Worms Undermine Buildings in Milwaukee Downtown Area

Millions of Dollars' Damage Done by Wharf Borer and the Tiny Micromalthus; Insects Ate Wood Piles Under Foundations of Five Structures, but Repairs Made Them Sound

By LLOYD D. GLADFELTER
Of The Journal Staff

TWO families of little worms with big appetites for wooden foundation pilings have caused millions of dollars in damages to downtown office and other buildings in recent years. Unless they are stopped, they will chew their way through the tough piling under other buildings—and the owners will have to pick up the check for millions more.

The story of the little worms, the wharf borer (nacerdes melanura) and micromalthus debilis, a rank newcomer, was told by Robert C. Johnson, president of the Siesel Construction Co., and member of the new county expressway commission. Johnson discovered the worms hard at work in pilings under several downtown buildings as long as two years ago.

Up to then neither had been suspected of having a hand in the serious weakening of the foundation supports of buildings here.

Replaced 2,800 Pilings

The damages were extensive. Johnson explained that his firm alone had cut off and replaced 2,800 untreated timber pilings under five downtown buildings. The work was done without fanfare so as not to disturb day to day business in the threatened buildings.

Downtown building owners were alarmed over the depredations of the hungry little wood borers. Many of them called Johnson to investigate underground conditions of their buildings. The timber piles under most were found to be sound. Others with concrete piles were never in danger of attack.

Johnson identified only one of the five structures that had been attacked by the borers—the Majestic building at 231 W. Wisconsin av. He refused to name others, but the city building inspector's office disclosed that permits had been taken out in recent years to repair piles under the Madison building, 623 N. 2nd st., the Woolworth building, 301 W. Wisconsin av., and the Boston Store. The fifth was not identified.

– Photo by A. T. Drooz, Federal Entomologist

The hungry wharf borer larva, enlarged.

All have been repaired and are now in sound condition.

At first the piling damages were laid to the dry rot fungus. But this theory was exploded when Johnson's crews found colonies of borer larvae in the pilings under one building. Experts at first identified the species as the round headed borer, a destructive fellow widely known in this area.

Have Appetites for Moist Wood

Suspicious when the identification did not fit the larva specimens which he had taken, Johnson sent samples to the Milwaukee office of the federal bureau of entomology and plant quarantine. H. J. MacAloney, chief of the division of forest insect investigations of the lakes states forest experiment station, and A. T. Drooz, an entomologist of the same division, exonerated the round headed borer. They agreed that the wharf borer was the villain. Other federal scientists in Washington, D. C., confirmed their findings.

Later Johnson found the rare micromalthus in piling under another building. Micromalthus never before had been found in this region, but it was known to have caused damage to buildings and railroad ties and mine props in South Africa.

Micromalthus is believed to have had its origin in this country. Entomologists believe that it migrated to Africa in American lumber. How it ever reached Milwaukee is a mystery.

The micromalthus, or "pipsqueek" as Johnson calls it, in larval (worm) stage is about as thick as a small pin and about one-fourth inch long. The wharf borer larva, is about an inch long and not so slender. The wharf borer, in June of each year, develops into a winged beetle about half an inch long.

Each year it is responsible for heavy damage to harbor piers and docks along the Atlantic and Pacific coasts and in Europe. So far it has not intested Milwaukee port installations, however.

Not much is known about the micromalthus, except that it usually follows the egg, to larva, to beetle stage. It has one peculiar difference; it can reproduce its kind either in the worm stage or by the usual process of laying eggs.

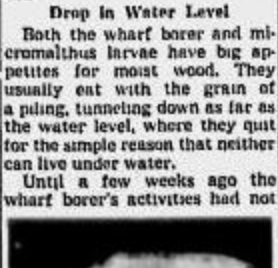
Drop in Water Level

Both the wharf borer and micromalthus larvae have big appetites for moist wood. They usually eat with the grain of a piling, tunneling down as far as the water level, where they quit for the simple reason that neither can live under water.

Until a few weeks ago the wharf borer's activities had not been detected outside the downtown section west of the Milwaukee river. But Johnson has discovered it in pilings under a building outside the downtown area, which he would not identify. He explained that the downtown infestation has been in an area where the underground water table has fallen as much as 18 feet in recent years. The water table there dropped in spite of the fact that the lake and river levels have been higher than normal.

As the water recedes, it leaves the moist pilings prey to the worms.

What has caused the water level underground to drop so far in only one small section of the central city has puzzled city officials and construction engineers. They know that the lowered water table has produced ideal moist condition for the destructive larvae to attack pilings.



– A. T. Drooz

The wharf borer, in its beetle stage, enlarged.

