work than are any of the others. Practice will soon show the grainers which ones to use.

51. The combing proper requires more care than skill, but the latter always counts in this as well as any of the other opera-

tions in graining. The operator should be provided with clean, soft cotton rags to wipe the combs every time that they are used. Never be tempted to draw it over the work a second time. "Get the habit" and it will stay with you so it will become *automatic*. Many an otherwise good job of graining has been ruined in looks by the slovenly habit of using dirty combs. Clean cut edges count many points in good graining. When nearing joints it is a good plan to cover an already grained or combed part with a small sheet of tin, which will prevent the comb from trespassing over into forbidden ground. Do not hold the tin flat over the grained or combed work, as it might mar it, but let it touch just at the joint, the hand holding it at an angle off the face of it.

52. Combing is not confined to oil work only, although by far most of the combing done is in that medium, but it is frequently resorted to in distemper work. The steel

combs are seldom used for this kind of work, the rubber ones being infinitely superior. It is more difficult, however, and it must be done very quickly, as the color will otherwise be dry, when it will be impossible to do anything with it, and the part being combed will have to be washed off and another application of distemper color given it. Quickness, therefore, is an important consideration in combing distemper colors; cleanliness is just as essential as was stated in the preceding paragraph for oil combing, only a little more so if possible. The operator should make up his mind as to what he is going to do before he touches a tool and then stick to it to the end, giving all his thoughts to his work.

QUESTIONS ON LESSON X.

48. Describe what is meant by "wiping out"?

49. What is needed for this operation and how done?

50. What are the tools needed in "combing"?

51. How is the combing done in oil graining?

52. How is combing done in distemper work?

LESSON XI.

PENCILLING IN THE VEINING, ETC.

53. In water color work the heart growth of veins, some of the flaking, knots, burls, etc., are done by pencilling the same with a camel's hair brush. Some is left just as the outlines made by the brush leaves it, but only in such outlinings as those of knots or in the imitating of defects and in some burls.

54. The "*pencilling*" requires a steady hand with a perfect control of the freedom of movement of the hand doing the work. To insure this it will be found much the best way is to use a mahl stick for a rest. It will insure against unsteadiness and will

enable the operator to do his work just as he wants it and where he wants it. It will enable him to give the heaviest part of the stroke at the center of the heart growth, where it ought to be, and to gradually lessen its width toward the sides, where it is not so full nor heavy.

55. The operator should be careful while executing his veining that the blender is used while the color of the veining put on is *still wet*, as otherwise it will not blend and the chances are that the work will be spoiled, or at least greatly inferior in quality. (Fig. 2 shows the blender.) The blending itself is the drawing of the soft hair over the wet color, which softens it and divides its stiff outlines in serrated, uneven, pore-like, outlines. While the operation is not a difficult one, good blending requires an intimate knowledge of what will be the effects produced by the use of the tool, as the blending can be overdone as well as underdone. A little practical ex-

perience will soon teach the operator its proper use.

56. *Fan overgrainers*, as shown in Fig. 4, come in various widths. It was said in paragraph 14 describing them, that many grainers preferred to make them themselves. This no doubt is due to the reason that in preparing them themselves they are able to arrange the hair so that they can get various effects from them, such as graduated lines, and again thick or thin lines, etc. But one can easily obtain the same results by buying a dozen or two of the ready made ones. They usually are made with a surplus of hair, and with a pair of sharp scissors the operator can easily cut out all the superfluous hair from the parts desired. With a good supply of overgrainers thus prepared before hand, he will be prepared to do an endless variety of veinings in lines equidistant, or graduated to suit.

57. The fan overgrainers are used for

many purposes, not only in *overgraining*, as their name would seem to indicate, but also in laying out the veining adjacent to heart growths wherever a succession of fine lines are required, and which in water color work corresponds to combing in oil work. The brush is dipped into the distemper color, then it is run through the teeth of a coarse horn comb such as is used in hair combing. This will separate the hairs into lines, when the operator can use it on his work by drawing it along the outer edge of his pencilled out heart growth, and continue it to the outer edge of the panel. In overgraining proper it is used in many other ways, and by the proper motion of the hand many forms and variations suitable to the character of the woods being imitated can be done. In this proper use of the overgrainer the skill of the operator will be shown. It will be well to say that these lines made by the overgrainer are to be blended for most woods, and the student is referred to

what was said regarding how it should be done in paragraph 55.

QUESTIONS ON LESSON XI.

53. What is said of the "pencilling in" of veins, etc., in distemper graining?
54. How are the veins pencilled in?
55. How is the "blending" done?
56. What is said of the fan overgrainers?
57. How are the fan overgrainers used?

LESSON XII.

THE USE OF GRAINING ROLLERS, ETC.

58. As stated in paragraphs 18 to 21, describing Figs. 6, 7, 8 and 9, corrugated rubber tools of various forms are used in graining. Some kinds of woods can be done complete with these tools, and again their main character laid out with them, which is afterward improved by hand work. They are great time savers and to the man who knows how to use them well, which can

be easily learned by following the directions given which accompany the boxes the tools are packed in, anyone can quickly learn their use, and will find it of great help in doing their work *quickly*, which is an important item, especially where the graining has to be done cheap. They will be able to turn out very much better work than could be done by hand for the same money. That fact alone if for no other reason (and there are other reasons also) entitles them to a welcome in the kit of progressive grainers who are not held in "awe" by precedents established when "grainers" were *getting something* for good work done by hand exclusively.

59. While we are in the way of describing other methods of graining than that of graining done by hand, it is only right and proper that the transfer graining papers should be noticed. The graining upon many of these is very good. It has one disadvantage in that on large jobs there will be more

repetition than is desirable; there is also an automatic indescribable look belonging to it, that grates upon an artistic taste, so that while the graining may be really much better than much hand work, yet hand or even that done with corrugated rubber tools will please the average man better than the more perfect automatic work done with the graining paper.

60. In graining with transfer paper, the paper to be used in the panels, stiles and rails should be cut into strips a trifle wider than desired for the actual space to be grained. The ground coat should be an appropriate one for the kind of wood to be imitated. The process of the transferring is similar to that used for all transfers; the paper is applied to its proper place, which it must cover fully, then the operator proceeds to wet the back of the transfer paper with a sponge which has been dipped in clean water. In a few moments after the wetting the paper can be pulled loose

from the surface over which it is applied, laid aside flat to dry, and an exact replica of the graining printed upon the face of the paper will be left upon it. These transfer paper strips can be utilized several times before the design is dimmed too much for use.

After the completion of the work it must be varnished in order to hold it on, as any other distemper work must be.

61. There is another form of graining paper which has just been patented in Germany, which is not a transfer paper really and which *does* excellent work. By some patent process the paper is made upon the face of the woods they represent; every pore and detail of the wood is perfectly represented. The ground color is covered over with oil graining color the same as for hand wiping. Then the graining paper, cut into proper sized strips, are placed over the surface and the back of the paper is rubbed over with a specially made brush

all over, taking care that the hands do not touch it any where except upon the edge, which should extend over sufficiently for this purpose; then the paper is lifted off and can immediately be used again. It leaves the job as if it had been "wiped out," but much better of course than 99 out of 100 men could possibly do it by hand. It is somewhat costly and outside of the samples which were given the author for testing he has never seen any. So far it has not been imported in this country in a regular way, but there is no doubt but that it will soon be.

QUESTIONS ON LESSON XII.

58. What is said of the use of corrugated rubber graining tools?

59. What is said of "transfer graining paper"?

60. How is transfer graining done?

61. What is said of a new "wiping out" paper?

LESSON XIII.

CRAYONS FOR MAKING FINE VEINS.

62. In such woods as maple, cherry, etc., the veining consists of very fine lines which show no blending in the natural woods. They are so fine that it would be very difficult to put them in with a camel's hair brush or pencil. Heretofore it has been the practice of grainers to take colors such as they wished, and by mixing with china clay and gum arabic mucilage compound these into a mass which they rolled out and cut into strips in order to make crayons out of them. The process is not very difficult, but the proper blending and sizing must be carefully done or the crayon may be so hard that it will not mark on the wood, or so soft that the varnish will rub up the color. These crayons in wood may be bought in many of the supply stores. One fault with most of them is that they are not sufficiently sized to hold on the color while the varnish is applied. This the manufacturers must

supply or their goods will be forced out of the market, in so far at least as the use that is made of them by the graining trade is concerned.

63. The crayons are sharpened to a point, and the veinings, knotting and burls are outlined by their means. They are used only where fine lines are required that are sharp and unblended. They are used in the same manner as ordinary graphite pencils are. Their use offers no difficulty even to a beginner other than the skill shown in making the right markings in the right place, which is a matter of study before using them.

64. *Mottling* is an operation which greatly enhances the value of graining in many woods. This mottling may be done by means of the so-called mottling brushes, of which many are shown in Fig. 5, in either oil or distemper graining. In the preceding sentence the words "may be done" are used, because many very good grainers

never use them, but depend upon their rubbing in brushes, etc. Again the sponge in distemper work is used and by the proper use of the badger blender beautiful mottlings are made without the use of any brush at all.

65. The sponge is held in the hand and by pressure and release of the same in going over the surface the color is unevenly distributed, which, when properly blended, will form mottlings coarse or fine, long or short, as wanted. It will require some practice in order to obtain a good control of the sponge.

