

INSECT PEST SURVEY FOR THE YEAR ENDING 30th JUNE, 1968*

CONTENTS

Addendum to Survey Ending June, 1967	180	<i>Vegetables</i>	
Errata to Survey Ending June, 1967	180	Bean	192
Introduction	181	Cabbage	192
<i>Commercial Tree Crops</i>		Capsicum	193
Cacao	181	Cucumber	193
Coconuts	183	Potato	193
Coffee	185	Pumpkin	193
Oil Palm	186	Taro	193
Tea	188	Tomato	193
<i>Fruit, Nut and Food Trees</i>		Yam	193
Avocado	189	<i>Pastures</i>	193
Banana	189	<i>Weeds</i>	194
Cashew	189	<i>Household Pests</i>	194
Citrus	189	<i>Medical and Veterinary Pests, Poultry</i>	194
Eugenia	189	<i>Parasites and Predators</i>	194
Mango	190	<i>Biological Control Projects</i>	
Pawpaw	190	A. Insects	196
Terminalia	190	B. Weeds	197
Fruit Trees General	190	C. Giant Snail	197
<i>Shade Trees and Ornamentals</i>	191	<i>Quarantine Interceptions</i>	197
<i>Field Crops</i>		<i>Appendix I—Index of Insects</i>	198
Sugar Cane	192	<i>Appendix II—Index of Plant Hosts</i>	201
Tobacco	192		
<i>Grain Crops</i>			
Maize	192		
Rice	192		

* Compiled by Entomology Branch, Research and Surveys Division, Department of Agriculture, Stock and Fisheries.

ADDENDUM AND ERRATA TO INSECT PEST SURVEY FOR THE YEAR ENDING 30th JUNE, 1967

ADDENDUM

COCONUTS

Galela sp. (Fulgoridae)

Female adult collected from palm, Passam, East Sepik District, April, 1967.

SHADE TREES AND ORNAMENTALS

Pericyma cruegeri (Butl.) (Noctuidae)—Poinciana Looper

The exceptional intensity of the wet season at the beginning of 1967 apparently slowed down the build-up of *Pericyma cruegeri* in the Port Moresby town area (Central District).

Surveys on the incidence of the pest carried out in January and February showed that by the third week of February, late instar larvae and pupae were present in the upper parts of poinciana trees (*Delonix regia*) throughout the survey area and it was evident that the next generation would cause severe damage.

Heavy defoliation was observed in the Konedobu and Paga Hill areas in the latter part of March, and became widespread shortly thereafter. Large populations persisted until the end of May but then declined sharply. The continuation of the wet season after the end of May enabled trees to make new growth which remained substantially free from attack. As a consequence, poinciana trees in Port Moresby carried more foliage in June than at the same period in any year since 1957.

Xyleborus compactus Eichhoff (Scolytidae)

Adults bred from stems of *Gliricidia maculata*, L.A.E.S., Keravat, E.N.B., February.

ERRATA

Page 51—delete the heading "Phytophagous Insect Pests in Papua and New Guinea" and substitute "Insect Pest Survey for the year ending 30th June, 1967".

Final para., line 3, for Messers", read "Messrs".

Page 52—column 2, under *Archips spilotoma* Meyr (Tortricidae), for "cause" read "caused".

Under *Grossotarsus barbatus* Chapuis (Platypodidae) for " $\frac{1}{2}$ in." read " $\frac{1}{8}$ in.".

Page 55—column 1, for "Psychidae, gen. et sp. indet." read "Psychidae, gen. et sp. indet.".

Page 62—column 1, for "*Atractomorpha crenaticeps* Blanch. (Acrididae)" read "*Atractomorpha crenaticeps* Blanch. (Pyrgomorphidae)".

Page 66—column 1, for "*Onthophagus latenasutus* Arrow (Scarabaeidae)" read "*Onthophagus latenasutus* Arrow (Scarabaeinae)".

Page 69—column 2, for "*Brachymeria euploae* Westw. (Braconidae)" read "*Brachymeria euploae* Westw. (Chalcididae)".

For "*Brachymeria* sp. (Braconidae)" read "*Brachymeria* sp. (Chalcididae)".

Page 73—column 1, for "*Lagria palliata* . . . 59, 57", read "*Lagria palliata* . . . 59, 67".

INSECT PEST SURVEY FOR THE YEAR ENDING 30th JUNE, 1968

INTRODUCTION

THIS is the second annual insect pest survey to be published. As in the first surveys†, the insects are arranged alphabetically under the different hosts which have been grouped under general headings such as Commercial Tree Crops, Field Crops, Fruit, Nut and Food Trees, etc., as shown in the Table of Contents. Indices to the various insects and plants mentioned in the list are appended. Abbreviations used in the text are as follows:—

- C.D.—Central District
- E.N.B.—East New Britain District
- N.D.—Northern District
- S.H.D.—Southern Highlands District
- W.N.B.—West New Britain District
- W.D.—Western District
- W.H.D.—Western Highlands District

Unfortunately the first survey contained some errors and omissions which were partly outside our control. These have been corrected and are given on page 180. The various family and subfamily names as listed in the CSIRO's recent text book *The Insects of Australia* (Melbourne University Press, 1970, xiii + 1029 pp.) have been used in this second survey.

