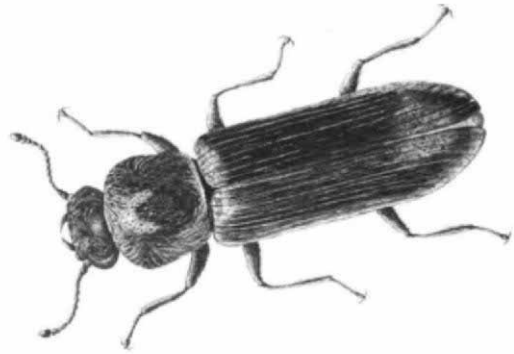
Powderpost Beetles

Controlling the bugs that dine on your wood



by Tom Parker

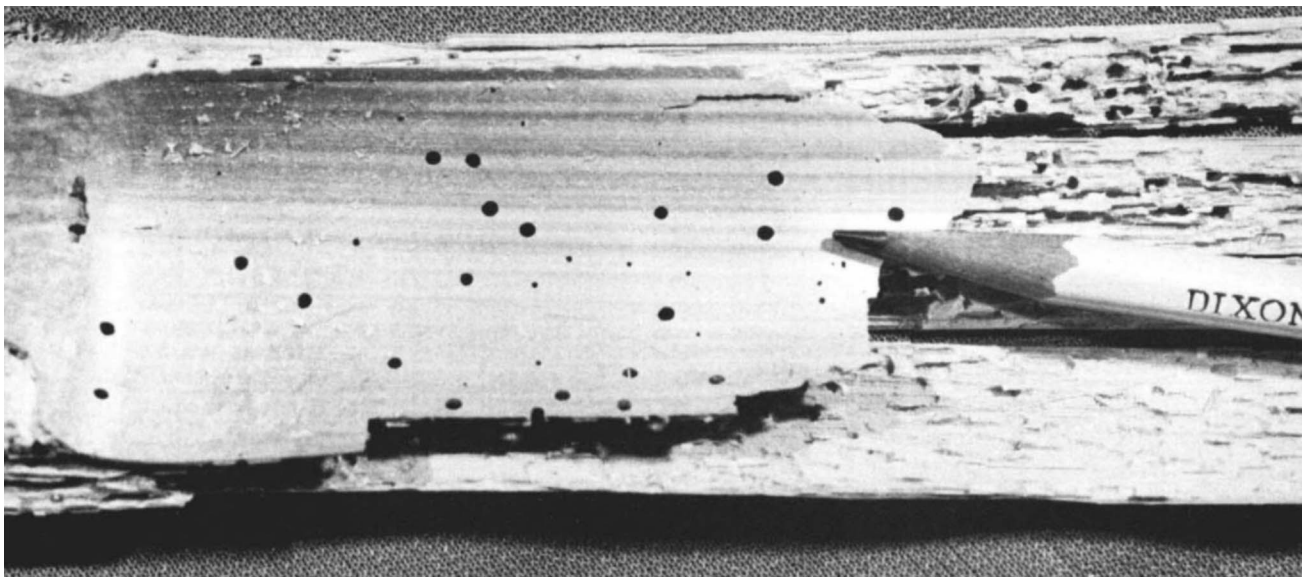
For practically every kind of wood that we have come to use, there is an insect that likes to make a meal of it. Termites are undeniably the most destructive wood-eating bugs, but powderpost beetles run a close second. Once established, powderpost beetles can do enormous damage despite their small size. They display a tenacious talent for survival—one species can even gnaw its way through lead-sheathed telephone cables to get at the paper insulation inside. It's worth the small amount of time and effort to inspect your lumber piles and structures for powderpost. If you catch an infestation early on, it can be eliminated before the beetles riddle your wood to the point of collapse.

Though there are dozens of species of wood-boring insects, American woodworkers are likely to encounter only two types of powderpost: anobiids and lyctids. A third family, bostrichids, is rarely seen. All are less than ¼ in. long, the anobiids being slightly larger than the lyctids. Anobiids are found in both hard and softwoods, but they do not infest living trees. The beetle life cycle runs about a year. The adult lays its eggs in checks or cracks in lumber having a moisture content between 8% and 30%. Each egg hatches into a larva which eats its way through the wood, forming circuitous galleries. As the cycle nears its end, the larva pupates into an adult beetle and emerges from the wood leaving a tell-tale round exit or flight hole. The lyctid life cycle is similar, but it infests only large-pored hardwoods, laying its eggs inside the open pores. Emerging adults may lay up to 50 eggs in the same board or they may fly off to a new source of food nearby.

