WOOD FINISHING.

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THE following notes on wood finishing have been taken from "The Modern Wood Finisher," by F. Lemaire, from information furnished by Mr. Bartolome Pascual, of the Philippine School of Arts and Trades, and from personal observations of the writer. Since any attempt at originality along this line would be of little value, three of the accepted ways of wood finishing have been taken from the above sources and explained as briefly as possible. From the numerous ways employed by wood finishers for the application of a wax, shellac, or varnish finish, one of each has been selected and explained in detail, the exact words of the authority from which they were taken being used whenever possible.

There are a few rules governing the finishing of all hard woods that should be well understood before the details of any particular method are taken up. They are here given.

All kinds of wood are made of fine, thread-like fibers bound together in large numbers. In some woods they are very fine and the wood is said to be fine grained. In others they are very coarse and the wood is said to be coarse grained. There are any number of medium grades between the two. In some woods the fibers are straight and parallel, in others they are twisted and interwoven, the first being called straight grained and the latter, cross grained. Cross grained wood has the better appearance when finished, and is therefore often used in furniture making.

The spaces between the fibers are called wood-cells, or pores. These pores vary in size, according to the structure of the wood, and they are really hollow passages through which the sap flows. When the wood has been dried so that no sap remains in these pores they will absorb any liquid that is applied to the surface. It is obvious that the sap must be well dried out before any finishing can be done successfully. It is also evident that these pores must be filled up before the surface can be polished. If any stain is to be used, it must be applied before filling. This is explained further under the subject of staining. If varnish or shellac is applied before the pores have been filled, part of it

will disappear into the surface so that the whole will appear rough. More varnish or shellac will not improve it nor make it level. One of the first principles of wood finishing is, "the less varnish or finishing material applied to a surface, the better." Numerous coats cover up the grain and give it a muddy appearance, and it should be the aim of every wood finisher to get the best polish with the least amount of material. When the varnish, shellac, or wax is applied, it should be upon a perfectly smooth, glass-like surface that will not absorb any of it. Filling is a very important part of the finishing process and if the workman understands the nature of wood he can easily see the reasons for the foregoing rules.

SANDPAPERING AND PREPARATION FOR FILLING.

Properly speaking, this work belongs to the shop, not to the finishing room. Woodwork is supposed to come to the finisher sandpapered and ready, and it may seem out of place to mention this operation in connection with wood finishing. In most of our trade schools and school shops, however, the teacher who is in charge of the shop is responsible for the finishing as well, and a few of the common requirements may well be mentioned.

Too much importance can not be placed on the proper preparation of work for finishing. There have been very many pieces of furniture exhibited at our annual exposition, that were "killed at the finish" by too hasty work. It may be taken as an axiom that "perfect polish can only be obtained on a perfect surface." Another half day, or even another hour of scraping and sandpapering, will often make the difference between a good and a bad finish. It is only a question of patience, and poor finishing is always set down as laziness on the part of the man in charge of the job. The general public judges by appearances and will seldom notice the good workmanship displayed in the construction of an article if it is poorly finished.

VARNISHING.

There has been a great deal of objection made to this style of finishing in the Philippines on the grounds that varnish will not dry in this climate. Most of these cases can be laid at the door of the cheap contractor who uses cheap materials. The best kinds of American varnish are just as satisfactory here as anywhere else. A little more time is needed for drying during some seasons of the year, that is all, and if the operator buys good, high grade varnish, he will get good results.

The system known as "French polishing" is now being taught in the school shops of the Islands. The time will come when

this will be discarded, as it is a long and tedious process. About the only arguments in favor of it are that the materials for it are cheap, consisting mostly of time and "elbow grease," and what little other material is needed can be purchased anywhere at small cost. Varnishing is the only system that the manufacturer can use profitably.

FILLING.

As this chapter is dealing with the use of real varnish, the user is advised to buy his filler at the same time that he buys varnish. Every manufacturer of varnish also makes filler, which is much superior to the home made kinds. If liquid filler is used, no directions need be given. It should be used according to directions. If a paste filler is used a little more work is necessary.[1] One of the best paste fillers on the local market is put up in the form of a paste which is thinned with turpentine until about the consistency of varnish. It is applied to the surface with a brush. Care has to be used in its application, as it dries very rapidly. The following directions for applying paste filler should be observed.

Thin as directed and apply with a flat brush. Before starting work, collect a quantity of soft, fine shavings and keep them close at hand ready for use.

The filler is applied to small surfaces, two or three square feet at a time. When the filler is first applied it has a wet, shiny appearance. As it sinks into the surface it turns dull and flat. As soon as this change occurs, rub the filler into the surface by means of a handful of dry, fine shavings. Then rub across the grain with a circular motion until no filler is left on the surface, all of it having either been rubbed in or taken up by the shavings. When one section is finished, apply filler to the rest and so on until the entire surface has been filled.

Allow twenty-four hours for drying, then go over the surface lightly with sandpaper number "00". The same process of applying and rubbing in should be used with either liquid or paste filler.