The majority of identifications other than those made by our own staff were made through the Commonwealth Institute of Entomology, London. Other specialists who co-operated were Drs I. F. B. Common, K. H. L. Key and Mr T. G. Campbell, CSIRO, Canberra, Australia, Mr K. L. Taylor, CSIRO, Hobart, Tasmania, Mr R. A. I. Drew, Department of Primary Industries, Brisbane, Queensland, Professor C. H. Martin, Oregon, U.S.A., Dr S. Endrodi, Natural History Museum, Budapest, Hungary, and Dr Z. Kaszab, Natural History Museum, Budapest, Hungary.

COMMERCIAL TREE CROPS

CACAO (*Theobroma cacao*)

Acanthotyla sp. (Coreidae)

Adults very numerous on cacao, mainly on pod stems, Popondetta/Sangara area, N.D., July, 1967 to June, 1968. Its status as a pest species still remains unknown.

Achaea janata L. (Noctuidae)—Cacao False-Looper

Larval damage to cacao (flush) in the Popondetta/Sangara area, N.D., remained at a very low level during the year and the insect has virtually ceased to be a problem.

† Insect Pest Survey for the year ending 30th June, 1967. *Papua New Guin. agric. J.*, 21 (2) : 49-75 (1969).

Adoxophyes fasciculana Walk. (Tortricidae)

Larvae were found feeding on flush foliage throughout the year in the Popondetta/Sangara area, N.D.

Adoxophyes sp. (Tortricidae)

Larvae found feeding on foliage throughout the year, Gazelle Peninsula, E.N.B.

Amblypelta theobromae Brown (Coreidae)—Amblypelta

Adults and nymphs numerous on pods in cacao blocks in the Kokoda Valley (Kokoda-Ilimo) and Popondetta/Sangara area, N.D., July, 1967 to June, 1968. Isolated areas of severe damage to young pods reported from time to time.

Anchiale maculata Oliff (Phasmatidae)

Adults and nymphs present on cacao in the Northern District throughout the year. Damage slight, although increases in numbers were recorded during the main cacao flush (vegetative growth) periods.

Cerambycidae, either *Dibammus* sp. or *Mono-bammus* sp.

Larvae boring in stems of cacao trees, Bougainville, July. Preserved larvae collected from cacao on Goodenough Island, Milne Bay District, were received at Konedobu in December.

Dasychira mendosa Hubn. (Lymantriidae).

Larvae present on flush foliage and pods from October onwards, Popondetta/Sangara area, N.D. Larval numbers increased during the period October to December and remained at a high level during the wet season.

Ectropis sabulosa Warr. (Geometridae)—Cacao Looper

Larvae present on flush foliage from time to time during the year but damage negligible, Popondetta/Sangara area, N.D.

Elytrocheilus coeruleatus (Pasc.) (Curculionidae)

Adults observed feeding on foliage and stems in the Northern District throughout the year. Twigs were often completely ring-barked, but damage usually of minor importance only.

Euproctis sp. (Lymantriidae)

Larvae collected from cacao flush, Vunapau, E.N.B., August.

Glenea aluensis Gah. (Cerambycidae)

Larvae boring in stems of cacao trees, Bougainville, July.

Helopeltis clavifer (Walk.) (Miridae)—Cacao Mirid

This insect is by far the most widespread and damaging cacao mirid in the Northern District, especially in the Sangara/Popondetta area. Adults, nymphs and eggs were to be found in cacao blocks at any time during the year, and damage to young and old pods and growing tips were both severe and widespread, especially during dry spells. Loss of production often approached 80 per cent of the expected crop.

Homona coffearia Nietn. (Tortricidae)—Tea Tortrix

Larvae fed on foliage, Keravat, May.

Hyposidra talaca (Walk.) (Geometridae)—Cacao Looper

Larvae present on flush foliage from time to time during the year, but damage negligible, Popondetta/Sangara area, N.D.

Idiopsis coerulea Fst. (Curculionidae)

Adults reported to have fed on foliage and caused minor defoliation, Bokre, Bougainville, December.

Lobobasis niveimaculata Hamps. (Arctiidae)

Larvae collected from cacao, Keravat, E.N.B., July.

Nacaduba berenice dobbensis Roeber (Lycaenidae)

A common species feeding on flush foliage in the Sangara/Popondetta/Serovi area, N.D., throughout the year. Of no economic importance.

Neolieftinckana fuscata Spin. (Fulgoridae)

Adults collected from foliage, Sangara, N.D., March. No damage noticed.

Olethreutes sp. (Olethreutinae)—Cacao Pod Borer

Reports of larvae boring into the mesocarp of ripening pods were received from Bougainville and the Warangoi area, E.N.B., during the year, but little or no penetration of the endocarp apparently occurred.

Panseptia teleturga Meyr. (Xyloryctidae)—Cacao Web Worm

The incidence of this pest continued to increase, particularly in areas where shade had been drastically reduced or completely removed on the Gazelle Peninsula, E.N.B.

Pantorhytes chrysomelas (Montr.) (Curculionidae)—Cacao Weevil

Adults collected from cacao trees, Baturu, N.D., August. Its status as a pest species is not known.

Pantorhytes batesi batesi (Faust.) (Curculionidae)—Cacao Weevil

Adults, larvae and eggs very numerous in cacao plantations along Markham Valley and lower Wau Valley, Morobe District, July, 1967 to June, 1968. Damage to trees by larvae and adults severe where no control measures had been adopted.