66. The sponge is an invaluable aid to the grainer in distemper work, and the student should spare no pains in learning to master its use. With it not only mottlings may be made, but the main features and character of all the burled growths of walnut, oak roots, pollard oak, bird's eye maple, sycamore, mahogany, etc., may be laid out; most of it to be blended, and when

dry overgrained and finished with either crayon pencils, camel hair knottings and linings done with various distemper colors or with the fan overgrainers, or by combinations of all the above.

67. The above comprises all the operations done in graining woods that can be given a general description of. Each kind of wood will require some of their use. Not all, however, must be given in the same manner, but must be adapted to suit the particular woods one may be trying to imitate. As occasion may require reference will be made to some of the paragraphs giving the proper information as to "how to do it."

QUESTIONS ON LESSON XIII.

63. How are graining crayons made?
64. What is said about graining crayons?
65. How is graining done with sponges?

66. What is said of the use of sponges in burled graining?

67. What is said concerning the special use to be made of the various operations in graining described in the previous lessons?

LESSON XIV.

GENERAL REVIEW OF WOODS.

68. Woods may be divided into two general classes:

1st. Those that are close grained and which when sawed into boards show very fine pores, or perhaps very little if any perceptible to the naked eye, as "holly," for instance, and in a lesser degree in "satinwood."

2d. Those that are composed of long, coarse ligaments, which when sawed into boards show a great number of pores, especially when the growth is comparatively regular, as in chestnut, walnut, etc.; with

a great number which lie between the two extremes.

69. There might be added a third division for those woods which have a jerky, crosswise fashion of growing, which to the unwary look as if there was no system in their growth, as in sycamore, rosewood, etc., but which they have as regular as any other just the same, as a kinky haired American of African extraction could truthfully claim for his tangled up specimen as against the rigid growth of that of the American Indian. As with hair, it will be found that most of the woods which grow in a tangled way are composed of very fine fibres, which grow closely together and therefore can be classed in class 1.

70. Before commencing the descriptions of the graining of the various woods it was thought best to examine some few general characteristics which belong to each class, and the student will then be able to tell at sight almost what may be the best manner

in which the graining shall proceed, either in oil or in distemper. Woods of class one, as a rule being close grained, need no stippling, as few pores show up separately as such, and it was shown that this is the main object of stippling.

On the other hand, nearly all woods that are classed in class two, but more especially those which are on the extreme side of that class should be stippled by all means, and the others are greatly helped by a partial stippling at least.

Included in as stippling must be added the check roller work, as this may be done in such a way as to replace the stippling done with the flogger for certain woods, in the graining of some peculiar specimen of quartered oak especially.

71. Before attempting to do any graining, the student is earnestly advised to procure a number of small pieces of veneers of the various woods; to glue them over smooth boards, fill them with a good hard-

wood filler if open grained; if not shellac them over with two coats of shellac, which he should also give to the open wood sample after having filled them and smoothed them properly. Then give them one or two coats of good varnish, when he will have object lessons which will prove invaluable to him. Let him not confine himself to one, two or three specimens of the same wood, but let him pick out as many as he can afford to do, in order that he may study their variations and different modes of growth, or he may get stuck into ruts and routine in his style of graining which he must try to avoid as much as possible.

There is nor cannot be any better teacher than these samples will be. They need not cost much either. Frequently they can be obtained for a song at some of the furniture factories from ends that are too short for use in their regular work.

72. As it is a matter of indifference at least in practicing studies as to the colors

that are used in doing graining, the student can paint a ground color upon any convenient board or old door and practice upon it. He had better have several; at least, he should have two—one for practicing graining in oil and another for graining in distemper. With plenty of rags and turpentine or benzine he can wipe out his work as easily as upon a blackboard, and he can recommence it again and again until he is ready to quit and then he can wipe it off, and it will be ready for the next time. This advice is good, for it will not do for the beginner to try his hand upon actual work until he is sufficiently sure of his skill that he will not make a botch of it. He can try all the various general operations mentioned above, and apply them as nearly as he can to the particular needs of the wood he wishes to imitate, referring first to the special details that are given under each of the woods in subsequent chapters.



QUESTIONS ON LESSON XIV.

68. How may all the various woods be classed?

69. What is said of woods of gnarled growths?

70. When do the wood imitations need stippling?

71. What is said regarding the preparation of various samples of veneers for study?

72. What advice is given about preparing practice boards for graining study?

LESSON XV.

GRAINING OAK.

73. Oak graining has always been in the lead in the quantity of it that is done, and it is no wonder. It offers so many variations, and in either in its heart growths or in its quarter sawed condition an endless number of forms can be indulged in which are all pleasing to look at. It can be grained in

oil or in distemper in both of its forms and in combinations of the two.

HEART GROWTH IN OIL.

74. *The ground* for all oaks is *buff*. Light oak requires a cream tone of it which can be deepened for the darker shades. For red and black oak a trifle of red can be added to the buff, which is made from some good ocher added to white lead. (See paragraphs 26 to 30 about preparing grounds under various conditions.)

75. *The graining colors* proper are prepared to suit the shade of wood desired from raw sienna, raw umber and for very dark antique oak with a little ivory black added. The color should be megilped in order to make it comb and wipe clean. (See paragraphs 33 to 36.)

The wiping should be done as advised in paragraphs 48 and 49. Then combed as stated in paragraphs 50 to 52.

76. The graining will be improved if the

same is overgrained after the wiping out and combing coat has become hardened. This must not be overdone to look well. It consists simply in using some of the graining color used before, and in touching up a few places on the grained work. This darkens them some and these variations of color enriches it. The student will notice it upon natural wood usually where the veining makes a turn, etc. Study nature, but do not *overdo it*.

77. When the overgraining is dry the job is ready for varnishing. In varnishing use an elastic varnish as much as possible, as both the ground coats and the graining colors contain oil and a hard, quick-drying varnish will not be so likely to give and accommodate itself to these as an elastic one will. As the varnishing coats which follow graining of all kinds are about the same for all woods it will not be necessary to repeat each time what is said here.

78. In varnishing over distempered

work a quicker and harder varnish can be used than that named above. As many prefer a wax finish to varnishing, this can be applied over the work. The ready prepared wax finishes are best to use; they are easily applied with a brush or even a rag and afterward polished over with a cloth or a hand polishing glove made of lamb skin with the wool left on. It will soon polish up into a soft-toned subdued gloss which is pleasing and imitates "rubbed work" in hardwood finishing.

GRAINING OAK HEART GROWTH IN DISTEMPER.

78. It will be well not to have the ground coats too oily for graining in distemper, as it may be difficult to spread the distemper color over it, especially in cool weather. On the other hand again, it must not be too flat, as then the colors will sink into it and if from any cause one desires to wash them off they will be indelibly marked out upon the ground, and will at the least look dirty.

The check roller can be used to good advantage in putting in a few checks here and there, and a little fine stippling on the side away from where the main heart growth is to be pencilled in with the camel's hair brush will help the looks of it. When dry proceed to put in the heart growth, using the overgrainer wherever possible in doing the fine line work over the stippling. It goes without the saying that all the veining, both heart growth and fine lines, must be well blended with the badger hair brush.

QUESTIONS ON LESSON XV.

73. What is said of oak graining in general?
74. How are oak ground tints to be made?
75. How are the colors to be applied?
76. How is the graining overgrained?
77. How is the varnishing to be done?
78. How is wax polish finish applied?

LESSON XVI.

OAK GRAINING—CONTINUED.

QUARTERED OAK GRAINING IN OIL.

79. There are a great number of ways of graining quartered oak and when one says that it is imitated in oil graining, but very little more information is conveyed than that the work is executed in that medium instead of in distemper color. The manner of doing it may vary greatly, as well as the growth itself, which is infinite almost. It is, therefore, a matter upon which little more information can be given without the actual showing than the rehearsing over of general principles. If the student has provided himself with a number of samples of quartered oak veneers and has practiced their reproduction in oil and in distemper, he will have gained an experience that type and printing ink cannot possibly teach him.

80. The grounds are to be the same as

described in the heart growth graining of oak. The graining color should be "rubbed in" very evenly, but neither too thick nor too thin. In most of the work, and that is naturally *that* which one tries to describe in giving general directions in graining a certain wood, the surface should be combed over with rubber combs and afterward split up with a fine steel comb to break up the vein lines. Some skill may be shown in this, for if done properly and at the right angle the lines will appear as thickly studied pores, but if not, anything but that.

81. The method of "wiping out" is described in paragraphs 48 and 49. Remove all the flakes of the larger sorts first, which usually are to be found in the center of the wood samples, keeping in mind a definite idea of what the work is to represent; this lays out the general character of the wood.

82. The subsequent wiping out is to be done in accordance with the main flaking, gradually lessening the size of the second-

ary flakings to the outer edge, where usually they are found much more numerous.

83. The graining may be much improved by softening the edges by using a very soft clean cotton cloth very lightly upon their lower edge. The proper doing of this requires some skill and usually is shunned by the cheap fellow, as it takes some little time as well as skill.

84. Overgraining quartered oak may be the means of greatly improving its looks, especially where a gnarly and knotty specimen is attempted. As stated before, this is done by the application of the color in oil used in the "rubbed in" coat to such parts which it is desired should look darker than the rest.

85. Sometimes the graining is finished up in water colors. The graining must, of course, be thoroughly dry in order that the distemper colors may take hold over it. Most beautiful effects can be obtained by this dual method of graining quartered oak.

It requires skill in the operator, but good judgment and experience the more, as it is an easy matter to overdo it, when instead of a thing of beauty it becomes an eye sore.

86. Varnishing is the final operation in all kinds of graining, but the graining may also be waxed polished as noted in the preceding lesson.