It is hardly necessary to state that filling can not be done successfully on a dirty surface. All sandpaper dust must be removed or it will mix with the filler and spoil it.

[1] A well-known manufacturer of finishing materials makes the statement that, "In our opinion the poorest grade of paste wood filler on the market is superior to the best liquid filler that can be made." This statement can be taken for what it is worth. In the writer's experience it has proved true.

SHELLACKING.

This part of the work is omitted in finishing cheap work on soft woods. It is recommended in work on hard woods because it gives a better surface for the varnish. Shellac dries very quickly and does not sink into the surface and dissolve the oil in the filler.

The first step is to see if the filler is perfectly dry. About the only safe way is to give plenty of time to dry and then a little more,—about twelve hours more than is directed by the manufacturers, to allow for the difference in climate between this country and the United States. A good formula for shellac is as follows:

Alcohol	1 liter.
White shellac	100 grams.

(Increase in proportion for larger quantities.)

Dissolve the shellac in the alcohol and stir or shake often while using, as the shellac will settle very quickly. If the alcohol is slightly warmed the shellac will dissolve faster. This can be safely done by placing the can or bottle in warm water. See that the surface to be shellacked is clean and free from dust. Apply the shellac evenly with a soft, flat brush. Cover all projecting parts, such as panels, first. Spread the shellac across the grain, taking only a small amount on the brush at one time. Allow twenty-four hours for drying and go over the work lightly with fine sandpaper (No. 00). It is now ready for varnishing.

APPLYING VARNISH.

The real problem in using varnish, under the ordinary conditions that obtain in our school shops, is that no room is available that is "dust proof". The following plan is suggested as a makeshift: Select the best room available; a class room with tight windows and doors will do. It must be well cleaned up perhaps on a Friday afternoon. On Saturday morning have it swept with wet sawdust, which will pick up most of the dust on the floor. With a damp cloth wipe off all articles of furniture or parts of the woodwork that are likely to be disturbed or touched by the workman. Dusting with a brush will not do. It only stirs up the dust, which settles elsewhere. All windows should be closed before the last dusting and not opened or disturbed until the varnish is dry. Wipe off the surfaces to be varnished with a soft cloth slightly damp, not wet. Allow enough time for drying and then apply the varnish. The varnish will be dry enough by Monday morning so that the article

can be moved elsewhere for storage, but two or three days should be allowed to make sure. The second coat of varnish can be applied on the following Saturday in like manner.

A book could be written on the subject of varnishing and many have been written. There are all kinds of right and wrong ways of doing it and the workman can learn only by experience. A good painter can learn very easily, but it is a matter of time and careful training to make a good varnisher out of raw material. No amount of reading "book rules" will give him what he must get by actual practice. It is a good plan to practice on waste pieces until fairly good results are obtained before this work is attempted on valuable furniture.

RUBBING AND POLISHING.

After the varnishing, if the work is of a high class, it is finished by rubbing and polishing, the rubbing to reduce all the unequal surfaces, and the polishing to bring back the gloss to the varnish. The process may be described about as follows: Test the varnish and be sure that it is perfectly dry. This can be done by pressing it with the thumb nail. If no impression can be made, it is dry enough. A pad for rubbing is then used. This pad can be made by wrapping a small wad of cotton waste in a piece of soft cotton cloth. The professional finisher uses a felt pad, but this is difficult to obtain on short notice and the substitute described may be used. The common practice is to dip the pad into oil or water and then into powdered pumice stone. This can be repeated as often as moisture is necessary to pick up the pumice. The pumice is rubbed with the grain of the wood, but care must be taken not to wear off the corners. The rubbing should be continued until the surface presents a uniform appearance. The finest grade of pumice is the best to use, as it is not so likely to scratch the work.

Polishing is the next step and is omitted if a dull finish is desired. After rubbing, the surface should be cleaned thoroughly at once. It is usually done by sprinkling the work with damp, soft wood sawdust. The sawdust is dampened to keep from scratching and is wiped off with a soft cloth. Now take a mixture of coconut oil and alcohol in equal quantities to dampen a rubbing-pad, and then rub the surface of the wood with a rotary motion until it is polished.

Since varnishing is so little practiced, it may seem that too much time has been given to the subject. This is not the case. In fact, much more could be said if space permitted. Our present system of "French polishing" is slow and laborious and

can be practiced only where time is no object. It is not a system by which a boy can earn a living after he finishes school. Some quicker and easier way is sure to come and it must, of necessity, be varnishing.

FRENCH POLISHING.

This method of finishing consists of gradually filling up the pores of the wood with a solution of alcohol and shellac and bringing the surface to a high polish by means of rubbing.

As in varnishing, too much care cannot be given to a proper preparation of the surface that is to be polished. Every little defect must be removed, and every scratch taken off, or the effect will only be to make them more noticeable. About one-half of the entire process consists of the sandpapering. Several grades of sandpaper are used and when the surface is ready for polishing it is as smooth as glass. Sometimes a filler is used as in varnishing, but the usual way is to start from the raw surface, working in the filler and bringing the surface to a high polish by the same means.

