Notes on Termites.

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ABOUT thirty years ago, whilst collecting and studying beetles at Tairua, Auckland, I came across a log containing a large colony of white ants. This species proved to be *Stolotermes ruficeps*, which may at once be distinguished from the other species by the presence of distinct eyes in the "soldier." This insect seems to be plentiful farther south, but I have not seen it north of Tairua, a small bush settlement between Cape Colville and Tauranga. At that time I had purchased a copy of the book entitled "Zoology of the Voyage of H.M. ships 'Erebus' and 'Terror'" in which was recorded the name of another termite, *Calotermes insularis*. A rough figure of the winged insect is given, but no description; so, when I discovered a white ant subsequently in the topmost branches of a puriri tree, near Whangarei, I naturally concluded that it was *Calotermes insularis*, only two species being known to naturalists in New Zealand.

Several years ago Mr. W. Froggatt, the Government entomologist at Sydney, who was making a special study of the Australian Termitidæ, applied to me for specimens of our species. The two above alluded to were forwarded to him, and soon afterwards he informed me that the one I had supposed to be *Calotermes insularis*, which occurs in Australia, proved to be a new species which he named and described as *Calotermes brouni*. Instead of forming immense mounds of hardened earth and subterranean galleries, such as I have seen in India and Burmah, our northern white ants congregate in hardwood, many small families of the same species occupying adjacent chambers within one piece of timber. Now, even supposing the female to be capable of producing sixty eggs a day, it is manifest that the other members of the community could not excavate such wood as puriri fast enough to provide accommodation for, and insure the rearing of, such a number of larvæ. So long, therefore, as they retain these habits there can be no danger of wholesale destruction to wooden buildings, but if this *Calotermes brouni* were to imitate some exotic species, by living and breeding amongst soft earth, the effect would be more disastrous than at present.

Detecting the establishment of a colony of termites in a wooden structure before much harm has been done is not a very easy matter, as they seldom leave visible external traces of their location. If their presence be suspected the boards level with the floor should be removed, so that the state of the upright studs and lower wall plates may be tested. An experienced workman, however, may often discover their presence by sounding, that is, by tapping the wood with a hammer or mallet and attentively noting the exact sound produced. This knowledge, of course, can only be acquired by practice, still, any intelligent person, by beating alternately uninjured and slightly decayed wood, may notice some difference of sound. The particular kind of wood to be tested should first be practised on until the peculiar tone can be distinguished from that emitted by some other sort.

The use of puriri for railway sleepers need not create the least alarm, because these soft-bodied insects, which, moreover, are of extremely sensitive and retiring habits, would immediately forsake them when subjected to the vibration and disturbance caused by frequently passing trains.