Much more could be written as to the many various methods that are being used in the graining of oak, especially of quartered oak, but the space limit of this manual is too confined to attempt it. The directions given will suffice to indicate to the student how to proceed and as he progresses along, the variations in the manner of doing the work will suggest themselves to him and he will grow into them naturally.

QUESTIONS ON LESSON XVI.

79. What is said in a general way on the graining of quarter sawed oak?

80. What is said of the rubbing in coat and combing?

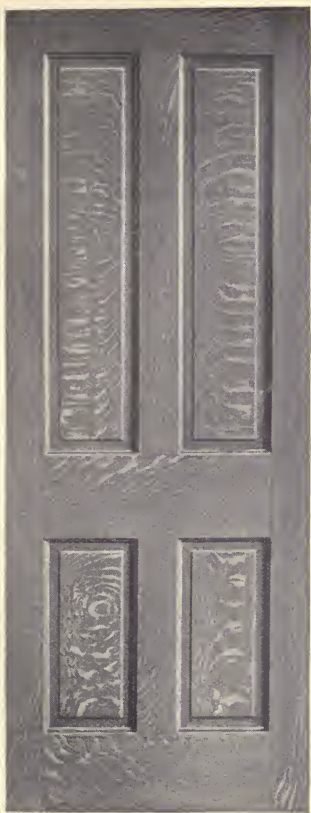
81. How are the flakes and champs put in?
82. What is said of the wiping out?
83. How are the edges to be softened?
84. How is the overgraining done?
85. What is said of combination oil and distemper work?
86. How is the work finished?

LESSON XVII.

GRAINING QUARTERED OAK IN DISTEMPER.

87. There is a great deal of quartered oak graining that is done in distemper in certain localities, especially where the grainers have come into the knack of it. When it is well done it is fully as good as when done in oil. The quality of the work is what counts, and it is just as easy to produce an eye sore in the one as it is in the other.

88. It is true that the operator has no time to take a nap and hardly to bat his eyes, and that no doubt is the reason why





so few grainers attempt quartered oak in distemper. The colors do dry very quickly, so the graining must be done without hesitation or waste of time. If it has been practiced on the lesson boards mentioned in paragraph 72 no one who has succeeded on them need be afraid of tackling it on door panels, etc.

89. Everything in the way of colors, sponges, rags, overgrainers, blenders and tools being ready and within reach, the woodwork to be grained should be washed over with water into which vinegar has been poured. When it has become nearly but not quite dry, proceed to lay on the color in streaks with the overgrainers, then with the rubber or fine steel combs run through the lines in order to break them up and to serrate them, and immediately proceed with the rag and thumb or the rubber-substitute for it to wipe out the champs and flakes in the way and manner described in the wiping out of oak

in oil graining; soften the edges by using the soft cotton rag in the same way also. It is needless to say that one panel at a time is all that should be colored up, and even this will be found too much by many, but it can be done and it is not so difficult as it looks to be; only, as said before, there is no time to think of the "girl you left behind you" or anything else but doing the work.

90. For a change dark flakings and other flaked veinings may be put in instead of light ones. In this sort of quartered oak graining the whole thing is reversed. The color is applied evenly but solidly over the panel and immediately combed with rubber combs and split as related in the preceding paragraph; then with the camel hair pencil brush proceed to pencil on the flakes and champs as desired, slightly blending them with the badger blender. This is not so difficult to execute as by wiping out, because it does not matter about hurrying.

91. In either method the use of the check roller can be resorted to to improve the looks of the graining, it is best to delay it until the graining has been completed, as then it can be put only in such parts as really require it, while if put on beforehand it may be that they may be placed where they should not. They are not essential and, as stated before, really a detriment when not used rightly. The expert who knows where to use them, however, obtains a more natural finish by their use.

92. The overgraining ought to be done in oil colors and put on very thinly, then with clean cotton rags wipe it off from such parts that are required to be light, which will give the shading as if it had been done in oil over oil graining with the difference that in shading the latter the overgraining color is applied only where it is wanted and requires no wiping out.

93. Where distemper graining is overgrained with oil colors it practically be-

comes the same as oil graining and that alone will usually protect it against accidents caused by water washing it off, but as the finish does not look even, that must be supplied as in the previous graining described, by either waxing or varnishing, or a combination of the two as related in paragraph 77.

QUESTIONS ON LESSON XVII.

87. What is said of quartered oak graining in distemper?

88. Why are some grainers afraid to undertake graining it in distemper?

89. How is the wiping out done?

90. How is dark flake graining done?

91. How may the check roller be used?

92. How should distemper graining be overgrained?

93. How is distemper graining to be finished?

LESSON XVIII.

GRAINING ASH.

94. Ash graining is very similar to oak graining, and but that the growth is somewhat coarser than that of oak, and that it is usually more evenly veined, at least in the American species, the student would find no need of further directions. It is somewhat more open, too, showing considerable porousness in some of its growth, so much so that some grainers stipple it as for walnut, but flog it finer and the color used being more subdued these pores do not show up so prominently. This, of course, relates to the graining it in water colors mainly, although it works nicely in oil for wiping out also, especially when the color used is for dark ash.

95. The ground should be very nearly that required for oak graining, just a trifle darker than is required for light oak. This, as in oak, is variable, and one must be guided by what finish is intended to be

given. Even the natural specimens vary greatly, and with the present fashion of staining woods into all sorts of outlandish hues one must take the cue as to what the ground shall be from the color used on the finish as stated before.

If it is finished in the natural color belonging to ash, the color of the ground can be made from ochre added to white lead as the base color, using more or less of it as a lighter or darker shade is desired.

96. The graining of ash in oil is done in much the same manner as that which is related for oil grain of oak in paragraphs 75 and 76. As the growth in the American varieties is straighter grained than that of oak, there will be no difficulty in wiping it out, only that the coarser growth must be reproduced as naturally as possible. The colors and megilp will be also about the same as for oak in the natural tone, and such other coloring matter must be added as found necessary to produce any of the

stained effects wanted in others. If the ground is stippled before the wiping out, it should be done with raw umber and raw sienna in distemper; it will be well to reduce their strength by the addition of whiting in order that the stippling may not appear too prominent.

97. The graining of ash in distemper is very easily acquired and presents but little difficulty to one who has his mind imbued with the main characteristics of its growth. The graining may be done with or without stippling, but if the stippling is well done it will improve it. The veining is done with the camel's hair brush, and the blending should follow it up quickly so as to divide up the veining before it has had time to set. This will enable the washing up of the stippling by the pressure of the blender, and will leave a paler base for the veining, which by the stronger contrast will appear more natural.

98. Ash is overgrained for the same

purpose as related of oak. It shows up the darker parts, or if they may be so called, the nerves of the wood. This should not be overdone, however, as it will defeat the very purpose for which it is done at all. It is better not to overgrain at all than to overgrain too much, and the student had much better do too little of it than to err upon the opposite side. The color used for overgraining is oil colors, as related for oak graining in paragraph 92.

99. Hungarian ash is so very much different from the American species in its growth that it might be well to cut it loose altogether from the ash group and to give it a place by itself. It resembles somewhat the growth sometimes seen in some yellow pine specimens. It is very wavy and the saw cutting across them the veins appear contorted into all kinds of circling growths, but with all this widening out suddenly of two lines which nearly meet together, there is a system in it and none ever cross over

each other. The student must study a natural specimen of it in order to understand this spiral and twisting system of growths, and when he sees through it he will find no difficulty in reproducing it in water colors, which is the only manner Hungarian ash is ever grained. It is possible to grain it in oil, but the time required to wipe it out will prevent grainers from ever attempting it the second time.

QUESTIONS ON LESSON XVIII.

94. What is said about the graining of ash?
95. What is a proper ground for the graining of ash?
96. How is ash grained in oil?
97. How is ash grained in water colors?
98. How should ash be overgrained?
99. How is Hungarian ash grained?

LESSON XIX.

GRAINING CHESTNUT AND MAPLE.

100. The graining of chestnut presents no difficulty either to one who has a good knowledge of the handling of graining tools. Its general character is much the same as that of oak and ash. It differs from either, however, and has a growth entirely its own. Its principal points are: Coarseness of veining; its fibres being thick and when cut across by the saw present numerous coarse pores which must be represented by stippling coarsely and somewhat irregularly flogged on, as it shows only a few in parts where the saw has not cut the fibres across either squarely or slanting.

101. The graining of chestnut may be done in either oil by wiping or in distemper. By either method it will be best to stipple it in the manner stated in the previous paragraph—rather coarsely. The ground is a light buff, just about such as described for oak or ash, and may vary to suit the grain-

ing and grainer. It can be wiped out easily in oil, but much the best way is to grain it in distemper, as it is easier and more quickly done. The veining is put on with a camel's hair brush and blended with the badger hair blender before the color sets. The veining being coarse is easily put on. Its growth is not nearly as regular as that of ash and presents much variation in its forms. The color used for the stippling should be the same as given for ash stippling, but should have but little whiting added to it, as the pores must appear coarse and prominent. The colors used in either oil or distemper graining are raw sienna deepened with raw and burnt umber to suit.

MAPLE.

102. The graining of maple differs materially from that of the woods described heretofore. In color it is on the same order, however, of a light buff tone. It should be given a ground color just off the white by the addition of a trifle of ochre to

the white lead base. There is considerable variation in this and if one is required to match or imitate some aged maple the general tone will need to be much deeper, and may require a ground as deep toned as that of oak or ash, as maple darkens considerably by age.

