

**AN UNUSUAL RECORD OF THE WHARF BORER, *NACERDA MELANURA*,
IN BURIED PILING AT VANCOUVER, BRITISH COLUMBIA.
(Coleoptera: Oedemeridae)**

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In October, 1945, three beetle grubs were brought to me with the enquiry as to whether or not they were teredos and would prove of potential damage to new piling. They were found in old piling at the British Columbia Sugar Refinery at the edge of tidewater and were uncovered during excavations for a new powerhouse. It was reported that they had been taken from piling that had been covered for thirty years. They turned out to be the larvae of *Nacerda melanura* (Linn.) the wharf borer.

Finding it hard to believe the details that accompanied them, I hastened down to the refinery and interviewed the engineer in charge of construction, who kindly showed me the situation. Between us, we dug out a number of larvae from thoroughly soggy piling in which the centre only was of firm though very wet wood. Tunnels were all through both rotten and firm wood: no pupae were found. To my astonishment, I found that the report sent up to me was true and was only part of the story. The beetle grubs occurred in piling that had been driven thirty years ago into an area of the sea that had been filled in five years previously with furnace ashes and earth; more ashes had been dumped around and on top of the piles and on this foundation, concrete had been poured for a depth of from one to three feet to provide the floor for the erecting and sand-blast shops. The heavy buildings had been torn down less than two weeks before my visit, the concrete floor dynamited out and the area was being excavated for a boiler room. The whole area had been reclaimed, reinforced, solidified and built over so long ago, that no one visiting it for the first time, as I did, would have guessed that it was not original solid ground.

The stub of piling from which I dug most grubs had been covered by a depth of

fill, of four feet by actual measurement, not counting concrete. The piles in the area were from four to six feet apart and in no instance did the top of one of them protrude above the ashes and all of them contained grubs and were thoroughly riddled, and all had been covered with ashes and with concrete.

How did the grubs get into those piles and how long had they been there?

In the January 1937 number of Volume 69, *The Canadian Entomologist*, R. E. Balch of Fredericton, New Brunswick, published a detailed summary of literature concerning *N. melanura*, and a careful account of his finding it in the wharf of the Atlantic Sugar Refinery at Saint John, N.B. He mentions that the beetle was recorded from Nanaimo, B.C., in 1928 and from Vancouver, no date, so it not new to this coast. His larvae when full grown were 30 mm. long whereas those I obtained were from 13 mm. to 26 mm. long and were therefore apparently not full grown. He says that the beetle is about 10 mm. long and flies during July and August; it is attracted to situations at tide level and its grubs live in damp wood.

It appears that one of two theories might account for this remarkable and extensive infestation at the British Columbia Sugar Refinery: ONE, that it started in piles soon after they were driven and that the beetles are capable of developing, mating and reproducing in tunnels, year after year, without having to come to the surface; or TWO, that the larvae either undergo a lengthy diapause or, in damp wood that is shut off from the surface, are extremely slow in developing. This second theory has some support in Balch's article wherein he quotes Laing (1936) writing in the "Entomologist's Monthly" who records an instance of living larvae being

found in wood which had been entirely surrounded by concrete, for seven years. Now Balch found that full grown larvae are 30 mm. long and I found one, obviously only partly grown, that was only 13 mm. long. If damp conditions in an enclosed space induce protracted development of these larvae, how long could they re-

main under these conditions, without becoming beetles? Surely this constitutes a record in any beetle larvae, of delayed development, and provides material for long term experiments in physiology and metamorphosis to determine the factors that enable larvae to survive under these conditions.

THE 1945 STATUS OF *DIGONOCOAETA SETIPENNIS*, TACHINID PARASITE OF THE EUROPEAN EARWIG *FORFICULA AURICULARIA* LINN. IN WEST POINT GREY, VANCOUVER, B.C.

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For at least fifteen years I have collected earwigs every autumn around West Point Grey for student instruction and have maintained them alive in cages, taking them out as required. Up to 1943, there was no indication in this caged material of parasitism by *Digonochaeta setipennis* Fall., the tachinid fly that was introduced from Europe about fifteen years ago, to control this pest. However, in 1943, when making the usual autumn collection by placing sacking and rolled-up newspapers in the crotches of trees in the garden, one fly puparium was obtained, so in 1944 the catch was closely watched and four puparia were obtained. In early October, 1945, the usual catch of two nights' collecting was placed in a pint jar with leaves, dried grass and crumpled paper for the earwigs to hide in and in the process of collecting, sixteen fly puparia were obtained from the sacking and were placed with the earwigs in the jar.

In the next few weeks some 30 earwigs were used for class purposes and the rest, numbering 58, were stored in the jar in an unheated laboratory.

During the winter the earwigs died off at intervals, but a few were still alive by the end of January. Shortly afterwards all were dead and when the mass was counted on 16th February, 57 puparia were obtained; deducting the 16 obtained at time of collecting, 41 maggots had emerged

during the winter from 58 earwigs, giving a parasitism of 70.7 per cent.

Unfortunately, the earwig collections of 1943 and 1944 were not counted, so the percentages are not available for those years. However, the sudden leap in infestation in 1945 was most conspicuous since, apart from those stored for observation, *setipennis* puparia occurred freely all over the garden wherever earwigs were sheltering, in bits of dahlia and lupin stalks, between boards and under trash where none had occurred in previous years.

The history of parasite release in Vancouver since 1936 was sent to me by W. Downes who was in charge of this work and I am greatly indebted to him for the following figures:

In May 1936, five thousand and nineteen *setipennis* puparia were placed out in five sub-equal lots in north and south Kitsilano. In July of the same year, 16,000 parasitized earwigs were released in thirteen locations all the way from Stanley Park, the West End and Kitsilano, to Central Park; of these, 1,000 were released at 8th Avenue and Tolmie, 1,000 at 10th Avenue near Sasamat Street and 1,000 at the University. These last three points are distant 666 yards, 900 yards and two miles, respectively, from where my collections were made. In August, 10,000 were released at ten locations throughout Vancouver, of which 1,000 were released near the