Pantorhytes plutus (Oberth.) (Curculionidae)—Cacao Weevil

Continued to cause severe damage to cacao trees on the Gazelle Peninsula, particularly the Warangoi area, E.N.B.

Pantorhytes szentivanyi Marsh. (Curculionidae)—Cacao Weevil

Adults, larvae and eggs very numerous in most cacao plantations in the Popondetta/Sangara area, N.D., July, 1967 to June, 1968. Damage to older cacao particularly severe where no control measures had been adopted.

Pinzulenza kukisch Her. (Limacodidae)

A very common species in the Sangara/Popondetta area, N.D., throughout the year. Damage slight.

Larvae severely defoliated cacao under coconuts on Kulili Plantation, Karkar Island, Madang District, during August to September. The outbreak was eventually brought under control by the chalcid pupal parasite *Brachymeria salomonis* Cam.

An outbreak also occurred on cacao under coconuts at Baubanguina Plantation, Central District, during October to November. A single specimen of the tachinid? *Spogossia* sp. was reared from a large batch of pupae received at Konedobu.

Priocnemecoris flaviceps Guer. (Coreidae)

Collected from cacao, L.A.E.S., Keravat, E.N.B., November.

Pseudodoniella typica (China and Carv.) (Miridae)—Cacao Mirid

Heavy infestations throughout the year in many areas on the Gazelle Peninsula, E.N.B., but most noticeable in the Warangoi area.

Salina sp. (Collembola)

Adults and nymphs always numerous on cacao foliage, Keravat, E.N.B. Its status as a pest has not been proved.

Symphylites sp. (Cerambycidae)

A commonly encountered pest of cacao in the Sangara/Popondetta area, N.D. The larvae bore in the stems of cacao trees. Damage to date has not been extensive.

An unidentified hymenopterous larval parasite is often associated with the larvae.

Tiracola plagiata (Walk.) (Noctuidae)—Cacao Armyworm

Except for areas of cacao still shaded by *Leucaena leucocephala*, *T. plagiata* ceased to be a problem in the Northern District. However in areas shaded by *L. leucocephala*, moderate to severe damage was still experienced throughout the year.

Toxoptera aurantii B. de Fonsc. (Aphididae)—Black Citrus Aphid

Adults and nymphs present on young flush from time to time during the year, Popondetta/Sangara area, N.D., but damage insignificant.

Xyleborus destruens Blandf. (Scolytinae)

Adults bred from cacao stems forwarded from Kieta, Bougainville, April, June.

COCONUTS (*Cocos nucifera*)

Aleurodicus destructor Mackie (Aleyrodidae)

Colonies (adults and nymphs) were noted on the foliage of many palms at Hula, C.D., in August. The infestation was not heavy, and little damage was apparent.

Amarygmus hydrophiloides Fairm. (Tenebrionidae)

Adult collected from fronds, Nahavio, W.N.B., May. No damage noted.

Amblypelta cocophaga cocophaga Brown (Coreidae)

Reported to have caused premature nutfall, Bougainville (no date).

Aulacophora sp. (Galerucinae)

Adults collected from fronds, Gaungo Village, W.N.B., May. No damage noted.

Axiagastus cambelli Dist. (Pentatomidae)—Coconut Spathe Bug

Adults and nymphs reported to be responsible for continued, severe nutfall, Lihir Island, New Ireland District, during the year. There

has still been no definite proof to show that *A. cambelli* is the primary causal agent of premature nutfall on Lihir Island.

Baryrrhynchus schroederi Kln. (Curculionidae)

Adults collected from fronds, Mosa Plantation, W.N.B., May. No damage noted.

Brontispa longissima Gestro (Hispidinae)—Coconut Hispid

Damage to young palms widespread and serious at Hula, C.D., August.

Larvae and adults caused moderate to severe damage to young palms throughout the year, W.N.B.

Cephrenes moselyi (Butl.) (Hesperiidae)—Coconut Skipper

Larvae caused moderate leaf damage to 1 to 2 year old coconuts, Talasea area, W.N.B., April. Two species of the larval parasites, *Carcelia* sp. (Tachinidae) were bred out from samples collected.

Chariotheca sp. (Tenebrionidae)

Adults resting on fronds, Mosa Plantation, W.N.B., May.

Ectocemus decemmaculatus Montr. (Brenthidae)

Adults resting on fronds, Nahavio, W.N.B., May.

Miolispa papuana Kln. (Brenthidae)

Adults resting on fronds, Nahavio, W.N.B., May.

Oryctes rhinoceros (L.) (Dynastinae)—Asiatic Rhinoceros Beetle

Adult damage to palms reported from the Gazelle Peninsula, E.N.B., throughout the year.

Larvae were found breeding in dead standing palms on Tingwon Island, New Ireland District, and in decaying coconut trunks and stumps at Tigak, Lakuramau, Pinikindu, Namarodu, Hilalou and Manmo, New Ireland, June.

Promecotheca papuana Csiki (Hispididae)—Coconut Leaf Miner

Small pockets of this pest were reported on the Gazelle Peninsula, E.N.B., during the year.

Reports of increased activity at Lindenhafen and Linga Linga, W.N.B., were received in the last quarter of 1967-1968.