103. Again as fashion has decreed that maple should be stained a light gray one has to grain it in imitation of that and the ground must then be made by the addition of lamp black to the white base sufficiently to make a faint pearl gray. The veining proper is not very prominent in maple. This consists of very fine lines with little if any feathering. Maple is a very close wood and shows but little if any porousness, therefore should never be stippled. The chief beauty of ordinary maple lays in its mottlings and not in its veinings. Plain maple being what is now under consideration, curled and bird's eye maple will be taken up in a separate lesson.

104. Plain maple is never grained in oil as it would be too tedious to imitate it by wiping. Therefore its graining by distemper work is the only method worth the while to describe. To be able to grain it well the student must have its character well made out—in his head at least. The color if the wood is grained in its natural color is made from raw sienna weakened down to suit by the addition of whiting. The character of the wood is best produced by the application of the color with a sponge. This should be blended at once and if the color has been properly applied with the sponge, the mottlings produced by the blending of the color will usually suffice and a few more of a deeper tone may be added in the overgraining. As soon as dry, which requires but a few minutes, the veining proper may be put in with the same color with a camel's hair pencil, but should not be blended. This should be done with a fine pointed brush as it should not be promi-

ment. The better way to vein maple is to use a light raw sienna toned crayon pencil and to draw them out where desired. These produce an even stroked vein much easier to obtain by their use than with a brush.

105. The overgraining of plain maple is done in oil and consists of a few darker mottles made with a brush specially made for this purpose, but which in reality is little better than a plain double thick varnish flat brush, and the latter will be found good enough for this purpose. If the color happens to be too thickly put on, it can be wiped out with a clean rag and left only where it is desired. It should be made of raw sienna darkened with raw and burnt umber and thinned with raw linseed oil and turpentine, half and half. It has been supposed all along that the maple graining was done in its natural color. If gray maple is to be imitated the distemper color should be made from ivory black toned down with whiting and the overgraining color from

ivory black thinned sufficiently to produce the tint wanted.

QUESTIONS ON LESSON XIX.

100. What is said in general of chestnut graining?

101. How should chestnut be grained?

102. What is said of maple graining in general?

103. How should gray maple ground be prepared?

104. How should plain maple be grained?

105. How should maple be over-grained?

LESSON XX.

GRAINING BIRD'S EYE MAPLE.

106. This is the most elegant form of wood known and good specimens of the wood are a sight that well repay for the trouble of looking them up, as they will make a glad heart to the man who loves

beautiful forms. To imitate it well by graining requires some practice and a good knowledge of what is required to produce the innumerable variations seen in it. When its growth is well understood it is not so difficult to imitate it. It may as well be stated here at the beginning that more bird's eye maple graining is spoiled by overdoing than by not doing enough work upon it. The beginner had better confine his efforts to but a very few of the "*bird's eyes*" at first. The few will look well and modestly nestled among their surrounding mottlings, but when this is overdone, which at the beginning especially is a synonym for badly done—whew! Better wash it off and try it over, with less of it next time, and the chances are that it will bear looking at it.

107. The graining of bird's eye maple is always done in distemper, for the same reasons that were given in describing the graining of plain maple, and for a few additional ones of its own besides, so that all that will

be said in connection with it must be understood as appertaining to distemper work.

108. The ground when the graining is done in imitation of the natural color of the wood must be of a very light tone of cream color, or the finished work will be too yellow. If it is to be finished in imitation of the gray stained variety the ground must be made to correspond to that shade and a faint pearl-gray ground must be put on as noted in paragraph 103. The ground should not be too glossy, nor too flat, either, for the distemper colors will not work at their best on either extremes, but one should strive for an egg-shell gloss as near as possible.

109. The graining proper proceeds very much as was described for the imitation of plain maple. The same colors being used in either the natural color imitation or the gray tone with a somewhat different manner of laying on the color with the sponge, in order to produce longer ridges of mot-

tlings than is usually necessary in plain maple. These mottlings must be running in one direction mainly, but in a haphazard sort of way, and not uniformly as in ladder rungs. It requires some experience and an intimate knowledge of bird's eye maple growth to do this preliminary laying out of the work. It is not difficult, but it must be done in the right manner in order to produce natural looking results.

110. The putting in of the bird's eyes is done in various ways—some ways being better than others. One of the ways used by many is to use the points of the fingers upon the still wet distemper color and to peck it on usually upon the apex of the ridge of the mottles. It is far from being the best way, but it is the quickest. In the natural wood the eyes are very seldom found upon the darker mottles, but more frequently upon secondary ridges between them, or even upon the valleys laying between them. As there is not enough color

left there to produce them by pecking them on with the fingers, the operators by that method have to confine their work to the aforesaid ridges, where they really do not belong.

Much better and more natural ones can be put on with a fine pointed artist's sable brush, and when one has become habituated to their use they are very quickly made.

Again they may be put in with colored pencils of a tone deep enough to suit the rest of the work. This is more quickly done than with the sable brush, but the strokes cannot be varied as with that, and the more artistic graining requires their use. There are a number of other more or less mechanical processes used in producing the bird's eyes, but none surpass the one's described.

The veining is done with colored pencils as related in paragraph 104 and over-grained as described in paragraph 105.

In all cases where graining is done in dis-

temper it is to be understood that the grain-
ing is to be varnished or receive a protect-
ing coat of some kind or another, and as
this is required in all cases of distemper
graining it will not be repeated hereafter.

QUESTIONS ON LESSON XX.

106. What is said regarding the grain-
ing of bird's eye maple?

107. In what medium is bird's eye ma-
ple usually grained?

108. How are the grounds to be pre-
pared?

109. How would you proceed to put on
the mottling lay out?

110. How are the bird's eyes put on?

LESSON XXI.

GRAINING SYCAMORE, CHERRY AND SATINWOOD.

111. Sycamore is another wood which,
like maple, shows but little pores. Its
growth, unlike maple, is an indescribable
interlacing and twining of its ligaments

which when sawed produce an infinity of variations with short, jerky, snappish terminations, and an infinity of short mottlings. This very infinity at last produces a uniformity on account of their smallness, as the eye cannot catch all their variations. Were it possible to greatly increase these of such a size as those of maple, sycamore would be one of the richest of our woods.

112. It is passably well imitated in distemper work and grained quickly. The ground should be deeper than that of any of the woods previously described, of a decided buff tone. The graining color should be made from raw sienna and burnt umber in distemper. The graining should be done with the sponge and immediately well blended. If the sponge is pecked on to the surface to be grained, the blending will produce the small mottles, and another pecking done in such places as needed and blended will usually produce a very fair representation of the wood. Another way is to put

on the color evenly with either a sponge or a brush and to rotate the rotary cylinder rubber roller graining tool upon it and blend quickly. This gives a very fair imitation if well done.

CHERRY.

113. Cherry graining presents no great difficulty, as it is a wood of very plain growth, so much so that it looks rather tame and for that reason it is very seldom imitated by graining. There are some of the rooms in the old-time houses where the woodwork is cherry, and it sometimes happens that repairs are done to it, and which have to be grained in order to match the old work.

114. The ground color is made by tinting white lead with ochre, venetian red and burnt umber. A very fine stipple of burnt umber much reduced with whiting may be given it and the veining should be put in with a pencil of the proper color, which

should in no wise be very prominent as in the natural wood it does not show much darker than the fine pores or stipple work. Of course all of the work is done in water colors.

SATINWOOD.

115. Satinwood, with the one exception of holly, is one of the easiest of all woods to imitate. There is but few markings upon it and next to nothing in veining. Mottlings of no great prominence by their depths of coloring are the only markings. The wood varies somewhat in the depth of its tone from a light to a medium tone of buff.

116. The ground will vary from a very light buff to a darker shade of the same. As said before the graining consists of mottlings which are not very prominent, therefore the graining color, which is made up from raw sienna and burnt umber in distemper reduced to less intensity by whit-

ing, should be put on thinly with a sponge and blended so as to show no feathering.

QUESTIONS ON LESSON XXI.

111. Relate what are the main characteristics of sycamore?
112. How is sycamore grained?
113. What is said of cherry graining?
114. How is cherry grained?
115. What is said regarding the characteristics of satinwood.
116. How is satinwood grained?

LESSON XXII.

GRAINING OF LIGHT AND DARK MAHOGANY.

117. Mahogany is one of the most beautifully formed woods that nature produces. In its plain form or in its most intricate featherings, it is always pleasing to look at and its most profuse variations of form do not cause any nausea nor does one become confused or tired of them. It is found in many variations of color. New mahog-





any is very light toned and seldom darker than a medium buff tone. It acquires a reddish tone by age, which becomes a rich dark red in time. This redness is usually artificially supplied in the natural wood by staining. In graining it is the most usual to reproduce the rich red darker variety, and that of the light varieties is only resorted to in order to match some parts added to a room which has been finished in the light natural wood.

118. The ground for light mahogany should be a buff more or less dark, according to the character of the finish wanted. A medium oak ground made by the addition of ochre to white lead is the most usual for light mahogany. For the darker mahogany imitations the ground should be rather reddish and much darker in tone. To the white lead base should be added yellow ochre and venetian red. For some specimens a trifle of burnt umber should

be added in order to darken it, but never sufficiently to kill the red yellow tone.

119. The graining color for light mahogany is prepared by mixing raw sienna and burnt umber in distemper; that used for graining dark mahogany is made from burnt sienna and burnt umber, the manner of doing the graining in either coloring being the same. Mahogany seldom shows any regular veining, but soft tones of mottlings, rather coarse and lengthy, but these usually are not numerous in what is known as plain mahogany. The whole character can be put on in one operation and with the sponge, which by the proper pressure will make out the broad veinings, which when blended out to bring out the feathering usually suffice to give the right character to the wood. The proper use of the sponge should be practiced in order to make the color lay strong in parts where it is wanted dark, and to wipe it out thin





where but little coloring is desired to show over the ground.

