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OUTBREAK *PROMECOTHECA ANTIQUA*— LINDENHAFEN ESTATE.

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I left Rabaul on 5th January per M.V. *Macdhui* for an inspection of the Morobe District, calling at Lindenhafen *en route*, where I had an opportunity of seeing the outbreak of *Promecotheca* on that estate and discussing the question of control with the manager.

The pest has reached such plague proportions that it is quite impossible to cope with it in the ordinary method employed in isolated cases of cutting off the infested leaves and immediately burning them *in situ*. Spraying or dusting tall plants, like coco-nut palms, is out of the question, with other than power apparatus. This would be an expensive method, but in extreme circumstances like that on Lindenhafen, the cost entailed would be justified.

The estate presents a dreadful appearance and it is the worst infestation of *Promecotheca* of which there is any record in the Territory. When walking through the plantation one hears on all sides the continual dropping of immature nuts which the palms can no longer sustain. Many of the trees have already succumbed, 370 dead palms having been cut down and destroyed, while there is not a single flower spathe on the whole plantation, so that no crop can be expected for two years, even from those trees that do eventually recover.

In the absence of insecticidal power apparatus, nothing in the nature of control experiments is possible in a case of such severe infestation, but we have good reason to believe, from similar outbreaks elsewhere, that when the plague has reached its peak, it will decline, the result probably of entomogenous fungi, or bacterial disease, and the majority of the palms should eventually recover. It is not known exactly where the outbreak first started, but it was known to exist in a nearby village grove and at Ring Ring, before entering Lindenhafen.

On the outskirts of Lindenhafen there are considerable areas of sago palms, or sac-sac (*Metroxylon sagu*) which is a major host of *Promecotheca*; constant lookout, therefore, should be kept to see if the pest is breeding there in numbers, and as soon as it is noticed that the coco-nut palms are becoming infested, immediate steps should be taken to cut off the infested leaves and burn them as already stated. On no account should the leaves be carried to a central fire and if the weather is too wet for fires to burn readily, they could be assisted by the addition of oil or other inflammable material.

In all insect attack there is more hope of control if immediate action is taken, for prevention is better than cure. A kindred species, *Promecotheca cumingi*, reached such plague proportions, eight or nine years ago, over large coco-nut

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areas in the Philippines, as to become a matter of grave national importance, and there is every probability, if an attack like that on Lindenhafen should start on the closely planted east coast of New Ireland, it would spread from plantation to plantation, and it behoves planters, therefore, to keep a watchful eye for the pest and adopt preventive measures without delay.

The adult beetle feeds on the lower epidermis and internal leaf tissues of the leaf leaving the upper side untouched, which turns brown and withers, so that nothing but the midrib remains. The female beetle lays its egg singly on the underside of the leaf over which it immediately places a protective covering of partially digested particles of coco-nut leaf expelled as excreta. The larva upon emergence from the egg penetrates into the parenchyma or leaf tissue upon which it feeds, making elongated mines about six inches in length and one-third of an inch in breadth. The larva becomes a pupa within the mine from which the adult beetle in due course emerges by cutting a hole through the upper epidermis of the leaf. The female only lays about twenty eggs, and it is surprising that an insect with such a small egg capacity should ever become such a serious pest. Although the outbreak of this pest seems to come on with great suddenness, its small egg capacity and long life history would indicate that its development, at first, must be slow as to be hardly noticeable, which is all the more reason for watchful care.

Outbreaks usually commence in a small way over a limited area, and some time must elapse before the density of the population reaches maximum numbers sufficient to become a plague, but even a few adults on a plantation should be looked upon as great potential enemies and treated accordingly.

Biological Control.

A method of control employed by German planters in New Guinea is the establishment of the vicious predatory ant "Kurukum" (*Oecophylla smaragdina*) on the palms. Nests of these tree ants were placed in the crowns of the palms, and ropes or string placed from one to the other to enable the ants to spread, without having to come to the ground. This method has been adapted from that recommended by Dr. van Hall, for the control of pests on cocoa, a much more delicate plant than a coco-nut palm, and it has much to recommend it. It no doubt harbours certain scale insects, noxious to plants, but if they can assist in control of *Promecotheca,* their advantages far outweigh any disadvantages. I have myself seen *Oecophylla* destroying adult *Promecotheca,* and R. M. Paine, research entomologist, formerly in Fiji, with whom I discussed the matter, was also of the opinion that it was of some value in the control of *Promecotheca.*

As soon as the entomologist returns to Rabaul he will be instructed to carry out investigations with regard to the "Kurukum" (*Oecophylla*) as a predator of *Promecotheca* and other methods for its control.

The Department of Agriculture in Fiji seems to have had considerable success in the control of *Promecotheca* with *Pleurotropis parvulus,* a minute parasitic wasp, introduced from Java by Mr. Paine, for that purpose. A radio was sent a few days ago to the director of that department desiring to know whether a colony of *Pleurotropis* could be sent to Rabaul from Suva by one of the W. R. Carpenter's boats, and steps are being taken to have the insectaries ready for their reception. It will, therefore, be seen that this department is taking every possible means for the control of *Promecotheca.*