Two adults were collected from coconuts, Nahavio, W.N.B., May.

Pterolophia arrowiana Breun. (Cerambycidae)

Adults resting on fronds, Dagi, W.N.B., May.

Rhynchophorus bilineatus (Montr.) (Curculionidae)—Palm Weevil

Damage to palms continued to be severe throughout the year in the New Britain and New Ireland Districts.

An infestation at Klinwata Plantation, E.N.B., June, was associated with a condition resembling bud rot of coconuts.

Numerous adults were collected in settlement blocks at Nahavio, W.N.B., in May.

Rhynchophorus sp. (Curculionidae)—Palm Weevil

See under *Sparganobasis subcruciatu*s.

Scapanes australis grossepunctatus Sternb. (Dynastinae)—New Guinea Rhinoceros Beetle

Adults damaged young palms, New Mas-sava and Warangoi area, Gazelle Peninsula, E.N.B. throughout the year and also damaged young palms at Mosa and Gaungo Villages and Tabairikau and Lavilelo settlement blocks near Hoskins and Wandoro, Volupai and the Dagi River Settlement area, W.N.B.

Damage to young palms was also reported from Tigak, Panameko, Eruk Island, Matakuru and Manmo and Mungai Plantation, south-east New Ireland in June, and Matakwiss and Lihir Islands, New Ireland District, also in June.

Segestidea sp. ? *insulana* Will. (Tettigonidae)—Coconut Tree Hopper

Many reports of moderate to heavy infestation were received from East and West New Britain during the year.

The outbreak at Volupai which commenced in February, 1967 ceased about the beginning of the 1967-68 dry season, probably as a result of the application of DDT/BHC dust and introduction of the parasites *Leefmansia bicolor* Waterst., *Doirania leefmansii* Waterst. and *Stethynium* sp. from New Hanover.

Oothecae were received from Volupai in March and April, 1968, but they were difficult to find and highly parasitized by *Leefmansia bicolor*.

• Other reports of *S. ? insulana* infestations were received from Kalili, E.N.B., in April and Kandrian, E.N.B. in May.

Segestidea sp. (Tettigoniidae)—Coconut Tree Hopper

Specimens in alcohol were received from Malai Island, Siassi group, in December. It was reported that palms on the island had been almost stripped by the hoppers.

A "Sexava" outbreak was reported from Umboi Island, Morobe District, in May, but no specimens were received.

Moderate damage was reported from the Situm/Gobari area, Morobe District, July to October.

*Sparganobasis subcruciatu*s Marsh. (Curculionidae)—Coconut Bole Weevil

Approximately 20 to 25 per cent of 12,000 6-year-old palms on Raihu Plantation, Aitape, West Sepik District, were severely damaged by a mixed infestation of *Sparganobasis subcruciatu*s and *Rhynchophorus* sp. larvae. *Rhynchophorus* sp. adults were also present in numbers. Approximately 1500 palms had either been killed or had collapsed.

In all cases damage was to the lower bole region, from ground level to a height of 2 to 3 ft. As some palms did not show external damage to the bole, the point of entry of the weevils was not certain. However it would appear that *S. subcruciatu*s was the primary insect responsible for the damage and that *Rhynchophorus* was secondary.

One adult collected from coconut palm, Sosoli Village, E.N.B., August. No damage reported.

Spodoptera litura (F.) (Noctuidae)—Cluster Caterpillar

Young larvae completely stripped the epidermis of young coconut fronds, Mosa Plantation, W.N.B., March to April; Keravat, E.N.B., May to June.

Tarundia sp. (Ricaniidae)

Adults collected from coconuts, Mosa Plantation, W.N.B., May.

Thosea sinensis (Walk.) (Limacodidae)—Coconut Cup Moth

Damage to young palms widespread and serious at Hula, C.D., August.

Tirathaba rufivena Walk. (Pylalidae)—Coconut Spathe Moth

Adults were reared from a heavily infested spathe from a dwarf coconut forwarded from Madang in August. It was claimed that palms in the town were not bearing as a result of damage by this pest.

Larvae were submitted in July from Lihir Island in samples of young button nuts from one of the premature nutfall areas. Less than 5 per cent of the young button nuts had been damaged by *Tirathaba*.

Larvae were also observed at Klinwata Plantation, E.N.B., in June, where they were found in high population density webbing together sections of male flowers.

Uropteroides gestroi Senna (Brentidae)

Adults collected from fronds, Gaungo Village, W.N.B., May. No damage reported.

Xyleborus exiguus Walk. (Scolytinae)

Adults collected from a necrotic area on a coconut petiole, Rainau Plantation, Gazelle Peninsula, E.N.B., June.

Zophiuma lobulata Ghauri (Lophopidae)—Coconut Leafhopper

Adults and nymphs still present on palms in the Finschhafen area, Morobe District, July, 1967 to June, 1968.

The general position was reported to have improved during the year with many of the previously affected palms recovering from the diseased or unthrifty condition (see I.P.S. for year ending 30th June, 1967 for description of disease condition). The improvement appeared to be related to a general decrease in *Z. lobulata* populations throughout the affected area.

COFFEE (*Coffea arabica*, *Coffea canephora*)

Tiracola plagiata Walk. (Noctuidae)—Cacao Armyworm

Reports of widespread defoliation of coffee by *Tiracola* larvae were received from the Morobe District in October; Upper Bena, East-

ern Highlands District, January to February; Togahau, Papoga areas in the Northern District in May to June.