In some specimens of plain mahogany many fine pores appear, and it may be well to flog a few of the lines made by the sponge lightly before blending. This must be quickly done, as otherwise it would become too dry for blending. There will be enough porousness show after the blending to make a more natural appearance than if the stippling had not been resorted to.

120. Crotch and feathered mahogany should be well studied out in order to reproduce it rightly. It is not very difficult to do the work, but as said before the operator must have a good idea of what he is going to do and should have the space to be grained all pictured out in his mind's eye. The feathering is brought out by the proper use of the sponge and the blending of it properly afterward has much to do in the making it look natural, for if it is not done right it will make an otherwise good

piece of work look ridiculous. In the natural wood these fine markings are very scarce, and never seen outside of veneers and are costly, therefore hardly ever seen except upon high priced furniture, but in the grained imitation the operator can indulge his wildest fancies in reproducing the choicest specimens of the wood at a small outlay.

121. In the crotch mahogany veneers one will frequently notice a fine set of veins which cross the mottlings or featherings in an opposite direction. They are not nearly as prominent as these, but seem to be a succession of fine paint lines. These when put in as they should be help out the graining very much, and the putting of these in is the chief object of overgraining. The coloring should be the same as that used for the graining, only thinned a trifle more and sometimes just darkened a bit more by the addition of a little ivory black in distemper. The fine lines are put in with the fan over-

graining brushes from which the hair has been well thinned out, so they will separate by running through a comb into a number of parallel fine lines.

QUESTIONS ON LESSON XXII.

117. What is said regarding the graining of mahogany?

118. How are the grounds of light and dark mahogany prepared?

119. How should plain mahogany be grained?

120. How is crotched and fancy feathered mahogany to be grained?

121. How is mahogany overgrained?

LESSON XXIII.

GRAINING WALNUT.

122. [At one time when graining was at its height, walnut graining was next to oak, the main wood which grainers had to imitate, and some of them attained to such skill as entitled their work to be called

art. It is not used just now to near the same extent that it used to be, but as the prevailing sorts of woods that are grained are subject to changes caused by fashion, there is no telling how soon walnut graining may take the lead among the dark wood imitations. The color of the various specimens of walnut vary greatly. The general tone of American black walnut is darker than that of the European species variously known as English, Italian, etc., they all being the same. But aside of the fact that American black walnut is darker, the degree of darkness varies considerably in various specimens. Walnut, especially black walnut, is a rather coarse, open-pored wood, with a heart growth which is well defined and of pleasing forms. The veneers which are sawed from walnut roots and forks of limbs, as in the crotch walnut, are very intricate and beautiful when all the details are well brought out by polishing.

123. The ground for walnut graining,

as may be well supposed, will vary greatly, according to the desired finish. The average European walnut ground is made from ochre, burnt umber and a trifle of venetian red added to a white lead base, and will be deeper or lighter according to the finish desired. It will be more yellow in tone than the ground that is used for the darker American species. For the latter the same colors are used in preparing the ground, only that it is made deeper on the average, and that it should not be quite as yellow toned as the ground used for the European variety.

124. The openness of the wood represented by the pores is easily reproduced by the stippling it should receive before the heart growth is either wiped out in oil graining or pencilled on in distemper. Some grainers dispense with it in oil work, but the finished work suffers from it. The stippling color is best made from some good Vandyke brown, and it may also be made

from burnt umber in distemper. It should be flogged on evenly and rather coarse, as it will not look good if flogged too fine.

125. After the stippling the graining may be done in oil by wiping out. The color used for graining may be either Vandyke brown, which has been made more drying by the addition of an extra quantity of good drying Japan, or from burnt umber, to either of which enough megilp has been added to keep them from running when sufficiently thinned out for wiping.

The easiest way of graining plain growth walnut of either the European or American varieties is in distemper, and while it may not be as good in the estimation of some, it is much more quickly performed, and when well done will look fairly good and natural. For the graining of it in distemper the same colors should be used in that medium as noted for oil work, and the veining pencilled on the stippled surface and well blended out while still wet.

126. The overgraining of plain walnut graining will add much to its naturalness of looks. This consists mainly of the darkening of some of the parts. It should be done with the oil color used in graining it in oil for either oil or distemper work. In the latter case the color should be sufficiently thinned and well rubbed out as to give it a coat all over and afterward it should be wiped out from all parts where it is not wanted with soft cotton rags.

QUESTIONS ON LESSON XXIII.

122. What are the principal characteristics of walnut?

123. How are the grounds for European and American black walnut prepared?

124. How should walnut be stippled?

125. How is walnut grained in oil and distemper?

126. How is walnut overgrained?

LESSON XXIV.

GRAINING WALNUT—CONTINUED; BURLED
WALNUT.

127. The natural plain growth of walnut usually presents no riotousness and is rather staid and well behaved, but with a sufficiency in variation to suit the most fastidious. Not so with burled walnut or root walnut of either the European or the American varieties. One would hardly recognize them as relations of the former but by that they carry some of the colors of the plain, besides many shades more and variations of them of their own. The European varieties are usually lighter toned than the American sort, and the contorted course of the veining is somewhat more regular in appearance, otherwise the burling and knots are very much the same. The same design executed in either European or American walnut would look well if properly done. There is considerable system in the seemingly wild growth of walnut burls.

Their representation requires considerable study in order to represent them naturally, not that it is very hard to do, but in order rather that it be not overdone. There is nothing that has a more vulgar look than an overdone imitation of burled walnut.

128. The student should familiarize himself with the growth of many specimens and besides he should carry an imprint in his mind of all the various natural specimens he may come across. In these studies he will no doubt have noted that the ground color or the lighter parts in the natural wood does not run uniform as in the plain wood. Some parts will require a much lighter ground than others, and good grainers take advantage of that knowledge and prepare the grounds in various shades in order to produce the effects desired. Some try to obtain these by overgraining, but while that improves the graining it will not produce the realistic effects possible by the varied colored grounds. This demands

good judgment and a full knowledge of the intended work so that a boy cannot be sent ahead to do the grounding, but the grainer himself must do it according to his own conception of the intended work.

129. The graining is always done in distemper. The colors used are raw and burnt sienna, raw and burnt umber and ivory black. To these may be added Vandyke brown. The lay out is first laid out with a sponge. A different sponge should be used in each color. After all the principal features have been put on and blended properly, the work proper of putting in the details commences and is done with camel's hair pencils, fan overgrainers, etc. It is presumed that the student has practiced these before, as he will hardly care to expose his ignorance upon a door panel where it would be very likely to put him to shame. Nothing but practice makes one perfect at this work. Yet many who have practiced it for years fail to do as good work some-

times as a novice would, because they have a false conception of it and keep on in the old rut, which was wrong from the beginning. It is not difficult of execution, but cannot be done right in a haphazard manner any more than by making lines and curves and expect to produce a good sign if not put in their proper places.

130. As hinted in paragraph 28, some grainers expect to do too much with the overgraining. They try to correct a faulty ground work and to put in many details which properly belong to the graining proper. It is possible, of course, to help very much in the correction of many faults, especially in those of bettering the mottlings, but if the graining has not been laid out nor grained pretty near right, no amount of overgraining will make it right, and more work that would have been passable is rendered worthless by overdone overgraining than from any other one cause.

QUESTIONS ON LESSON XXIV.

127. What is said of burled and root walnut graining?

128. How should the grounds be prepared for it?

129. How is burled walnut grained?

130. How is burled walnut overgrained?

LESSON XXV.

GRAINING ROSEWOOD, ETC.

131. Rosewood has never been very extensively used in interior finishing. Its dark, somber tone unfits it for most situations and its great cost unfits most people from even thinking about its usage. Therefore, while the last reason has not been a factor in discouraging its graining, the first one given has sufficed to confine its use to that of a few fancy articles of bric-a-brac or fancy pieces of furniture, and in the latter it has been mainly in the stained form that it is seen. As, however, it sometimes happens that a grainer is called upon to

produce it upon a fancy box or something else, he should know how to do it.

132. The ground for rosewood should be compounded from venetian red brightened up with vermilion and lightened with white lead, but not too much. It should be of a decided red, and while but little of it usually shows through the dark superstructure of veins, and that little in the natural wood is always of a decided red tone, some grainers add ochre to the red, but that only serves to muddy up the red tone and should never be resorted to.

133. The main character of the wood should be put on with a sponge with distemper color consisting chiefly of ivory black, to which a trifle of umber may be added, but which is not necessary really. The main character of the wood is laid out in long, wide stripes, which should consist chiefly of a number of fine lines or veinings. The first laying out should be put on rather thin and allowed to dry, when the fine line

work can be put on with the fan overgrainer, and the parts of the ground which have not been covered with the first wide stripe lay out mentioned should be gone over with the fan brush and a number of fine lines made running into the dark straight ones. It is between these that a little of the ground will show here and there only. The character of the wood should be well understood in order to make a fair imitation, and no one will attain that by being told "how it looks," for that is impossible, rosewood being so unlike any other wood.

There is usually no overgraining necessary if the work has been properly done. Nor should the fine line work done with the fan overgrainer be blended, as the veining stands out sharp. As sometimes the beginner will be apt to have it show too much of the red ground, it may be well to give a glazing coat of ivory black in oil over the whole surface and to wipe up a few of the parts where the red ground is desired to

show through. This will act as a protection to the work, too, and when dry a coat of varnish can be given it which will usually suffice then.

