

## Observations on the attractiveness of certain materials for termites

by

L. G. E. KALSHOVEN

**I n t r o d u c t o r y.** Termites when finding their way into houses and godowns will attack paper, cardboard, fabrics, matting, sackcloth, leather, etc. Sometimes they appear to go to these substances even more readily than to wood or bamboo. This tendency — an interesting one in itself — can be used to advantage when experiments are to be carried out on the susceptibility to termite infestation of various materials, treated or untreated with preservatives. F.i. the samples to be tested can be wrapped in some matter which has shown itself to be particularly attractive.

In order to obtain more definite indications of the attractiveness or unpalatability for termites of various materials on which incidental observations had been made previously, a simple experiment was carried out at the forest-entomological field station of the 'Instituut voor Plantenziekten', Buitenzorg (to-day Bogor) in 1937. The field station was situated near Telawa in the teak area of Central Java, 50 m above sealevel at the border of teak plantations about 50 years old at that time. The termite fauna of the premises and the nearby forest was well known.

**M e t h o d.** The following materials were included in the test: rice straw, dry stalks of maize plants, dry bark of the teak tree (*Tectona*), dry teak leaves, cardboard, cheap cotton cloth, pieces of split bamboo, and lengths of the softwooded stems of *Ricinus* and *Manihot*.

These materials were put in small, rough cases of seasoned heartwood of teak (therefore fairly termite-proof themselves), with plenty of crevices allowing the termites to enter. The boxes were placed in sites inhabited by one of the following common species: *Coptotermes javanicus* Kemn., *Odontotermes javanicus* Holmgr., *Microtermes insperatus* Kemn., *Macrotermes gilvus* Hag. and *Eutermes* pr. *matangensis* Holmgr.

The cases were inspected by a Javanese assistant, Mr Warnodihardjo, at least once every month to see whether the particular termite species had entered. Where this had not been the case, more frequent and even daily inspections were made. The experiment lasted from July to December 1937, covering the second part of the dry season and the first part of the wet season. At long intervals and at the final inspection the site was visited by the author.

**R e s u l t s.** In the box exposed to *Coptotermes* after 6 months only the outermost layers of the cardboard were left; the fabric was practically destroyed; the maize stalks had been eaten to a large extent; newspaper, bamboo-chips, *Manihot*- and *Ricinus*-stems had been gnawed off a good deal, but still an appreciable part of them was left; in the teak leaves a few tunnels had been made; the teak bark and rice straw had been touched very little.

The result confirmed observations previously made about the rather slow, but ultimately very destructive work of populous colonies of this termite, which has moreover a large capacity for penetrating into materials even when they are unsuitable for food.

*Microtermes* in its box had finished the cardboard and the maize-, Ricinus- and Manihot-stalks (only a few shreds of which were left); from the piece of fabric a sizable part had been eaten; the parcel of newspaper had been entered from below and hollowed out to some extent; from several of the split bamboo pieces the inner softer part had been consumed; the bunch of rice straw showed some traces at the basal part; the teak leaves and bark had not been touched.

This again was in confirmation of earlier observations on the habits of this small soil-inhabiting, 'fungus-growing' termite, almost ubiquitous in the plains of Java in all terrains covered with woody vegetation.

In the box destined for *Odontotermes* this termite did not appear but the case was soon entered by *Macrotermes*, after a month joined by *Microtermes*. Notwithstanding the fact that everything was done to discourage the visits of both species — their galleries being destroyed and the insects already entered being removed, and this almost daily during 4 months — the uninvited species persisted in entering the box until the last bits of the cardboard, maize-, Ricinus- and Manihot-stalks, and rice straw (as far as this did not become rotten) had been finished. *Macrotermes* appeared to be the dominating species in this case.

The box to be attacked by *Macrotermes* legitimately, was lowered into the soil at the periphery of a mound of this species and fixed with some split and plaited bamboo at the top of a hole containing a fungus-cake. After a month *Macrotermes* proved to have attacked the bamboo support slightly but it had not entered the teakwood box. However, *Microtermes* had entered it. It was chased away and this was repeated twice more, but in December, when the contents of the box were investigated, no traces of 'Macro' were found, while 'Micro' appeared to have eaten part of the teak leaves, maize stalks, Manihot-stems and bamboo.