Approximately 23 per cent of the pupae collected at Togahau were parasitized by the tachinid *Exorista sorbillans* Wied.

Zeuzera coffeae Nietn. (Cossidae)—Coffee Borer

Larva boring in coffee, Bunum-Wo Plantation, Banz, W.H.D., September; Kup area, Chimbu District, November.

OIL PALM (*Elaeis guineensis*)

Acanthotyla sp. (Coreidae)

Adults collected from oil palms, Saiho, N.D., January. Numerous, but no damage noted.

This is the same species that occurs on cacao in the Northern District (see under cacao).

Alcidodes sp. (Curculionidae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Aspidomorpha quadriradiata Boh. (Cassidinae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Basicryptus sp. nr *rugicollis* Westw. (Pentatomidae)

Adults collected from oil palms, Saiho, N.D., January.

Campsomeris sp. ? *manokwariensis* (Cam.) (Scoliidae)

Adult resting on oil palm, Mosa Plantation, W.N.B., May.

Cardiodactylus novaeguineae de Haan (Gryllidae)—Tree Cricket

Adults collected from oil palms, Saiho, N.D., January.

Carpophilus sp. (Nitidulidae)

Adults collected from oil palm, Kapore, W.N.B., May. No damage noted.

Cephrenes augiades Felder (Hesperiidae)

A minor pest of oil palms, the larvae chew across the pinnae of the oil palm frond, roll up the cut section to feed on it and finally pupate in this section. Collected Kapore and Mosa,

W.N.B., April. The damage is similar to that caused by *Cephrenes moselyi* which attacks coconuts in the same locality.

Ceresium pachymerum Pasc. (Cerambycidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Clania sp. (Psychidae)—Bag Moth.

Larvae responsible for defoliation of seedlings in nursery, Mosa Plantation, W.N.B., April. Damage severe.

The tachinids *Exorista* sp. and *Strobliomyia orbata* Wied. were bred from field-collected material.

Coccinella arcuata (F.) (Coccinellidae)

Adult resting on oil palm, Mosa Plantation, W.N.B., May.

? *Coelophora inaequalis* (F.) (Coccinellidae)

Adults collected from oil palm, Nahavio, W.N.B., May. No damage noted.

Coelophora inaequalis var. ? (Coccinellidae)

Adults collected from oil palm, Kapore Settlement, W.N.B., May. No damage noted.

Coelophora ripponi Crotch. (Coccinellidae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Diacrisia niceta (Stal) (Arctiidae)

Larvae collected from oil palms, Mosa Plantation nursery, W.N.B., April. The larvae were observed to be stripping the pinnae from fronds.

The preferred host appears to be a *Portulaca* sp. (? *oleracea*), a common weed of cultivated areas.

Dicladispa fabricii Guer. (Hispiinae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Dindymus sp. ? *pyrochrous* (Boisd.) (Pyrrhocoridae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Eoporus elegans Pasc. (Cerambycidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Eupholus schonherri Guer. (Curculionidae)

Adults collected from oil palms, Saiho, N.D., January.

Eurycania tristicula Stal (Ricanidae)

Adult collected from oil palm, Nahavio, W.N.B., May. No damage noted.

Gryllotalpa sp. (Gryllotalpidae)

Adult collected from oil palm, Mosa Plantation, April. No damage noted.

Henosepilachna doryca Boisd. (Coccinellidae)

Adults collected from oil palm, Mosa Plantation and Nahavio, W.N.B., May. No damage noted.

Henosepilachna guttatpustulata (F.) (Coccinellidae)

Adults collected from oil palm, Nahavio, W.N.B., May. No damage noted.

Henosepilachna sp. (Coccinellidae)

Adults collected from oil palm, Kapore, W.N.B., May. No damage noted.

? *Hypolixus* sp. (Curculionidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Lanelater sp. (Elateridae)

Adults collected from oil palms, Saiho, N.D., January.

Leptoglossus australis F. (Coreidae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Lynamorpha diluta Stal (Pentatomidae)

Adults collected from oil palms, Saiho, N.D., January.

Metriona papuana Spaeth. (Cassidinae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Mezira membranaceus F. (Aradidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Monolepta nigroapicata Bry. (Galerucinae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Nerthra laticollis (G. & M.) (Gelastocoridae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May.

Nysius villicus V.D. (Lygaeidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Papuana woodlarkiana (Montr.) (Dynastinae)

Adults caused appreciable damage to seedlings by boring into the boles and also by feeding on the roots. In severe attacks the young seedlings died, but in most instances damage resulted in retarded growth and production of small, distorted fronds. Mosa Plantation, W.N.B., April.

? *Peribleptus* sp. (Curculionidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Plutorectis sp. nr *boisduvali* Westw. (Psychidae)—Bag Moth

Larvae collected from oil palm seedlings, Mosa Plantation, W.N.B., April. Damage severe.

Priochirus sp. (Staphylinidae)

Adult collected from oil palm, Kapore, W.N.B., May.

Psychidae, gen. et sp. indet.—Bag Moth

Larvae collected from fronds, Saiho, N.D., January. Minor frond damage reported.