134. Many more woods could be given, but of all the rest yellow pine is the only one which is ever likely to be imitated, and very little of that excepting in the matching of some repair work. There is no reason for giving it a special description, as that given in paragraphs 94 to 99, and especially in 99, will come as near to it as it would be possible to make it.

QUESTIONS ON LESSON XXV.

131. What are the principal characteristics of rosewood?

132. How are the grounds for rosewood to be prepared?

133. How is rosewood grained?

134. What else is said regarding the graining of yellow pine and other woods.

LESSON XXVI.

MARBLING.

135. The imitation of marbles and other stones of a variegated character is much older than that of the imitation of woods by graining. This is no doubt due to the universal custom of public buildings in the Roman Empire being finished in stonework, marbles, jaspers, onyx and other variegated stones. The patricians vied with each other in the lavish decoration of their palaces, which were, of course, the real thing, but many of the merchants and plebeians who could not afford these expensive finishes, had recourse to an artificial representation of them, in their principal chambers at least. The marble imitations found so far do not speak very highly for the skill of the marblers of that period, and it must take a rank far below that of other mural decorations done at the same time presumably by a higher grade of artists.

136. The enormous use of marble and

onyx in various decoration in this country, which has been developed within the latter part of the past fifty years, has been educating the people to the use of something better than the miserable paper imitations which have paraded as marble, or rather been a parody upon it. Such as these paper imitations have been, it is no wonder that people of taste have tabooed them from their homes, preferring a plain wall or washable varnished tile paper to those ludicrous misrepresentations.

137. For many purposes marble imitations are beginning to be used much more extensively than they were and good imitations always captivate the attention of people of taste, with the consequence that when once introduced in a neighborhood it soon happens that the man who is able to do a good job is soon overrun with that kind of work. That it has not become general is because, sad to say, it has almost become a lost art from long disuse. The many

cheaper halls, restaurants, etc., in public and semi-public buildings where the real stone is too expensive; the many private vestibules, halls and bathrooms, where their use is almost imperatively demanded by good taste as the only permissible embellishment to relieve the monotony of the walls, by at least a dado imitation of good marble done *in oil* and *washable*. An endless variation in variously formed panels and cornices and surrounding stiles, where contrasting colored varieties of marbles and onyxes can be used, or their use in plain slabs as desired, will enable the artist who does the marbling to produce an individuality of work on every job. The good marbler is entitled to be called an artist, for it is only an artist who can vary this infinity of forms properly. Not that the execution of the work demands great ability in reproducing it—the artist's skill is developed and shown in the proper arrangement and use of coloring, and also in the proper tracing

out of the work itself, but that without the other will surely disappoint.

138. Many marbles resemble each other very closely excepting in their coloring, and even in marbles of the same quarry there will be found such variations in the forms of their veinings, agglomerations in those of conglomerate form that really no well defined description can be given of any of them. The general characteristics is all that can be said of any of them and some general directions given under each which will help the student to do his work upon right lines.

139. Marbles may be divided up into two great divisions, and even these are somewhat interchangeable, and it will depend upon the angle that the slabs have been sawed as to whether they should be placed in one or the other division. These two divisions are the striated marbles, which includes the veined and serpentine marbles, and the conglomerate, which in-

cludes most of the onyxes and marbles which show but little veining. As stated before this arbitrary division is sometimes misleading, as a striated marble will show up in chunky formation if sawed in a certain way, and again considerable veining will show in a conglomerate if sawed at the right angle. The placing them in one or the other of the two divisions applies only when they are sawed in the natural and customary way—squarely through the block where they show their character more fully. In some varieties, however, as in some of the onyxes, there is little regularity of formation and serpentine forms will be found bordered with large chunks of conglomerates, and the latter with more or less of well defined serpentine formation intermingled with it. This really is what makes the chief beauty of the onyxes. The students should study the forms taken by marbles thoroughly as possible in order to store up in their memory the innumerable varia-

tions of forms of all the several sorts of marbles which they come across.

QUESTIONS ON LESSON XXVI.

135. What is said relative to the imitation of marbles by ancient civilizations?

136. What uses of marble imitations are made of today?

137. To what parts of interior decoration are they best adapted to?

138. What is said of the irregularity of form in marbles?

139. In how many divisions can marbles be placed in?

LESSON XXVII.

GENERAL DIRECTIONS FOR MARBLING.

140. Under the name of marble are included all variegated stones, and therefore the term "marbling," like that of "gilding," which is applied to gold, silver and all metal leaves means considerably more than it should. Truthfully speaking marbles

are of lime formation, while granites and jaspers and many others are not. The coloring of the veinings are due to various causes; various substances being deposited and enveloped in the lime formation, some by infiltration of metallic ore beds above the lime formation, which found their way through some of the softer fissures of the imperfectly formed limestone and deposited there. Again, as in honeycomb limestone, substances which deposited along with the lime, but which being more soluble have been washed out of it, leaving the lime full of small holes, as the name indicates. These being subsequently filled up with colored deposits.

141. General directions will be given in this and subsequent lessons as to "how" the various operations used for imitating marbles are performed, and the student will be referred to them when the special description of the various well-known marbles and other stones are given. The same op-





erations being used in nearly all of them, being varied to suit the peculiar needs of each as required.

142. There is no need of special brushes or tools for any of the operations about to be described, and the ones described as useful for the imitation of wood by graining will more than suffice as but few brushes are needed. For laying the grounds, some of the larger flat ones and some smaller flat ones to lay in colors in smaller groups, and dry ones to blend them. Some fitches or small bristle artists' brushes and some camel's hair pencils with a few wing and tail feathers for putting in some of the finer veins, and badger blenders are about all the tools needed.

143. 'As to material, white lead and zinc white will form the bulk of it, as it is used either as a base or by itself in all the marbles that will be described, with, of course, the exception of the black marbles. As there are so many colors used in imitating

marbles, the whole list may be of use at some time or other, and it will not be necessary to name them all over at this time, as under each marble will be given the ones needed. Light varnishes are required in order to give the finished marble a uniform appearance and as a protection. This is the hardest part of all to procure, as the stronger ones are not fit to use over white or even upon some of the darker ones having white veins, turning them yellowish. Damar varnish is forced upon the marbler, so there is little wonder if many prefer to leave the work as it is without varnishing.

All the above applies to oil color marbling only as work done in distemper is never varnished. The colors needed in water color marbling are the same as for oil work, only they must of course be in the dry state.

144. The walls of halls are sometimes done in imitation of marble slabs, and one is then required to scaffold for it in order to

reach them. As directions were given how to reach the walls and ceilings in Vol. II, or "Interior Painting," the student is referred to that for fuller details. For most work good step ladders will be found best, as they permit the work to be done with more comfort, the operator climbing up or down as needed without having to reach up or bend down too much.

QUESTIONS ON LESSON XXVII.

140. What is said regarding marble formation?
141. What of the general operation used in imitating marbles?
142. What are the tools needed in marbling?
143. What material is used in marbling?
144. What appliances are needed in wall work in order to reach their surfaces?

LESSON XXVIII.

THE OPERATIONS OF MARBLING.

145. The laying on of the proper colors for the ground is the first operation in the order in which they occur in marbling, and it is a very important one, too. It will be well to state here that the descriptions which are given is for marbling in oil, as that is by far the best way of imitating marble, therefore the proper allowance must be made for water color work of quicker drying, and therefore it will require considerable speed in conducting the marbling operations, giving the operator but little time to do his work in he cannot possibly produce as good work as he can in oil. Only rather plain figured marbles should be attempted by the students in distemper work. The ground is usually put on all over alike in oil, and usually it is put on with white lead. While that is fresh, if a parti-colored ground is desired, a little of

the proper color is worked over it and blended more or less to suit.

146. If the imitation is striated, veined or serpentine marble, while the ground is still wet the main body of color and veining should be put in and blended. The blending in marbling constitutes a most important part, as by means of it veins and lines are made to disappear as it were into the ground gradually, which gives it transparency, and it will look as if it came from the interior and gradually becoming stronger toned as it reached the surface. These effects are all produced by proper blending.

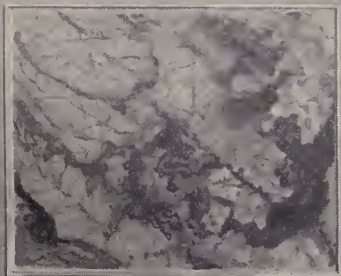
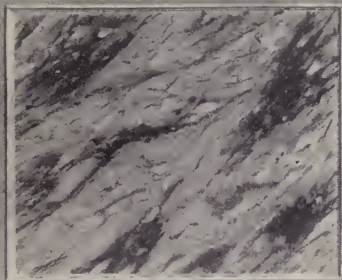
If the imitation is a conglomerate marble the chunks should be put on with dabs of color suitable and of the right size, depending upon the blender to soften them into a gradual disappearance into the ground.

147. While the ground is still wet in veined or striated marble the deeper toned veins, or rather that portion of the veins which it is desired should appear as hav-

ing reached the surface by a gradual ascent from below, should be touched with a little of the fresh color and left unblended. This is done with camel's hair pointed pencils or with the tip end of feathers for some of the finer lined ones.

In the conglomerate imitation the chunks can be touched with fresh color left unblended at what is desired should show as their surface point, so that the chunks will show as if they were gradually sinking away from sight to the interior of the stone.