Committee Studies Problem

To find the answer, Mayor Zeidler last fall appointed a special committee, headed by Johnson. Other members are Henry Jacobson, chief engineer of the Jos. Schlitz Brewing Co., Walter M. Swietlik, commissioner of public works; City Engineer Lloyd D. Knapp and Building Inspector Leon M. Gurda. The common

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Rumania, H to Russ Gri

By JAY G. HAYDEN
North American Newspaper Alliance

WASHINGTON, D. C. – The key to Russia's insistence to keep its troops in Austria, even after the west had acceded to all previous Soviet terms for an Austrian peace treaty, lies in Rumania and Hungary. This was made crystal clear at the Big Four foreign ministers' conference in Berlin.

Incident to making peace with Rumania and Hungary in 1947, Russia slipped in a clause declaring that the Soviet Union could continue in those countries "such armed forces as it may need for maintenance of the lines of communication of the Soviet army with the Soviet zone of occupation in Austria."

For seven years that stipulation has provided the only excuse for Russian armed occupation of Hungary and Rumania, without which those countries in all probability would prove as rebellious as neighboring Yugoslavia, the

Water Level Is Linked to Damage to Buildings

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council provided $6,000 to make the investigation.

"We have made test borings in the area to find the point where the ground water is at the lowest level," Johnson explained. "It is probable that at that point we will find the cause of the falling water table."

It may be due to a broken well casing which allows the water to drain away to a deep subterranean stream, or it may be caused by a break (fault) in a layer of clay that underlies the city. Many wells have been sunk hundreds of feet into the earth in the downtown area to obtain cold water for air conditioning.

Accidents Save Some Buildings

Ironically, some buildings have been saved from damage by the accidental breaking of their underground drain pipes. This was caused when the earth shrunk away from the basement floor after the water level fell. With nothing to support them the drains broke and the rain water from roofs and the scrub water from cleaning basements poured into the ground instead of being carried away in sewers.

"The drain water kept the earth under the buildings so wet that the larvae were not able to live there," Johnson said.

In neighboring buildings, however, the same fortunate accident had not occurred. Sturdier drain pipes remained intact and the ground beneath the buildings dried to an ideal moist condition. The wharf borer and the micromalthus beetles marched in, settled down, laid their eggs and hatched the hungry worms that have done all the damage.

Piling Is Rebuilt

In the case of the 14 story Majestic building, some piles that were within inches of destroyed piles remained intact. This was fortunate, because their powerful shoulders were able to hold up the structure while repairs were made.

Johnson said that the little worms attacked one pile or a few of them at a time. While they feasted, the other piles dried out to the point where they had no gastronomic attraction any more.

More than 200 of the 900 piles under the Majestic building were seriously damaged or destroyed by the wharf borer larvae. In a dramatic engineering feat, the Siesel Construction Co. crews sank shafts and dug tunnels far beneath the building's basement floor. They cleared away the drying earth from around all of the pile clusters, sawed off the rotted or damaged ones at the water line and built up, with steel and quick drying concrete, new and stronger piles.

A similar technique was used under the Madison building. There the first sign of trouble was cabinet drawers sliding out from a closed position without any apparent reason. That meant that the building was leaning, and, in turn, that something was wrong with the foundation pilings. The north wall is said to overhang its base by 22 inches. This has not impaired the structural soundness of the building, however.

Might Be Others

MacAloney said that in addition to the buildings already noted, there might be others that have been attacked by the two borers, but that because they "work in complete secrecy underground, we have no way of knowing."

The surest way of preventing future attacks, Johnson said, is to restore the underground water table, thus making the earth and the piles so wet that the borers can find no friendly habitat in which to live.

Engineers have found a way to defeat the armies of little worms until the time Johnson and his special committee find out what caused the water table to drop—and restore it. They flood the ground beneath the buildings to the saturation point, automatically controlling the water flow by float shut-off valves.

—AP

Pat McMahon of Pontiac, Mich., is a Vinoba follower.

tured the imagination of India's destitute millions.

Now, at the age of 59, he has come here to the historic Gaya district of Bihar state, where Buddha had his revelation under the sacred bodh tree 1,400 years ago.

Reds Impressed, He Says

"I shall stay here, he told me in an interview, "until a complete, nonviolent revolution in land ownership has been achieved. I want to set fire to the tottering houses of landlords and capitalists by their own hands.

"Even the Indian Communists are greatly impressed by this movement. There is no disputing the fact that there is acute poverty in India and we need to eradicate it. Now, if a thirsty man can get good, clean water, will he touch dirty water?"

In his long campaign across troubled India, Bhave and his party rise at 4:30 a.m. sharp. He drinks a cup of milk, says morning prayers and begins a hike that may take him 15 miles that day. Admirers from all parts of India and abroad frequently join his contingent of about 20 close followers.

They plod along in the pre-

—Journal staff

What happens when the wharf borer worm chews away at the piling under building foundations is shown in this picture taken at an unidentified building in Milwaukee.