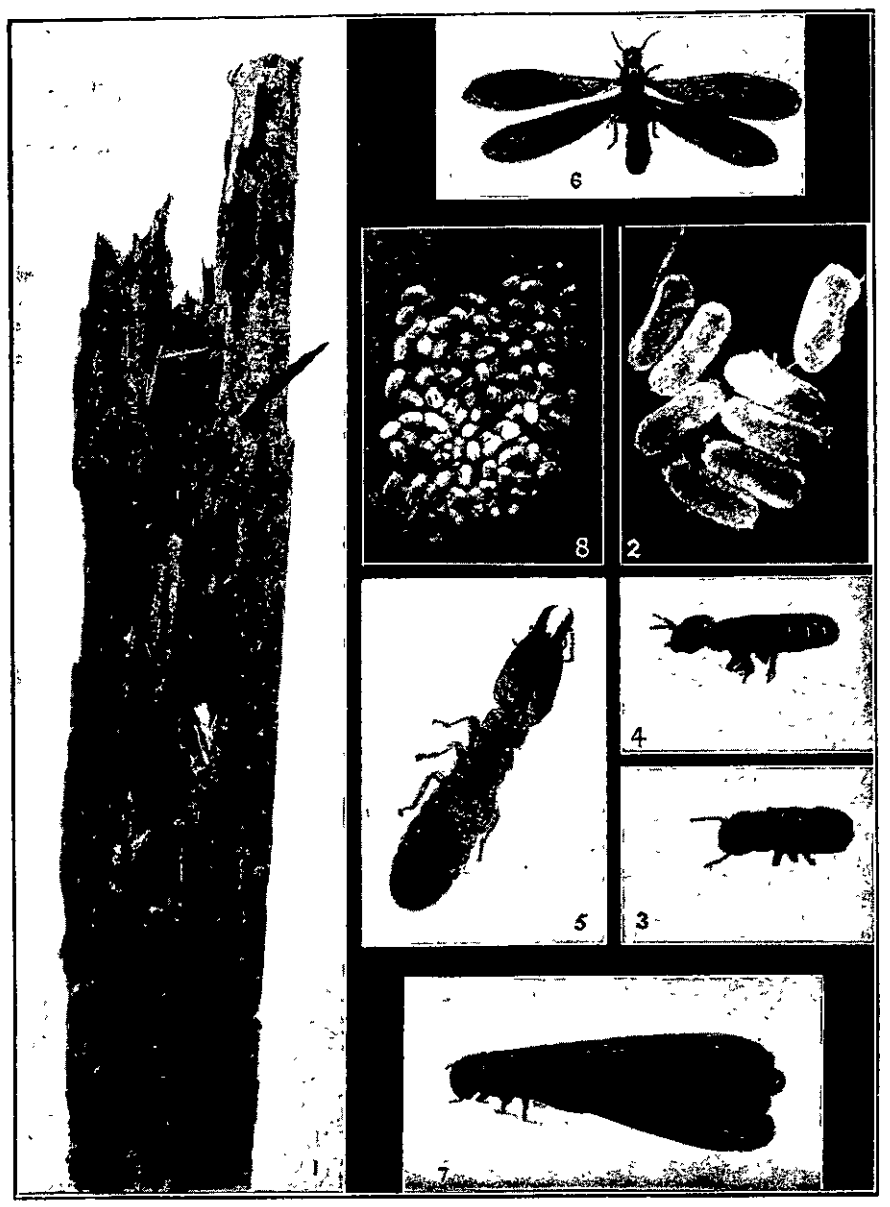

PLATE II.—WHITE ANTS. 1. PORTION OF KAURI SUPPORT DAMAGED BY WHITE ANTS. 2. EGGS. 3–4. LARVÆ. 5. SOLDIER. 6. WINGED INSECT. 7 WINGED INSECT AT REST. 8. EXCRETA.

PLATE I.—PORTIONS OF PURIRI BLOCK SHOWING DAMAGE DONE BY WHITE ANTS.
Photos by courtesy of Agricultural Department.

Plate 1 is from a photograph of two portions of a hard puriri block, which, before being cut open by me, seemed quite sound outside, and exhibited only some slight superficial cracks due to long exposure to the weather. These cracks are noticeable on the whitish upper part of the smaller piece on the left.

The larger upright portion measured 12 in. in length by 9 in. in breadth. When cut open it presented the appearance shown in the illustration. Inside the thin outer crust the wood to the depth of about 2 in. was completely burrowed or excavated lengthways, the partitions between the cavities being sometimes but little thicker than coarse paper. This dark, practically useless band was untenated except by some woodlice (Oniscus), which had occupied the old cavities after the "white ants" had worked deeper into the hard wood. The central, apparently uninjured part, was next cut open bit by bit, by means of a hammer and heavy chisel, only, however, with difficulty, owing to the hardness of the wood. When the broken pieces were examined they were found to be perforated in all directions, chiefly in the form of galleries communicating with the larger cavities used as nests. Many of these had already attained dimensions calculated to materially weaken the block as a support and, in course of time, even this once solid central portion would become as rotten and useless as the outer band already alluded to.

Out of one-third of this central piece, or about one-sixth of a large ordinary house block, I secured 142 larvæ or nymphs, 2 soldiers, 30 of the perfect winged insects, and 8 eggs. In addition thereto, quite an equal number were destroyed in breaking up the wood, or were killed by me whilst they were trying to effect their escape. Three other pieces were broken into and carefully examined. In these the proportion of winged insects was much greater, but no more eggs were found. I estimated the number of the various forms of this species within one entire block to exceed a thousand. This examination was made during the last week in January, 1905.

The piece on the left of the illustration is so placed that the condition of the cross section