

Furniture and Cabinet Making

POINTS ABOUT GLUE.

One of the things that seem to puzzle not only the smaller fry among glue-users, but many of the larger ones, and the older heads in the business as well as the younger ones, is glue absorption; that is, the absorption of the glue by the wood on which it is spread. There is another matter about absorption in connection with glue which is based on the power of glue to absorb water. Probably this bears some relation to the other matter of the amount of glue that may be absorbed by the wood. Any given wood will absorb glue in proportion to what we term its (the glue's) thinness, all other things being equal. What we might term in common language the thinness of glue, however, is not the only thing that plays a part in the quantity of glue that may be absorbed or taken into the body of the wood on which it is being used. There are different textures of wood which take in different quantities, and the temperatures of the wood at the time of gluing, as well as the glue itself, have a lot to do with it.

The first thing that it seems necessary to get straight on, is to what extent the wood should absorb the glue. Evidently it must absorb a little, otherwise there is no chance for the glue to exercise its holding qualities and cement the two pieces of wood together. It would be interesting if we could have an illustrated explanation of just how glue exercises its holding power. It would give considerable light on the subject of whether or not it is necessary to have it penetrate into the body of the wood in making a glue joint. In some of the cements used in the building trade the method of cementation has been explained and illustrated. It consists largely in particles of the cement expanding, or rather sending out arms or branches in different directions under the influence of water, and these interlocking with each other and around the grains of sand, either individually or on the stone face, form the holding qualities. To get strength and likewise density it is desirable to have the particles so distributed that there will be room for all of them to send forth as many of these tentacles or branches as they may be inclined to, and at the same time to have them fill up as nearly as possible all the different voids incident to the joining. After one has seen the idea illustrated by magnified drawings and pictures it is easy to understand where and how such articles as cement and lime get their holding or cementing qualities, or rather how they exercise them. Does glue exercise its holding qualities in the same manner, and, if so, how far should glue penetrate to encompass sufficient fibers of the adjoining wood to make the best glue joint? These are questions that it is hard to answer, but it is very likely they depend somewhat on the nature of the wood and the comparative fineness and coarseness of its fibers and general structure. Reasoning from this hypothesis, we might well argue that in the finer and closer grained woods there is no need for so much penetration to get the holding power wanted, or for the glue to get the proper grip on the face of the wood. To a certain extent, therefore, the matter naturally adjusts itself, because the closer the grain of the wood the less tendency there will be to penetrate by glue of the same consistency, and the more it will be inclined to penetrate the more open or coarser-grained woods.

In the foregoing we might argue that glue should be of the same consistency for the finer-grained woods as for the

coarse, and in a general way the argument might hold good, too. There is another thing to be kept in mind, though, and that is the more glue that is absorbed into the face of the wood, the more must be put on to get the same result. Therefore, while glue of the same consistency might be used, it will be necessary to spread it more thickly on the coarser-grained wood. This is a pretty good point to make a note of and keep in mind. Also, it should be followed up by a study of different woods by way of experiment, because quite frequently woods of what might be termed practically the same class as to coarseness of fiber, may be so differently bonded together within themselves that some of them will absorb glue much more readily than it will white oak. This has been demonstrated of somewhat the same structure as oak, and it will absorb glue much more freely. Also, glue will penetrate red oak more rapidly than it will white oak. This has been demonstrated thoroughly in efforts to use red oak for barrels, which are required to be sized or have the pores of the wood filled with glue. The process resorted to in sizing or filling the pores of an oak barrel with glue is to pour a gallon or two of hot glue inside the new barrel, then put the bung in and roll the barrel around well, so that the glue comes in contact with the entire inside surface. While this is going on the heat in the barrel, from the glue, generates steam and other gases and creates pressure, and this pressure serves to force the glue into the pores of the wood thoroughly. When red oak is used, the glue is forced right out through the pores instead of just embedding itself in the wood and filling up and closing all the pores, and for this reason they can't use it for certain classes of tight-barrel work. All this is entirely aside from the use of glue in veneer work, except in that it demonstrates the difference between white oak and red oak as to the power of absorbing the glue. It would seem to follow naturally then, that for gluing red oak one should either use more glue or have it a little thicker than that used for white oak, to get equal penetration and satisfactory results.

Some authorities maintain, in connection with absorption of glue by wood, that there is quite a wide variation in the quantity of glue that any given wood will absorb at different temperatures. Glue, it is hardly necessary to state, is always used warm—that is, practically all glues made use of in veneer work. There are some special glues—some liquid glues and things of that kind—that are spread cold, but the glue under discussion here is always used warm. Its flowing qualities are partly due to the heat, and therefore anything that tends to cool it off reduces its flowing qualities and checks its penetration into the wood; so that, when using wood that is cold, the glue will be chilled and stop penetrating the wood much sooner than if the wood to be glued has been heated until it has something near the temperature of the glue. Quite frequently additional penetration is induced by the use of hot cauls, which, even after the glue is chilled somewhat from contact with the wood, warm the whole mass up and start the glue to flowing again. This helps out where there is too much glue left in the joint and not enough penetration into the wood. If, however, the glue has already penetrated the wood enough, and there is no surplus glue in the joint, to induce further penetration by the use of heat or hot cauls is likely to deduct from the strength of the joint. This should be kept in mind by people who do jobs of fancy veneering and sometimes go over them with hot cauls afterwards for