Rhinoscapha schmeltzi Fairm. (Curculionidae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Rhinoscapha thomsoni Waterh. (Curculionidae)

Adults collected from oil palms, Saiho, N.D., January.

Rhyparida fasciata Baly. (Eumolpinae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Scapanes australis (Boisd.) (Dynastinae)—New Guinea Rhinoceros Beetle

Adults collected from young oil palms, Saiho, N.D., July. Damage of no economic importance.

Sodates sp. (Cerambycidae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May. No damage noted.

Spodoptera litura (F.) (Noctuidae)—Cluster Caterpillar

Young larvae completely stripped the epidermis of the fronds of young oil palm seedlings, Mosa Plantation nursery, W.N.B., March to April.

The tachinid *Cuphocera varia* F. was bred from field-collected material.

Stenocatantops angustifrons (Walk.) (Acrididae)

Adult collected from oil palm, Mosa Plantation, W.N.B., April, and Saiho, N.D., January. No damage noted.

Sybra sp. (Cerambycidae)

Adult collected from oil palm. Saiho, N.D., January.

Tarundia boadicea Dist. (Ricaniidae)

Adults collected from oil palm, Mosa Plantation, W.N.B., May.

Tmesisternus politus Black (Cerambycidae)

Adults collected from oil palms, Saiho, N.D., January.

Tmesisternus yorkensis Fairm. (Cerambycidae)

Adult collected from oil palm, Kapore, W.N.B., May. No damage noted.

Valanga spp. (Acrididae)

Several species of *Valanga* caused minor damage to fronds of young seedlings in the nursery, Mosa Plantation, W.N.B., April.

TEA (*Camellia sinensis*)*Adoxophyes* sp. nov. (Tortricidae)

Larvae caused heavy defoliation of seedlings growing in a glasshouse at Konedobu, C.D., during August to September.

Brevipalpus californicus (Banks) (Acarina: Phytoptipalidae)—Scarlet Mite

Caused some damage to tea foliage in many parts of the W.H.D. during the year. A tea insects survey of the Mount Hagen-Minj-Banz area was carried out in Feb-

ruary, 1968. It showed that *B. californicus* was to be found in all tea plantings in the Wahgi Valley. It was especially numerous at Nunga and on Bucknell's plantation. In fact when inspected in February the population at Bucknell's probably warranted spraying with sulphur.

Adults and nymphs were submitted from Monenga, W.H.D., and reported as damaging tea on Kudjip Tea Estate, Banz, W.H.D., July to September.

A severe infestation was observed on tea at Ialibu, S.H.D., and on a mature stand of tea on one plantation in the Western Highlands in February.

Collembola (Family ? Sminthuridae)

An unidentified collembolan was found in numbers on tea at Pugamp Plantation, W.H.D., February. It occurred on mature foliage and was associated with brittle, yellowed or whitened, mottled leaves. Its importance as a possible tea pest has not been investigated.

Hemitarsonemus latus (Banks) (Acarina: Tarsonemidae)—Yellow Mite

Present in large numbers on experimental tea seedlings in a glasshouse at Konedobu, C.D., in July, and caused heavy defoliation. A spray of 0.03 per cent dicofol completely controlled the infestation.

Homona sp. ? *coffearia* Nietn. (Tortricidae)—Tea Tortrix

Larvae present on tea plantings, Wahgi Valley, W.H.D., February. Damage negligible.

Oribius spp. (Curculionidae)

Adults numerous on tea plantings, especially on the edges of plantings adjacent to native vegetation and hedges, Wahgi Valley, W.H.D., February. Damage slight and consisted of leaf chewing.

Papuana spp. (probably *P. woodlarkiana* (Montr.)) (Dynastinae)

Tea bushes on Wurup Smallholder Blocks and on Warrowau Plantation, W.H.D., showed fresh signs of *Papuana* damage when inspected in February. Damage consisted of partial or total ringbarking of the trunk at or below ground level with subsequent stunting and chlorosis of affected plants.

Tetranychidae (? *Oligonychus coffeae* Nietn.)

A species of Tetranychidae was present on many tea plantings, Wahgi Valley, W.H.D., February, but not in any numbers.

Toxoptera aurantii B. de Fonsc. (Aphididae)—Black Citrus Aphid.

Adults and nymphs present on tea plantings, Wahgi Valley, W.H.D., February. Of no apparent economic importance.

Zeuzera coffeae (Nietn.) (Cossidae)—Coffee Borer

Larvae boring in tea, Banz and Olgaboli areas, W.H.D., in September and February and December respectively. Damage to isolated tea bushes only.

FRUIT, NUT AND FOOD TREES

AVOCADO (*Persea gratissima*)

Scolytoplatypus papuanus Egg. (Platypodinae)

Adults collected from a dying branch of avocado, Banz, W.H.D., April. Associated with the scolytine *Xyleborus potens*.

Xyleborus potens Schedl (Scolytinae)

Adults collected from a dying branch of avocado, Banz, W.H.D., April. Associated with the platypodine *Scolytoplatypus papuanus*.

BANANA (*Musa* spp.)

Nacoleia octasema (Meyr.) (Pyralidae)

Larvae caused damage to fruit, Keravat, E.N.B. throughout the year. Adults were bred out from a bunch of bananas in June.

