

to establish this point; but it is significant that sporocarps were never produced on lower sugar concentrations.

I am indebted to Prof. Gilbert M. Smith, Stanford University, for the sporocarps of *M. vestita* and to Mr. Ernest Ashby for the two photographs.

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<sup>1</sup> Gautheret, R. J., "Manual Technique de Culture des Tissus Végétaux" (Paris, 1942).

<sup>2</sup> Wetmore, R. H., and Morel, G., *Amer. J. Bot.*, **36**, 805 (1949).

<sup>3</sup> Shattuck, C. H., *Bot. Gaz.*, **49**, 19 (1910).

<sup>4</sup> Smith, G. M., "Cryptogamic Botany", **2**, 328 (1938).

### Invalidation of the Genus *Vaughaniella*

AN examination of specimens of an alga at first assigned to *Vaughaniella rupicola* Boergs. has led to the conclusion that the genus *Vaughaniella* Boergs.<sup>1</sup> represents the basal rhizomatous portion of the genus *Padina* Adans. In southern Queensland, these flattened rhizomes, often showing transition to fan-shaped thalli, are found at the base of plants of *Padina commersonii* Bory in both estuarine and exposed localities; but around the margins of shallow lower littoral pools, on exposed rock platforms, rhizome development may sometimes take place without any production of fan thalli.

A more complete account will be published elsewhere.

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<sup>1</sup> Boergesen, F., *Kon. Danske Vidensk. Selsk., Biol. Medd.*, **15**, (8) (1950).

### An Insect Pest of Coconuts and its Relationship to Certain Ant Species

IN 1924 McDonald<sup>1</sup> and Welsford<sup>2,3</sup> reported the presence in Kenya, Tanganyika and Zanzibar of widespread damage of coconut fruits characterized by abortion of young female flowers, excessive dropping of young nuts and formation of necrotic lesions in those nuts which reached maturity. The damage was attributed to unfavourable soil conditions.

Present studies of the damage in Zanzibar have shown that it is caused by both nymphs and adults of a coreid bug which has been identified by the Commonwealth Institute of Entomology as a *Theraptus* sp. The feeding punctures of this insect are made through the calyx of the female flowers and into the young fruits, on which necrotic areas develop. Female flowers damaged in the bud stage, or when newly opened, are invariably destroyed; but if attack is delayed until after fertilization of the flower, the nuts may develop to maturity, the necrotic areas caused by the punctures developing into slit-like lesions in the husk. The damage appears similar to that caused by *Amblypelta cocophaga* China, in the Solomon Islands<sup>4</sup>.

In the course of studies on the tree-nesting ant *Oecophylla longinoda* Latr. in connexion with clove diseases, it was noticed that damage by *Theraptus* sp. was absent or negligible in coconut palms occupied by this ant. The ant has been observed destroying

*Theraptus* sp. nymphs on coconut palms, and it probably destroys or deters the adults. It is of interest that an *Oecophylla* species was apparently used as a beneficial predator on citrus pests in China so far back as the twelfth century<sup>5</sup>; and in the Far East, Simmonds<sup>6</sup>, Tothill<sup>7</sup> and Murray<sup>8</sup> have reported that *O. smaragdina* is predatory on several coconut pests.

Details of the yield of nuts from a single gathering in a block of fifty-two coconut palms, of which sixteen were inhabited by *O. longinoda*, are shown in Table 1. The figures for yields shown in the table are approximately one-quarter of the annual yields.

Table 1

	No. of nuts/tree	Percentage nuts showing lesions caused by <i>Theraptus</i> sp.	
		0-10 lesions/nut	More than 10 lesions/nut
<i>O. longinoda</i> present	21.2	16.5	6.2
<i>O. longinoda</i> absent	4.9	48.6	50.3

The figures show that, in the absence of *O. longinoda*, not only is the yield of nuts greatly reduced by *Theraptus* sp. attack, but also damage to the nuts obtained is practically 100 per cent. Such damage results in reduction in size of nut and in yield of copra, as shown in Table 2.

Table 2

	Approximate No. of lesions/nut			
	None	0-10	10-20	>20
Wt. (lb.) of 100 unhusked nuts	286	264	229½	164
Wt. (lb.) of copra from above 100 nuts	47½	45½	36½	25½

Certain ground-nesting but tree-foraging ants, notably *Anoplolepis longipes* Jerd. and *Pheidole megacephala* F., ssp. *punctulata* Mayr., have replaced *O. longinoda* in many coconut areas of Zanzibar. The figures for coconut yields which have been obtained show that *Theraptus* sp. damage is not significantly reduced by the presence of the above two ant species. Observations on these ants in coconut palms show that they are not aggressive towards *Theraptus* sp.

Studies are in progress on the ecology of the various ant species with the object of determining conditions under which *O. longinoda* will replace the non-beneficial ants. Results of these and of studies of the problem on the coasts of Kenya and Tanganyika, as well as work on insecticidal control of *Theraptus* sp., will be reported later.

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<sup>1</sup> McDonald, J., *Ann. Rep. Kenya Dept. Agric.*, 106 (1924).

<sup>2</sup> Welsford, E. J., *Ann. Rep. Dept. Agric.*, Zanzibar, 15 (1924).

<sup>3</sup> Welsford, E. J., *Tech. Conf., E. African Dependencies*, Nairobi, 205 (1928).

<sup>4</sup> Phillips, J. S., *Bull. Ent. Res.*, **31**, 295 (1940).

<sup>5</sup> Friederichs, K., *Tropenpflanzer*, Berlin, **23**, 142 (1920).

<sup>6</sup> Simmonds, H. W., *Fiji Dept. Agric.*, Bull. 16 (1925).

<sup>7</sup> Tothill, J. D., *A Reconnaissance Survey of Agricultural Conditions in the British Solomon Islands Protectorate* (Fiji, 1929).

<sup>8</sup> Murray, G. H., *New Guinea Agric. Gaz.*, **3**, 1 (1937).