As far as *Macrotermes* was concerned this part of the experiment was a failure, showing that materials to be tested on its susceptibility to infestation by this very common soil-inhabiting termite should not be placed in or too close to the termitarium. This fact has since been corroborated by other observations and might well be kept in mind for future experiments of the same kind.

The experiments with *Eutermes* gave a totally negative result. A big colony of this arboricole species was nestling in an old *Ficus elastica* tree, standing in the corner of the premises, bordering the teak forest. The box was attached to one of the large branches of the *Ficus*, along which the *Eutermes* galleries were running, but the termite did not even extend its tunnels to it.

A small additional experiment was made during the wet season in January 1938 in the same locality about the attractiveness of various materials for *Macrotermes*. This species has shown in the course of the years the largest list of vegetable materials which it can use directly or indirectly as food. Bundles of untreated deal wood, Ricinus-stems, maize-stalks and Manihot-stems all wrapped in a layer of newspaper, were dug into the soil in the neighbourhood of *Macrotermes* mounds at 5 different spots. After one month the deal wood had been eaten moderately or considerably while the other materials were practically finished.

More experiments of similar kind, including tests of leathern goods,

woollen fabrics etc. were planned at the time but they were never carried out.

**General remarks and conclusions.** The experiments described here should be considered as quite preliminary, giving as a result only clues as to the preference of the termites for particular more or less artificial materials, as well as some indications about the technique to be used (or to be improved) for carrying out further observations.

Cardboard (the common brown kind) was preferred as food by *Copto-*, *Micro-* and *Macrotermes* in the largest number of cases, followed in diminishing attractiveness by *Ricinus-*, *Manihot-* and maize-stalks, the newspaper and the split bamboo.

The difference between the method of attack of *Coptotermes* and *Microtermes* was striking, the first entering the material through small holes and making rather flat rooms, the second attacking the objects over large patches or the whole surface under cover of mud-galleries.

In none of the cases the teak bark had been used as food by the termites, showing that this material, removed from the trees and dried, is almost termite-proof. Dry teak bark is also fairly resistant to various other insect infestations and to climatic conditions. Therefore it is not surprising that large pieces of old bark are used with advantage in walls and roofs of temporary huts and sheds in the woods, in timber yards, etc.

Curiously enough the omnipresent gramang-ants, *Anaplolepis longipes* Jerd., colonies of which are always to be found near the soil surface under fallen leaves etc., had chosen the interspaces between the pieces of teak bark in all the cases as a nesting place.

Amsterdam, March 1952.

---

**Talrijk optreden van de rupsen van *Yponomeuta evonymellus* L. in 1952.** (Lep., Yponomeutidae). Het Handelsblad van 26 Mei 1952 bevatte een mededeling, dat onder de kardinaalsmutsen op de terreinen van de Amsterdamse Waterleiding een ware ravage aangericht werd door de rupsen van de bastaardsatijnvlinder. De heer G. L. VAN EYNDHOVEN maakte de Redactie er op attent, dat dit rupsen van *Yponomeuta* waren. De betreffende redacteur antwoordde hem o.a. dat het verschijnsel in de hele duinstreek tussen Den Haag en Haarlem viel waar te nemen. Ik zelf zag, dat de kardinaalsmutsen in het Kennemerduin ook danig toegetakeld waren. 1 Juni zag ik eveneens een paar aangetaste struiken in het Amsterdamse Bos. Tussen de ingang bij de Kalfjeslaan en het dorp Amstelveen staan talrijke prachtige exemplaren van de heester, maar de aantasting door de mot is hier blijkbaar nog pas in een beginstadium. — Lpk.

**Bezoek aan England.** De heer Eric W. CLASSEY, F.R.E.S., die een handel heeft in entomologische boeken en tevens een ijverig verzamelaar is van insecten, heeft aan onze Vereniging medegedeeld, dat onze leden bij een eventueel bezoek aan Engeland te allen tijde welkom zijn. Echter is het wel wenselijk tevoren een afspraak te maken, daar de heer CLASSEY meermalen voor verzamelexcursies afwezig is. Zijn adres is : 91, Bedford Lane, Feltham, Middx., tel. FELtham 3740.

Haarlem, April 1952.

G. L. VAN EYNDHOVEN, Secretaris.