Strumeta musae (Tryon) (Tephritidae)—Banana Fruit Fly

Adults were bred from banana fruits received from Goroka, E.H.D., January, and the Kuare area, S.H.D., in July. Minor to moderate damage was reported and it would appear that *S. musae* is a chronic problem in both areas.

CASHEW (*Anacardium occidentale*)

Oribius cruciatus Fst. (Curculionidae)

Adults damaged foliage of young trees at Bereina, C.D., January to April. Partial control was obtained by ring-weeding and spraying the bases of infested trees with dieldrin.

Selenothrips rubrocinctus (Giard.) (Thripidae)

Caused severe to complete defoliation of several 15-month old trees in an experimental planting of 4 acres at Bereina, C.D., July.

CITRUS

Agrilus occipitalis Esch. (Buprestidae)

Adults were collected from the bark of an unthrifty *C. aurantifolia* tree at Ilimo Farm, C.D., May.

Larvae boring in and just under the bark of unthrifty lime trees, P.A.T.I., Popondetta, N.D., throughout the year. Their status as a primary or secondary pest is still not known.

Elytrocheilus coeruleatus Pasc. (Curculionidae)

Adults collected from citrus, Saiho, N.D., November.

Eudecatoma sp. (Eurytomidae)

Fruit galling of *C. aurantifolia* probably caused by this wasp, Kerema, Gulf District, May.

Eurycania tristicula Stal (Ricanidae)

Adults collected from citrus, Nahavio, W.N.B., May.

Papilio aegens Don. (Papilionidae)—Citrus Butterfly

Larvae caused moderate to heavy defoliation of young lime trees at Bereina, C.D., June.

Papilio sp. (Papilionidae)—Citrus Butterfly

Larvae caused extensive damage to citrus, Sohano, Bougainville, June.

Phyllocnistis citrella Staint. (Phyllocnistidae)—Citrus Leaf Miner

Larvae mined young leaves at Kikori, Gulf District, May; caused severe damage to citrus, Nahavio, W.N.B., May; recorded throughout the year on citrus at Keravat, E.N.B.

Thosea sinensis (Walk.) (Limaecodidae)—Coconut Cup Moth

An adult was reared from a larva feeding on *C. sinensis* foliage at Laloki, C.D., June.

EUGENIA (*Eugenia* sp.)

Idiophantis sp. nov. nr *chirodaeta* Meyr. (Gelechiidae)

Adults were reared from larvae feeding within galls on leaves, Kavieng area, New Ireland, March.

Strumeta tryoni (Frogg.) (Tephritidae)—
Queensland Fruit Fly

One adult bred from *Eugenia* fruit collected at Koabu, Fly River Delta area, W.D., December.

MANGO (*Mangifera indica*)

Chunrocercus niveosparsus (Leth.) (Cicadellidae)

Adults and nymphs feeding on mango inflorescence, Rabaul, E.N.B., April to June, causing the entire inflorescence to blacken. Found in association with *I. clypealis* (see below). Few, if any, trees appear to bear fruit following an attack by these leafhoppers.

Adults collected from foliage and inflorescences, Daru, W.D., November, and Konedobu, C.D., April. Heavy infestation caused chlorosis and necrosis of flowers and was accompanied by sooty mould development. Associated with *I. clypealis*.

Idioscopus clypealis (Leth.) (Cicadellidae)

Adults and nymphs feeding on mango inflorescence, Rabaul, E.N.B., April to June, causing the entire inflorescence to blacken. Found in association with *C. niveosparsus*.

Adults collected from foliage and inflorescences, Daru, W.D., November and Konedobu, C.D., April. Heavy infestation caused necrosis of flowers, and was accompanied by sooty mould development. Associated with *C. niveosparsus*.

PAWPAW (*Carica papaya*)

Ischiopsopha bifasciata Quoy and Gaim. var. *byla* Heller (Cetoniinae)

Adults fed on ripe pawpaw fruits, Upper Musa, N.D., January.

TERMINALIA (*Terminalia catappa*)

Aiteta iridias Meyr. (Noctuidae)

Adult reared from a larva feeding on foliage, Konedobu, C.D., April.

FRUIT TREES, GENERAL

Asiadacus curvifer (Walk.) (Tephritidae)

One specimen collected resting on banana foliage, Sepi Village, Kiwai Island, W.D., December.

Strumeta bryoniae (Tryon) (Tephritidae).

A few specimens collected from "Dak Pot" male lure trap (baited with 1-(p-hydroxyphenyl)-butan-3-one and 1-(p-acetoxyphenyl)-butan-3-one), garden area, Daru; one specimen in "Dak Pot" in rainforest near Masin-gara Village, 30 miles west of Daru, W.D., December.

Strumeta frauenfeldi (Schiner) (Tephritidae)

Specimens taken in "Dak Pot" lures at the following Western District localities: Daru, Mabaduan Village, Dauan Island, Olmawata Village, Sepi Village (Kiwai Island), Balimo Station, December. In almost every case the trap was in or near mango trees. It would appear that *S. frauenfeldi* is associated with mango as it was taken only at locations where mangoes were present, never at sites where they did not occur.

Strumeta musae (Tryon) (Tephritidae)—
Banana Fruit Fly

A single specimen was taken in a "Dak Pot" lure in primary forest near Dogono Village, Balimo area, W.D., December.

The species commonly found infesting bananas in the Western District appears to be an undescribed *Strumeta* sp., species 'C' (see below).

