Wood-wasps producing short circuits.

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It is a well known fact that wood-wasps are able to cause some damage when burrowing their way out from the wood where pupation has taken place. In several cases the exit holes are found in the flooring boards or in various material covering the floor — such as linoleum, carpets or the like. Even a soft metal like lead has been bored through by the emerging imagos, and several cases on the metalpiercing powers of *Siricidae* are cited in the literature. A famous classic case dates from the time of the Crimean War, where boxes of cartridges were perforated and the lead bullets destined for the French troops were damaged by the insects. Laing, Scott (1919, 1920) and Pax (1921) mention a series of severe damage to lead caused by emerging wood-wasps and other lead-perforators among the insects. Holes made by wood-wasps are said to have been found in lead roofs (*Sirex gigas*) and lead chamber coverings in chemical factories (*Sirex gigas* and *juvencus*) (France and Germany). The strong mandibulæ should be able to perforate quite heavy lead plates. Hart (1906) calculated the time it would take a wood-wasp to burrow through lead 4 mm thick as 48 hours.

Among other insects damaging lead, beetles and termites have contributed in a great many cases. In Denmark *Hylotrupes bajulus* L. have sometimes made exit holes in the leadroofs of old churches (Boas 1923). A caterpillar of *Cerura bifida* Bkh. is known to have damaged a telephone cable in Copenhagen by making a cocoon of lead filings (Larsson 1945).

As wood-wasps do not appear to have been recorded as damaging the lead sheathing and the insulation of electrical cables the following note on the injury caused by a *Siricid* species may be of interest.

The Technical Department of the Middle-Jutland Police in the autumn 1950 sent to me for determination an electrical cable probably perforated by an animal and which caused a short circuit at a farm house in the spring 1950.

The occurrence had taken place at a farm situated at Hallendrup near Randers, and it vas possible to localize the short circuit to an unarmoured lead cable fastened to the woodwork of

a cowhouse. A burned spot about 25 mm in diameter was distinctly seen on one of the deal boards close to the electrical cable. By removing this cable the characteristic exit hole of a woodwasp appeared (fig. 1). A closer examination of the deal boards showed a great many exit holes varying in size from 4—6 mm's diameter most of them placed in the middle of the 20 mm thick boards (fig. 2). The deal boards were placed in the stable during the summer of 1948. After being kept in a laboratory room for a few days a piece of wood perforated by the insects developed a high degree of convexity probably on account of fresh wood now getting desiccated. By cutting the cable open the insect was shown to have perforated the following sheets of insulation (cfr.

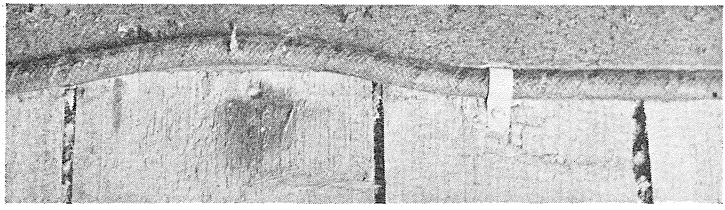

Fig. *1*. Deal boards from a stable at a farm in Jutland where unarmoured lead cables were used. The cable is bent aside to show the exit hole of a wood wasp and the burned spot from a short circuit.

fig. 3): 1: A 1½ mm thick envelope made of plaited paper strings saturated with pitch. 2: A 0,9 mm thick lead sheathing. 3: A one layer paper envelope containing three insulated wires. 4: Finally the insect has gnawed through the paper envelope and the 0,6 mm thick caoutchouc layer surrounding the single wires. In the three poled cable only the negative and the positive wires were damaged, while the third one — the earth connection (black wire in the middle, see fig. 3) was not gnawed at all by the insect. All this insulating material has no doubt been pierced by one and the same boring. The resulting short circuit has scorched the paper inside and outside the lead sheathing and melted the lead that frames the hole.

Unfortunately it has been impossible to get a specimen from the damaged deal boards so that an exact determination as to which species has done the perforating of the wood and lead could not be obtained. The dimensions of the burrows and exit holes seem to indicate one of the two wood wasps common on fir trees: *Sirex gigas* L. or *Paururus juvencus* (L.). I am inclined to think that the damage may have been done by the last mentioned species.