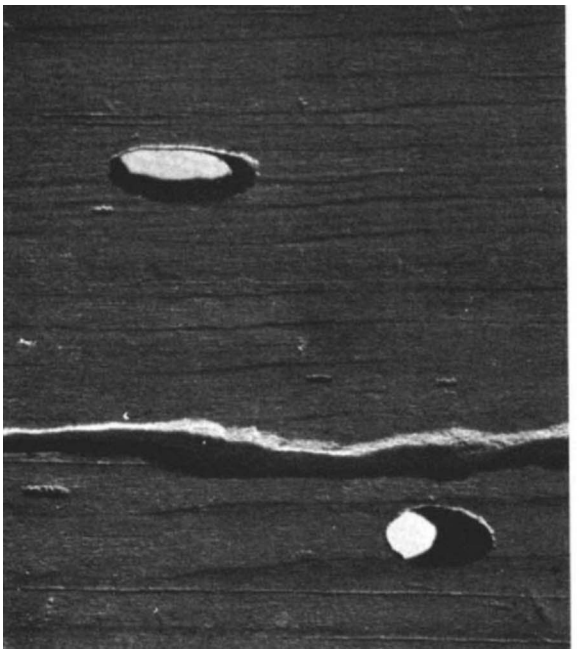
I've seen insect infestations in all parts of the country in a wide range of woods. Powerpost are particularly fond of freshly cut and stacked lumber, but they'll gladly eat wood in old furniture, particularly if the piece doesn't have a hard surface finish like shellac or lacquer. Ash, oak, elm, walnut, cherry, poplar and a host of softwoods are susceptible to powderpost attack. The beetles eat only the sapwood, feasting on the starch stored in the parenchyma cells. They may occasionally wander into heartwood, but the lack of nutrients and the extractives in heartwood make it unattractive.

Wood suspected of infestation should be inspected closely. On horizontal surfaces, small, crater-shaped piles of powdery sawdust surrounding small round holes strongly indicate active powderpost beetles. Vertical surfaces may show drift lines where the powder has fallen away from the hole and collected on the nearest horizontal surface. Anobiids bore an exit hole 1/16 in. to ⅛ in. in diameter; lyctids leave a hole 1/16 in. or smaller. A better way to identify the beetle is to rub a bit of the powder or "frass" between your fingers. If it feels distinctly granular, anobiids are responsible. Lyctid frass is as fine as talcum powder and virtually disintegrates at the touch.

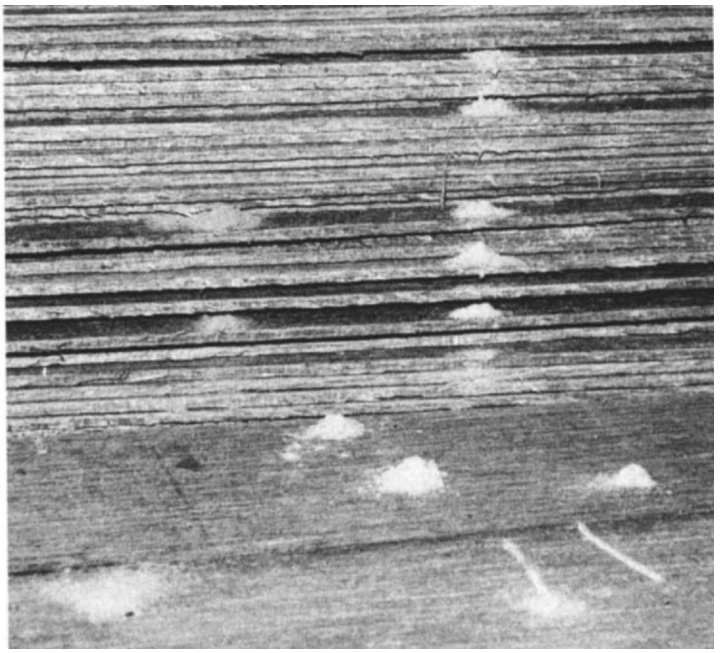
Holes in the wood but no signs of frass may indicate an infestation or damage done by some other type of insect before the tree was cut. Inspect the exit holes closely. If they appear dark or weathered or if holes in old furniture have drops of finishing materials in them, the infestation is probably over. Bore-holes that pass entirely through the wood are likely to have occurred before the wood was sawn, since no sensible wood-eating insect chews its way in one side and out the other. Similarly, wood surfaces that show exposed grooves or galleries were probably sawn after the infestation, and the insects have long since gone. The best way to handle the pow-



Pencil shows lyctid powderpost damage and exit holes in bamboo. Galleries at right have made the piece extremely fragile.



