Insects Injurious to Timber

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The weakening and destruction of timber by insects is often a serious problem in construction work. The tree standing in the forest, the sawlog, the board, the crude and finished product are all subject to insect attack which may lead to further deterioration or itself be directly destructive.

This subject has received comparatively little study, though it is frequently of more than minor importance. The nature of the wood, its condition, use, location and the habits of the insects concerned are all factors in the occurrence of insect damage to woodwork.

It is intended in the present article to give a general, non-technical account of the more common forms of insect damage to timbers, a short discussion of the conditions under which the damage occurse and some suggestions concerning the prevention or control of the injury.

Timbers are frequently seen well sprinkled with what are generally called “pinholes,” presenting the appearance of holes caused by a charge of very small shot. A deterioration accompanying the occurrence of pinholes is often seen in the staining of the infested wood. The holes are caused by timber beetles, small, cylindrical, brown to black insects from one-tenth to one-fifth of an inch long, and about one-sixteenth of an inch or less in diameter, the holes being a little larger than the diameter of the insect itself. Large species occur in the warmer countries.

The adult beetle bores a gallery for itself and young, into the sapwood of unseasoned lumber, frequently extending the gallery into the heartwood. The insects feed for the most part upon a fungus that grows in the gallery walls. The original attack may have occurred in the woods shortly after the tree was felled or girdled. As the young transform from small, white worms to full-grown beetles, they emerge and begin their attacks anew by starting other galleries in the same or nearby pieces of wood.

“Pinholes” are occasionally seen that vary considerably in size in the same piece of wood. Such defects are caused by
long and slender timber worms. The adults of these worms, likewise beetles, fly around during the summer and lay their eggs inside the bark of logs or just beneath the surface of barked or square timber.

Perhaps the most commonly noticed form of insect injury to timbers is caused by borers, white grubs of various sizes that in the adult stage are known as long-horned, wood-boring beetles, and, if the grubs are flat headed, as the metallic wood boring beetles. The injuries are in the form of quite noticeable round or somewhat flattened worm holes varying in size in the same piece of wood. The timbers attacked are materially weakened by these borers. Logs and rough timber of all kinds may become infested.

In the forms of injury already mentioned the original attack takes places usually, though not always, during the summer. This is particularly true if the trees had been felled the preceding fall or winter and the bark not removed.

When the logs are placed in water a sufficient length of time before floating to the mill, the insects beginning the attack in the woods are killed and as long as the logs being floated remain thoroughly wet, it is not likely that further infestation by insects will take place. If logs are transported by rail or any method other than floating, the attack will, most likely, continue.

The control, then, of the insect injuries of the kind we have briefly discussed goes back to the forest, to the felling of the tree. Where practical, felled trees should be worked into lumber as soon as possible, making efforts, especially, to avoid leaving the logs on the ground in the woods during the summer. If the logs are not to be used within a reasonably short time, they should be arranged in loose piles in the sun and kept off the ground or kept in water during the same period. In other words, the timber should be either dry or wet, not moist. Where practical and not conducive to excessive checking, the bark should be removed immediately upon felling the tree or as soon as possible thereafter.

In the foregoing cases the primary attack was on the unseasoned timber. Seasoned woods of all kinds is subject to attack by what are known as powder post borers. Their presence in the wood is often announced by piles of sawdust-like borings at the base of or underneath
the infested parts. In fact, the borers are named from their habit of reducing wooden parts of buildings and furniture to a powder. The galleries are usually plentiful in the same piece of wood and are most frequently packed with borings. These beetles prefer to start their galleries in sapwood. Hence wood used in building construction should be free from sapwood in order to offer most resistance to the powder post beetles. If this is not expedient then the sapwood should be treated with kerosene, coal tar or creosote. In order to prevent the spreading of the attack from infested to non-infested wood, the infested portion, or the whole piece if more convenient, should be removed and burned. If this cannot be done practically then treat the infested parts with a heavy application of kerosene. When wood previously infested is used, painting will not stop the progress of the attack, though it will prevent attacks unless the cracking of the wood or paint exposes some unpainted part.

Among the most interesting destroyers of timber are the white ants, more properly known as termites. These insects are not true ants nor are they exactly white. They live in colonies somewhat as ants do, and it is on this account that they are called ants. They are small, long, white to brown, soft bodied insects occurring more abundantly as one approaches the tropics.

There are many features of extreme interest in the life of these insects. The species found in the tropics are to a great extent mound builders, some of the African mounds reaching a height of twenty feet. The destruction of wooden buildings and furniture is nothing short of sensational. They work entirely within the wood and continue their work, leaving no indication whatever on the outer surface, until the structure collapses. Wooden parts of buildings and articles of furniture, apparently perfectly sound, have been found to consist of nothing but the outer shell due to the habits of these insects.