148. It will be best after having formed all the character of the veining and having touched up the bright parts to let the work dry before attempting to put in the white veining and what may be called the "high lights," or the lightest parts of the colored veins or chunks in the conglomerates. If this was attempted upon the wet color and one should undertake to finish the whole work at the one time, he will find that he cannot produce good white veins and that





they mix up so much with the others as to become anything but *white*. Where it is desired to produce the impression of white veins disappearing into the rest of the work, however, it will be well to put in some and to blend them in to produce that effect, while the first color is still wet and when it has dried to go over them at what is intended for their surface points with some fresh color, which will greatly enhance their transparent effect. Now the light veins are put in without fear of their tones being destroyed by mingling with the wet ground colors, and all the finishing touches should be put in. Defects, if any, can be corrected and when the work is dry it may or may not be varnished.

149. The directions given above will suffice to give the student the manner of producing any kind of marble or onyx desired. The spots usually seen in granites are produced by striking a brush upon a stick at some distance from the surface which it is

intended should be covered, the size of the dots being governed by this distance, and also by the kind of brush used. A fine spraying with turpentine afterward will cause them to spread sufficiently to run together at the edges and to look more natural than if left without this operation.

QUESTIONS ON LESSON XXVIII.

145. How should the grounds be put on in marbling?

146. How is the veining and blending done in marbling?

147. How is the veining made to appear as if coming up to the surface from the interior?

148. How are the finishing touches put on?

149. What is further said of marbles and how are granites imitated?

LESSON XXIX.

THE VARIOUS MARBLES.

AGATE.

150. Agate is a variegated stone, a conglomerate, and according as it is cut will sometimes show a number of veins usually circling around some center. The ground is white lead, and the various colors may be put in and blended over. This is followed up with touching certain parts with fresh color, which is left unblended to give a sharp edge. The colors vary very much in various specimens of agate, some being rather light and others very dark, so the student has a good range to choose from, from crimson lake, prussian blue and chrome yellow or ochre.

BROCATELLO.

151. The ground for Brocatello is made from ochre and white lead, or it may be put on with white lead and ochre brushed into it, leaving it darker in patches than in

others. Then put on a thin glaze over it when dry made of raw and burnt sienna with enough whiting to make it rather transparent. When the color has set sprinkle it over with turpentine by striking a small brush over a stick it will cause it to spread the color and to show the yellow ground through. Then shade the larger blotches with a light yellow ochre to show the angular fragments and give it depth. Then vein with color made of vermilion and Prussian blue, being careful not to put in the dark lines through the blotches.

BLACK AND GOLD MARBLE.

152. 'As the name indicates this marble's chief tone is black with blotches of yellow. It is a conglomerate marble. The ground should be put on with black paint and lightened up in parts by working in a little white in spots, as it should not be uniform in tone, but the lightest parts should be as dark as a dark slate. Dab on the yellow

spots where they belong and connect a few of them by veins, then blend to produce transparency; then touch up with some of the light color, which should not be blended. Let dry and put on a very few high lights on some of the yellow and with ivory black used as a glaze correct any glaring mistakes by covering them over which will then appear as belonging to the under parts.

DOVE MARBLE.

153. This marble is one of the easiest to imitate on the whole list. It is a veined marble and chiefly a warm gray with white veining. The ground should be made from white lead, lamp black and warmed up with a little vermilion. Put in the white veins and blend; after blending touch up parts of veins you will wish to show as coming to the surface, but do not blend. When dry emphasize such parts as desired with white.

EGYPTIAN GREEN MARBLE.

154. This is a conglomerate marble which presents many varied forms according as it has been cut. Under certain cuttings it presents a mass of crystalline matter of great beauty, and somewhat more difficult of execution than the more ordinary forms of it do. By a little practice, though, the student will find no great difficulty in representing it correctly. It is a marble which presents in any of its forms a beautiful appearance, and one which the operator is prettysure to be called upon to reproduce, therefore he should spare no pains to study it well and to practice what he has learned in order to be ready for any emergency. The ground is an invisible green made of black with a trifle of yellow added. When dry put on a suitable green glaze, dabbing on here and there the black masses and put in the green network of veining with a feather, touching them up with a camel's hair pencil with the same color to give it

character and transparency. It will be noticed that according as it is cut a mass of crystalline bodies seem to show through the semi-transparent stone, and this will test the skill of the marbler to reproduce naturally.

QUESTIONS ON LESSON XXIX.

150. Give a description of the marbling of agate?

151. How is Brocatello marble imitated?

152. Describe how black and gold marble is imitated?

153. Give a description of how dove marble is done.

154. How is Egyptian green marble imitated?

LESSON XXX.

DESCRIPTION OF THE VARIOUS MARBLES—CONTINUED.

ITALIAN PINK MARBLE AND SCARLET MARBLE.

155. Really this marble and the Italian scarlet marble are only variations of sienna marble, and as the variation consists altogether in the coloring of the marble and not at all in its veining and other forms, there will be no need of telling "how" it should be done, as that is related under the heading of sienna marble in the following paragraph. For color venetian red lightened up to a pink with white lead is used instead of that described, and in the scarlet variety vermillion toned down with venetian red.

SIENNA MARBLE.

156. This marble is more extensively imitated than any of the others, with the exception of white marble black veined, and there is no wonder that it is so with its

wealth of forms. No matter what one may fancy or do it is pretty sure to look like some specimen of it has done before if the same character is kept up to the end. It is true some forms are more pleasant than are others, and that is true really in all marbles, so that the student should not spend much time in trying to do something which is considered an inferiority in the sienna marble itself. The most pleasing forms are clumps of darker color overrun with veinings and intervals of lighter tone also veined, but usually with much lighter toned veins than the set occupying the darker clumps. But some of the light as well as the darker ones usually trespass some upon each other's ground, and in some specimens clumps of very fine dots extend over some of the light areas instead of veins.

The ground should be put in with white and the larger clumps put in with raw sienna and blended. Then some of the intervals may be connected with lighter toned and

smaller clumps, also made with the raw sienna upon the still wet ground. Proceed afterward to put in darker broad veins with the artist's bristle brushes and blending them. After the blending, put in the white veining, which, of course, will mix with the still wet ground, but that will give it the transparent effect if when the work has dried they are touched up here and there with flake white to give them their character. The darker veinings should also be touched up in order to emphasize them and make them look transparent. Variations galore will suggest themselves to the student who has made a study of these marbles from natural specimens.

FLORENCE MARBLE.

157. The ground for this marble is a neutral tone of red made with white lead and Indian red. The veining should be put in with burnt umber and a second set with burnt sienna, a few of each running in every

direction without any regularity. This veining must be done while the ground is still wet in order that the ends may blend in with it and seem to disappear into it. Sometimes the veining runs out of clumps and seems to break forth, leaving some parts nearly free of veinings, and then suddenly to spring up into a network as intricate as seen upon a nutmeg melon.

TENNESSEE MARBLE.

158. This is an American marble. It is usually of a mauve or bluish violet tone, and of a medium between dark and light, some specimens being rather dark. As it is plentiful and cheap much of it does not show up at its best, but there are some specimens which are very beautifully marked. As all other marbles, it has an infinity of showings. Its general character is an all-over veining. Some specimens, however, showing a few patches of plain white of considerable extent, and in all the better

ones some large thick white veins with a number of smaller ones running in a wild way radiating from them, but with a distinct tendency to run in the same direction as the large white veins spoken of. Then there is another set of smaller veining of the same tone as the ground, but much deeper scattered nearly all over it. The ground should be put on with white paint and color made from Indian red deepened with Prussian blue, dabbed on nearly all over it and blended into the white, leaving a few patches of white and the larger fissure veins where desired, although these can be put on after the ground has become dry. Much of the smaller veining should be put on before the ground is dry in order to mix with it and give the transparent effect so much desired. Afterward the stronger high light effects in the large white veins and in some of the parts of the smaller ones should be touched up with flake white, and

the darker veins should be touched up here and there also with the darkest color.

QUESTIONS ON LESSON XXX.

155. Describe how Italian pink and Italian scarlet marbles are imitated?

156. How is sienna marble imitated?

157. How is Florentine marble reproduced?

158. What is said concerning the imitation of Tennessee marble?

LESSON XXXI.

DESCRIPTION OF VARIOUS MARBLES, GRANITES
AND PORPHYRIES—CONTINUED.

SERPENTINE MARBLE.

159. This marble is probably but a variation of the verd antique, which it closely resembles in all its colorings. It contains more veinings than the other, although it, too, shows up clumps of conglomerate very much the same in formation; as a full de-

scription of verd antique is given in the subsequent paragraph, the student can vary from the directions given in so far as to introduce the veinings mentioned which the other has but few of.

VERD ANTIQUE.

160. Verd antique marble is really a modified Egyptian, being somewhat more blotchy than its cousin the Egyptian green marble. The ground should be made from Prussian blue and yellow ochre to make a brownish green, then dab some of each of the separate colors blue and yellow where the blotches are desired; then connect them by veinings and blend, touching up afterwards with fresh color parts which should show prominently, but be careful not to overdo this, as but little of the full tone of the yellow should show or it will make it look unnatural.

WHITE VEINED MARBLE.

BLACK VEINED WHITE MARBLE.

161. These two marbles are bracketed together, as with the exception of the ground color and the reversing of the color used in the veining they are so much alike that the same description will do for each of them. They are veined marbles, and many specimens show fissures which for the sake of naturalness and variety may be imitated but very sparingly, as really it is a defect.