The development of wood wasps burrowing in deal bords can

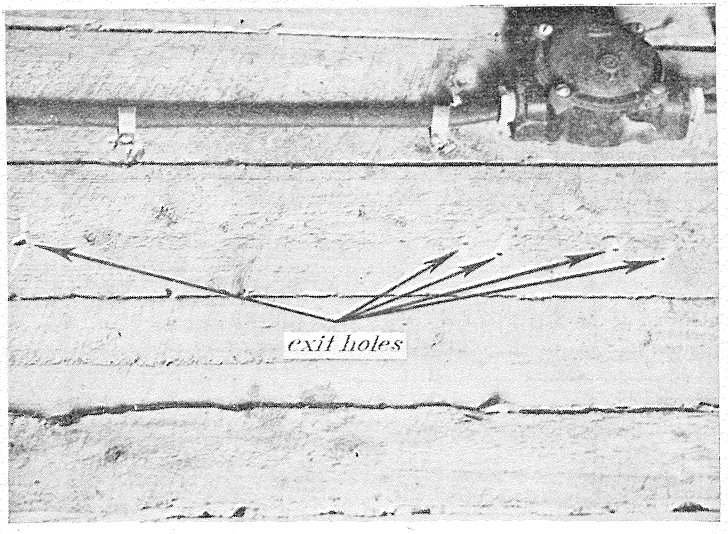

Fig. 2: Part of the deal boards covering the walls of the stable. Electrical cable and five exit holes of wood wasps are seen.

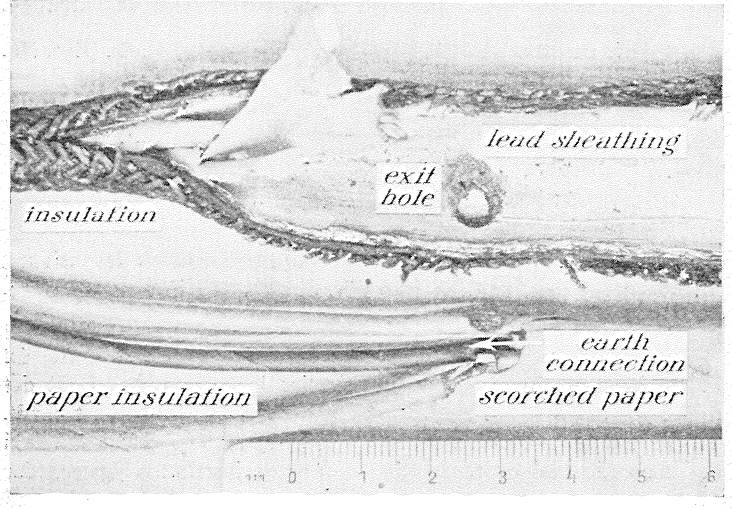

Fig. 3: The cable is cut open to show exit hole piercing the lead sheathing and the insulation of two of the wires, the earth connection (the black wire in the middle) not being touched.

take quite a long time, about six years according to Boas (1923). To prevent an occurence such as a shortcircuit produced by the boring of a wood wasp, wood desiccated during a long period should be used, special attention being paid to the occurrence of living larvae or pupae of wood wasps. To use unarmoured lead cables fastened to deal boards may well be risky, and the above mentioned farmer has therefore changed the whole instalment in his stable.

Photographs: courtesy of the Technical Department of the Middle-Jutland Police.

Mr. Percy G. Bird, Aughton, Lancs., England has revised the English text of the manuscript.

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Anmeldelse.

Bo Tjeder: **Näbbsländor. Mecoptera.** Svensk Insektfauna 14, Sthlm. 1951 (udg. af Ent. För. Stockholm). Pris sv. Kr. 3.—. 42 pp., 22 Fig. og 2 Tavler.

Skorpionsfluerne fylder i Svensk Insektfauna et helt Hefte, 42 Sider, hvad der kan synes lidt rigeligt i Betragtning af, at det drejer sig om 5 Arter, een *Boreus* mere end her fra Landet kendt. Til Gengæld er Indledningen, Morfologi, Biologi, endog Palæontologi og "Namnhistoria" overordentlig udførlig og instruktiv, ligesom der ogsaa er en omfattende Literaturliste. Bogen er derfor mere end den giver sig ud for, faktisk en lille Monografi, og ogsaa som saadan til megen Gavn.

S. L. Tuxen.