The species found as far north as Oregon are by no means as destructive as those found further south. In certain tropical countries it is out of the question to use wooden telegraph poles, railroad ties or wooden sills or underpinning for buildings. A common American species of white ant was introduced into Europe many years ago and became so serious that it destroyed the Imperial Greenhouses at Schonbron in Austria.
Another species found in Southern Europe is also found in Texas, Kansas, Colorado, Southern California and most likely occurs in other parts of the West. The common American species attacks the wooden parts of old buildings and under- mines the supports and other parts of the structure. They prefer to work in damp wood and carry on their excavations usually with the grain so that when a collapse does take place it is usually sudden and violent.

In the late spring the flight of winged males and females takes place. When the insects settle down, the wings break off and under favorable circumstances new colonies are begun. With the exception of these flights, which are very noticeable, there may be no indication of the destruction being done to wooden structures in the vicinity.

It is difficult to suggest methods of control for this pest. Almost every case will necessitate some modification of any plan of treatment recommended. If the nests can be located and are found to occur outside the house or in the earthen floor of the basement, they should be dug out as far as practi- cal and the soil saturated with a solution of arsenic. In con- structing a house in a region where white ant attacks to timber in buildings are common, provision should be made for getting below the floors to combat any invasion likely to take place. Good ventilation and drainage should be provided for under- neath the building, so that the soil may be kept as dry as pos- sible. In many cases the tunnels of the insects can be fumi- gated with carbon bisulphide and in some cases the fumes can be forced into the colony nests. This material is very poisonous to all forms of animal life. As it is highly inflammable and explosive, care should be taken that no fire of any kind is per- mitted within range of the fumes. This applies particularly to oil lamps and tobacco smokers. The carbon bisulphide can be poured into the gallery directly from the container.

Timbers well creosoted are practically immune from at- tacks of white ants, or, for that matter, any wood infesting in- sects. In South Africa partly eaten timbers, such as skirting, boards, flooring, etc., have been successfully treated with a solution of arsenic in some mineral oil. Paraffine, kerosene, benzine, carbolic acid, corrosive sublimate, and zinc chloride,
have also been recommended for the preservation of wood against white ants.

It may be mentioned here that when the true black ants are noticed in a building, they have usually entered through injury caused by other insects or other agencies. They are rarely directly injurious themselves to the timber and may be considered as of secondary importance as far as the attack on woodwork is concerned.

Telegraph and telephone poles are often attacked near the surface of the ground by borers. The borers will attack sound poles but prefer wood that is beginning to decay. Wet wood is not subject to such attack. At the surface of the soil or a short distance above or below the surface, holes will be seen in the infested poles from which the adult beetles have emerged. The dead beetles may occasionally be found in the soil next to the pole. Painting the base of the pole up to several feet above the ground with a preservative is fairly effective. The best treatment, however, is thorough creosoting.

Mine timbers are subject to attacks by insects. The attacks may take place before and after placement in the mine and are caused by borers, timber worms, timber beetles, or white ants. The primary injury caused by the insects is often followed up by further deterioration due to the entrance of fungi.

Logs intended for placement in mines should be felled in the fall or winter, barked as soon as possible after felling, and piled loosely off the ground so that they will dry rapidly, care being taken that the timber does not dry too rapidly. Such timber should be inspected frequently and the badly infested wood should not be used. If logs are to be preserved, particular care should be taken that the ends are well treated, otherwise a ready avenue of entrance by white ants is afforded.

A general article of this nature should perhaps include a mention of the injury done to piling by marine borers. These borers are not insects. Two groups are molluscs and three are crustaceans. The injury caused by “shipworms” has been known for a long time. Soft and hard woods are attacked and practically all the attacks take place in salt water.

The region of attack on piling is from mean tide-water mark to above five feet below low water. These marine borers are very destructive, and, like white ants, give no evidence on
the surface of the wood of the destruction that is going on within the wood. The entrance holes of marine borers are very small and become filled with dirt, leaving no external sign of the infestation. The only method of finding the exact condition of probably infested piling is by chopping into the wood.

Though the marine borers are quite destructive along the North Pacific coast, still they are not present at the mouth of the Columbia River, due to the amount of fresh water present. An idea of the destructiveness of these borers may be had when it is known that the life of a pine pile in Puget Sound is generally considered to be one year. Other wood piles will be destroyed in one to three years.

The control of these pests, while on the one hand quite expensive, is, on the other, an absolute necessity, and ultimately economical. Piles should be straight, strong and not split when driven. Thorough creosoting of the piling is at present the best treatment. An application to the outside of the wood alone is not always effective. Adulterants in the preservative may evaporate or leach out. Marine borers in the bottoms of wooden bessels or any movable wood can be killed by floating into fresh water. However, there is still an opportunity for the discovery of a cheaper and effective method of protecting piling in salt water from marine borers.