This infestation, caused by a boring beetle, is over. Holes that pass entirely through a board, or exposed galleries (across center of photo), indicate the wood was sawn after infestation.



Frass piles around this lumber are a sure sign of powderpost infestation. The powdery nature of the frass indicates that lyctids are at work. Beetles can completely destroy the wood if left unchecked.

derpost problem is, of course, to avoid it in the first place. Look for beetle frass and exit holes in any lumber you are buying while it's still in the stack. If you are air-drying lumber outside, store it up off the ground and cover it with plastic or canvas once it no longer needs exposure for drying. In new home construction, particularly where wooden structure is exposed above a dirt crawl space, I always tell contractors to install a layer of heavy plastic on the ground under the beams to keep the wood from absorbing ground moisture. Vents in crawl spaces and foundations will keep moisture below levels attractive to powderpost beetles. During construction, don't throw wood cutoffs and waste into the crawl space and don't bury it near the house either since that invites other kinds of wood-eating insects. If you're putting in new vents and sealing off the soil beneath an existing crawl space with polyethylene sheeting, do only half of it at a time, or the wood will dry out too quickly.

You can rid infested wood or furniture of beetles in several ways. Rough lumber can be kilned so that all parts of the wood are heated to 150° for three hours. That should kill powderpost beetles at all stages of their development. Interestingly, high kiln temperatures may make the wood more attractive to powderpost infestation later on. Above 113°, parenchyma cells are killed quickly and their starch content is fixed. Kilning below 113° depletes the starch and lessens the food available to the insects. Even this wood, however, may retain enough starch to support an infestation.

If you cut away badly riddled portions of once-infested sapwood, you can use the rest of the wood. Be sure to burn the sapwood cutoffs. A coat or two of a hard surface finish such as varnish or lacquer should prevent any remaining adult beetles from laying their eggs.

I've found one of the easiest and most effective weapons against powderpost beetles is the pesticide lindane. Following the instructions furnished with the product, mix a 1% emulsion of lindane, and spray or paint it on infested wood or on lumber that you want to protect. The emulsion will crystallize in the wood and kill the beetles as they emerge to lay eggs. It will also kill newly hatched larvae as they tunnel into the wood. Lindane can be used on in-place structural timbers, log cabins, barns, wagons and other outdoor objects. On old furniture, it might be wise to apply the emulsion on an unseen part of the furniture to see if it stains or discolors the finish. After it has dried lindane is considered safe for use around children and pets, but I wouldn't put it on lumber that will eventually come into contact with food.

When massive infestations in old houses or furniture can't be treated with lindane, there is an expensive last resort. Fumigation with highly toxic gases such as methyl bromide or Vikane is a sure-fire way to end powderpost problems. To fumigate a building, the entire structure is covered with a huge tarp and carefully sealed. The gas is pumped in under controlled conditions, and special monitors and fans ensure a uniformly deadly mixture. After 24 hours the building is thoroughly ventilated, and sensitive instruments sample the air for safety. Furniture and lumber can be similarly treated in air-tight chambers or temporary tents. But I suggest turning to fumigation only after all else has failed. The gases are extremely dangerous and are so penetrating that they can seep through a concrete-block wall in minutes. These gases are sold only to licensed users, so you must hire a professional to do the actual fumigation. The bill is likely to be large—I recently fumigated a museum in Pennsylvania, for example, and the job cost $15,000 and took a week. That particular building had other kinds of insect infestations, and fumigation was the only choice. Woodworkers who inspect their lumber carefully and use common-sense storage techniques will invite the powderpost beetle to have his next meal elsewhere. □

Tom Parker is an entomologist who specializes in the control of insects that infest museums, historic houses and libraries. He conducts seminars throughout the country.