The ground for these marbles should be white lead; for the white veined proceed to dab on patches of black with a small tool and blend the black with the white all over, but have the ground darker in parts than in others, varying from a gray to nearly true black, but of the latter sparingly. A few white blotches and main white coarse veins are left, and the white veins are put in with flake white, which will blend into the ground

and serve to give the proper transparency. When dry the pure white veins must be touched in order to bring them out.

For the black-veined variety the white lead ground is gone over here and there, but not too much of it, with a touch of black which must be vigorously worked into the white to produce a few blotches of light, faint gray not prominent at all. The veining is gray of a trifle darker tone, which is called black by courtesy and as a contrast to the white of the ground.

162. The above comprise about all the leading varieties of marbles. There are many other varieties, chiefly of those described, and differing from them chiefly in their coloring, their imitation being the same excepting that.

ONYXES.

163. Onyxes differ from those stones which are known as marbles chiefly in that they are more transparent. The clumps or

blotches of variously colored component parts of the conglomerate are much more diversified than can usually be seen in marbles and according to the angle at which they are cut present an endless variation. Sometimes whole slabs show the conglomeration cut across; again in others considerable blank space is found in close proximity and again serpentine waves of veins looking very transparent run around the clumps, etc. Nothing but a close study of the natural stone can give one a perfect idea of their vagaries of form. The general directions given in paragraphs 140 to 149 cover all that could be said here as to the manner of imitating them and the student who has carefully followed the descriptions which are specially given under each marble will find no great difficulty in imitating the variously colored onyxes.

GRANITES, PORPHYRIES AND JASPERS.

164. All the above are closely related and may be bracketed together in describing their imitation. According to their predominating colors they are known as red, gray, white, etc., and have usually the name of the countries from which they come given them in addition.

The ground color should consist of the leading or predominating color, and the rest of the spots are put in by sprinkling or striking the brush against a stick. When the colors have commenced to set, but before they have dried and while still partly wet, turpentine should be sparingly sprinkled upon the work, which will cause the spots to spread and run into each other, but it must not be overdone or a mess will be the result. A little fine flaked mica may be sprinkled upon the work after it is finished, also before drying has been completed; this will give more naturalness to

the granite imitations; the porphyry and jasper do not need it.

QUESTIONS ON LESSON XXXI.

159. Describe the character of serpentine marble?

160. How is verd antique marble imitated?

161. How are white-veined black marble and black-veined white marble imitated?

162. What is said of other varieties of marbles?

163. How are onyxes imitated?

164. What is said regarding the imitation of granites, porphyries and jaspers?

FINIS.

INDEX

Agate marbling—how done.....	145
Applying the rubbing in colors in graining.....	50
Ash graining—general remarks on.....	93
Ash graining—how grounds are made for.....	93
Ash graining—how grained in distemper.....	95
Ash graining—how grained in oil.....	94
Ash graining—how overgrained.....	95
Ash graining—Hungarian—how grained.....	96
Badger haired blenders—their uses.....	28
Bird's-eye maple—how grained.....	101
Black and gold marble—how imitated.....	145
Black veined white marble—how imitated.....	150
Blending distemper graining.....	62
Brocatello marble—how imitated.....	145
Brushes used for laying grounds.....	25
Brushes used rubbing-in color	25
Burled growth of woods.....	75
Burled Walnut—how to grain.....	122
Burled Walnut—how to overgrain.....	123
Camel's hair pencils used in graining and marbling.	30
Champs—how wiped in quartered oak graining...	41
Check rollers—how to use.....	53
Chestnut graining—general remarks on	156
Chestnut graining—how to grain it.....	157
Cherry graining—how to prepare grounds for....	109
Cherry graining—how to grain it	109
Colored crayons—used in fine veinings.....	71

Colors used in preparing grounds in graining.....	21
Colors used in graining in distemper	22
Colors used in graining in oil	23
Combination oil and distemper work in oak grain- ing	36
Curled maple—how grained.....	10
Davis rubber rollers used in graining.....	32
Description of material used in graining.....	23
Dove marble—how imitated.....	147
Egyptian green marble—how done.....	149
Fan overgrainers—their uses.....	28
Flakes—how wiped in quartered oak graining.....	85
Florence marble—how imitated.....	148
General remarks on Ash graining	92
General remarks on Bird's-eye maple graining....	100
General remarks on Chestnut graining	97
General remarks on Cherry graining	109
General remarks on Burled Walnut graining.....	122
General remarks on graining operations	38
General remarks on preparing grounds	41
General remarks on preparing meglips	43
General remarks on preparing graining grounds..	41
General remarks on preparing graining colors ...	43
General remarks on Mahogany imitation	112
General remarks on Maple (plain) imitation.....	98
General remarks on marbles, imitation	130
General remarks on Oak graining	79
General remarks on Quartered Oak graining	84
General remarks on Rosewood graining	133
General remarks on Satinwood graining	110
General remarks on Sycamore graining	104
General remarks on making tints	42
General remarks on tools used in graining.....	31
Glycerine—to retard drying of distemper colors...	48

Graining colors for oak.....	80
Granites—how imitated	160
How to do the combing in distemper	58
How to do the combing in oil	58
How to blend distemper work.....	62
How to do the wiping with rags.....	57
How to grain Ash	93
How to grain Ash (Hungarian)	95
How to grain Bird's-eye Maple	99
How to grain Curled Maple	99
How to grain Cherry	100
How to grain Chestnut	97
How to grain Mahogany	112
How to grain Maple (plain)	96
How to grain Rosewood	127
How to grain Walnut	116
How to grain Walnut (curled)	118
How to grain Satinwood	113
How to grain Sycamore	108
How to marble Egyptian green marble.....	148
How to marble Florentine marble	152
How to marble Italian pink marble.....	150
How to marble Italian scarlet marble.....	150
How to marble Sienna marble	150
How to marble Serpentine marble	145
How to marble Tennessee marble	153
How to marble Verd antique marble.....	156
How to marble white veined and black veined marbles	157
How to imitate Onyxes	158
How to imitate Granites	160
How to imitate Jaspers	160
How to imitate Porphyries	160
How to use the Davis graining rollers.....	65

How to use the Ridgely graining tools.....	65
How to use the colored crayons	72
How to use the wax in finishing.....	80
Italian pink marble—how imitated.....	148
Italian scarlet marble—how imitated.....	148
Jasper—how imitated	160
Mahogany—how to prepare ground for.....	109
Mahogany—how to grain	112
Mahogany—how to make the featherings.....	115
Maple, plain—how to prepare the ground.....	99
Maple, plain—how to grain	99
Maple, bird's-eye—how to grain	101
Maple, bird's-eye—how to put in the eyes.....	104
Marbling—general remarks on.....	130
Marbling—imitation of agate	145
Marbling—imitation of black and gold marble....	146
Marbling—imitation of Brocatella marble	147
Marbling—imitation of Dove marble	148
Marbling—imitation of Egyptian green marble....	148
Marbling—imitation of Florence marble	152
Marbling—imitation of Italian pink marble.....	150
Marbling—imitation of Italian scarlet marble....	150
Marbling—imitation of Serpentine marble	152
Marbling—imitation of Tennessee marble	153
Marbling—imitation of Verd antique marble....	156
Marbling—imitation of white and black veined marble	157
Marbling—imitation of Onyxes	158
Marbling—imitation of Granites	160
Marbling—imitation of Porphyries	160
Marbling—imitation of Jaspers	160
Material used in graining.....	21
Mottlers—their uses	29
Mottling—how done in distemper.....	73

Oak graining—general remarks on.....	79
Oak graining—how to grain	84
Oak graining—how overgrained	86
Onyxes—how to imitate.....	160
Old varnished work—how to treat it for graining..	41
Old woodwork—how to treat for graining.....	40
Overgraining—the use made of it.....	62
Overgraining—how to use the four overgrainers...	63
Pencilling the veining in distemper.....	61
Pencilling the veining—how done	61
Porphyries—how imitated	160
Practice boards—to study graining upon.....	77
Quarter-sawed Oak—general remarks on.....	84
Quarter-sawed Oak—grained in distemper.....	88
Quarter-sawed Oak—how the dark flakes are put on	96
Quarter-sawed Oak—how the checkroller is used..	91
Quarter-sawed Oak—how overgrained	91
Quarter-sawed Oak—how wiped out	89
Quarter-sawed Oak—how finished	95
Rags—their use in graining.....	37
Ridgely rubber graining tools.....	34
Rosewood graining—general remarks on.....	126
Rosewood graining—how to make the grounds....	127
Rosewood graining—how to grain it	128
Rosewood graining—how to overgrain it	129
Rubber graining rollers (Davis)	32
Rubber graining combs	35
Rubbing in color in oil in graining.....	49
Rubbing in color—how applied	52
Satinwood—how grained	100
Serpentine marble—how imitated.....	146
Sienna marble—how imitated.....	150
Stippler—its use in graining.....	27
Stippling—for walnut—how done.....	119

Stippling—general rules for.....	55-75
Sponges—their use in distemper.....	74
Steel graining combs.....	35
Varnish brushes used in graining.....	30
Varnishing—how it should be done.....	81-87
Verd antique marble—how imitated.....	156
Walnut graining—general remarks on.....	116
Walnut graining—grounds for	118
Walnut graining—how to stipple for	119
Walnut graining—how grained in oil and dis- temper	120
Walnut graining—how overgrained	121
Wax used in preparing megilp.....	22
Wax polish—how applied.....	82
Whiting—its uses in preparing megilps.....	23
White veined marble—how imitated.....	149
Wiping out—what it means.....	56
Wiping out—how done	57
Woods—how classed	83





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