The process approved and in use in most of our shops is as follows: After having smoothed the surface with sandpaper, give it a coat of coconut oil. Now use the finest sandpaper, which has already been worn smooth, and rub the surface until dry.

Make a ball of cotton waste and wrap it in a piece of soft cotton cloth, but be sure that there are no folds or wrinkles in its surface. Wet the ball with alcohol, from the inside, so that the alcohol may soak through. Sprinkle the surface of the wood with powdered pumice stone and rub with a rotary motion until the ball becomes dry. Repeat until the pores are filled. Prepare the shellac as already described under varnishing and put it in a bottle with a tight cork. A small hole may be cut in the cork so that a few drops of shellac can be shaken out at a time. Moisten the inside of the ball with shellac and continue the rubbing until the surface is polished. This will give what is called a natural polish to the wood, as none of the materials used has any color that will affect it.

The foregoing description gives about all that can be said in the way of directions. In simply reading over the rules, it would appear to be very easy to polish wood, but a practical trial will prove that it is quite the reverse. A great deal of patience is required and the proportion of material necessary has been well described as five per cent oil, alcohol, pumice, and shellac, and ninety-five per cent "elbow grease".

There are many objections to this kind of polishing, the principal one of which is the amount of time required. On the

other hand, it is cheap as far as materials are concerned and makes a fine polish. It can be used under circumstances where varnishing is not possible and will be, for many years, the only practicable system we can use in our schools.

WAX FINISHING.

This system is the easiest, and, at the same time, the most practical finish for some classes of work. It offers no difficulty in the repairing of spots that have been marred. One of the best things about wax finish is that it is easily repaired by anybody. Wax finish has many things to recommend it for use on soft wood furniture. It is cheap, easy to apply, and easy to keep in good condition. Even a wax finish, however, can be put on badly and a few ordinary precautions must always be observed.

Prepare the surface to be waxed just as carefully as if it were to be polished. Fill the wood with some good filler, taking the same precautions as in preparing for varnish. When the filler is dry, sandpaper lightly and apply the wax, rubbing until a good polish is obtained.

One of the chief objections to wax finishing is that it requires constant care to keep it in good condition. Nevertheless, the time required to re-polish it is very little. Waxed furniture can be re-polished by the houseboy as often as necessary, with the same wax that is used on the floors. Another objection is that it is always sticky. This is not true, if the right kind of wax is applied in the right way. The prepared wax sold by dealers here, if used in small quantities, will give a high polish that will not feel different from varnish. The sticky kinds of wax are those that are home-made and too thickly applied.

Wax is sometimes applied without first using a filler. This is only on very cheap work and is not recommended even for cheapness, as the outlay of a few cents more for filler will improve the work fifty per cent.

STAINING.

Cheap work is often stained to look like something better, and so a few suggestions along this line will not be out of place. In the local markets there are several kinds of stains which give satisfaction. The directions for their use are usually printed on the container, and it is not necessary to take up the details in the use of any particular stain. A few general rules that apply to all can be given.

Stain should always be applied before the filler. It is the next thing in the finishing work after sandpapering. Apply the

stain carefully, going over the surface thoroughly, but taking care not to double anywhere, as this will produce streaks in the stain. Most of the common stains or wood dyes are mixed with water, benzine, or alcohol, which "raise" the grain. It is necessary to allow plenty of time for drying; then the surface can be gone over with fine sandpaper before the next step.

Most of our stained work is made of lauan or tanguile. This wood, if properly stained, will give a fair imitation of oak or mahogany. The usual object of staining is to make the article match something else in color, or to make the imitation product look like the real one; therefore a stain should always be selected with care and tested on a sample piece of wood before using. If it is not the right shade it can be thinned to make it lighter or mixed with a darker stain to increase its color. It is not safe to expect that any stain will give quite as deep and rich a color as is shown in the catalogue sent out by the manufacturer.

GENERAL SUGGESTIONS.

In conclusion it is suggested that the filler, varnish, stain, or wax, be purchased already prepared whenever possible. The manufacturers of finishing materials have spent years in perfecting their products and it is folly for an amateur workman to attempt to make his own materials of this kind. Even though he secures the best in the market and does as well as he can, he will not attain perfection. What chance has he when he is using doubtful materials?

Another good piece of advice is: "Do not buy cheap material." The saving of a peso in the finish may mean the loss of ten in the sale.

Above all things, do not waste time in trying to polish inferior work. A good polish will make a piece of furniture attractive, but it can not cover bad workmanship.

It is as impossible for a human being to be happy who is habitually idle as it is for a fine chronometer to be normal when not running. The highest happiness is the feeling of well-being which comes to one who is actively employed doing what he was made to do, carrying out the great life-purpose patterned in his individual bent. The practical fulfilling of the life-purpose is to man what the actual running and keeping time are to the watch. Without action both are meaningless.—ORISON SWETT MARDEN.