Strumeta tryoni (Frogg.) (Tephritidae)—
Queensland Fruit Fly

One adult bred from *Eugenia* fruit collected at Koabu, Fly River delta, W.D., December.

Strumeta sp. 'A' (Tephritidae)

Collected in "Dak Pot" lures at Daru and Sepi Village, Kiwai Island, W.D., December. Not abundant.

Strumeta sp. 'B' (Tephritidae)

Six specimens taken in "Dak Pot" lure, Daru town area, W.D., December.

Strumeta sp. 'C' (Tephritidae)

A very abundant species in the Western District, being taken in "Dak Pot" lures at Daru, Olmawata Village and Sepi Village, W.D., in December. At the last two sites, lures were located in banana gardens, and one at Sepi

caught several hundred specimens in 1 hour. Banana fruits infested by maggots were collected at Sepi, but failed to produce adult flies.

SHADE TREES AND ORNAMENTALS

Acanthotyla sp. (Coreidae)

Adults collected from flemingia (*Flemingia* sp.), Popondetta area, N.D., March. Its status as a pest species has not been investigated.

This is the same species that occurs on cacao in the Northern District (see under cacao).

Agapophyta sp. (Pentatomidae)

A heavy population of adults produced necrotic lesions on leaves and pods of cassia (*Cassia fistula*) at Konodobu, C.D., April to June.

Cryptopblebia ombrodelta Low. (Tortricidae)

Adults reared from larvae which had damaged up to half the seed in many pods of indigofera (*Indigofera teysmani*) at Laloki, C.D., May.

Helopeltis clavifer Walk. (Miridae)—Cacao
Mirid

Caused minor damage to shoots of *Flemingia strobilifera* at Bisianumu, C.D., November.

Maconellicoccus hirsutus (Green) (Pseudococcidae)—Hibiscus Mealybug

Severe infestations on hibiscus (*Hibiscus rosasinensis*), township area, Rabaul, E.N.B., throughout the year. Ornamental hedges of hibiscus were heavily infested and suffered severe damage.

Mastotermes darwiniensis Frogg. (Mastotermitidae)—Giant Termite

A *Cassia* sp. tree was found infested by *M. darwiniensis* at Lae (Hospital site), Morobe District, November.

Pericyma cruegeri (Butl.) (Noctuidae)—Poinciana Looper

The 1968 outbreak of *P. cruegeri* in the Port Moresby area, C.D., lasted for approximately 3 months, from the middle of March to mid-June. Observed rates of larval and pupal parasitism were rather low (10 to 15 per cent), but the early onset of the dry season and consequent scarcity of regrowth on defoliated poinciana (*Delonix regia*) trees led to the collapse of the outbreak.

A sample of pupae collected on 21st March yielded the following results: adults emerged 85 per cent, parasitized 11 per cent, died from other causes 4 per cent. The pupal parasites *Brachymeria euploaeae* Westw. (Chalcididae) and *Échthromorpha insidiator* Smith (Ichneumonidae) were bred from the parasitized pupae.

On 19th April, 2 samples were collected—one from walls, stumps and other sites not on poinciana trees, the other from the normal site in webbed leaves. These yielded the following results: adults emerged 84 per cent (leaves), 60 per cent (other sites); parasitized 10 per cent (leaves), 15 per cent (other sites); died from other causes 5 per cent (leaves), 25 per cent (other sites). The high proportion of pupae from other sites which died from causes other than parasitism probably reflects enforced pupation by larvae which had abandoned defoliated trees and failed to find other food.

Poinciana trees at Popondetta, N.D., were completely defoliated by *P. cruegeri* larvae by the end of February. Both of the pupal parasites mentioned above were bred from field collected pupae at Popondetta.

Planococcus citri (Risso) (Pseudococcidae)—
Citrus Mealy Bug

Shoots of *Flemingia strobilifera* were infested by citrus mealy bugs, causing leaf puckering and stem distortion, Bisianumu, C.D., November.

Protaetia sp. ? *fusca* Herbst. (Cetoniinae)

Adults damaged orchid flowers, Lae, Morobe District, June.

Psyllidae, gen. et sp. indet.

Psyllids infested seedlings of *Eucalyptus deglupta* at Togoba, W.H.D., in August. Another species which commonly infests *E. papuana* in the Port Moresby area was sent for specialist identification in April. Both species are considered to be new, but neither has been described.

Riptortus sp. ? *annulicornis* Boisd. (Alydidae)

Adults fed on pods of flemingia (*Flemingia* sp.) Popondetta area, March. Damage severe.

Xanthodes transversa Gn. (Noctuidae)

Larvae fed on hibiscus (*Hibiscus rosa-sinensis*) foliage, Keravat, E.N.B., July.

Xyleborus destruens Blandf. (Scolytinae)

Larvae bored in trunks of casuarina (*Casuarina oligodon*) apparently causing death of some trees in the Wandu area, Chimbu District, November.

Xyleborus fornicatus Eichh. (Scolytinae)

Boring in *Mundulea sericea*, Saiho, N.D., March, 1968.

Xylotrupes gideon (Dynastinae)

Adults numerous on poinciana (*Delonix regia*) trees, Navuvu Plantation, E.N.B., November.

Zeuzera sp. (Cossidae)

Larvae severely damaged a young silky oak (*Grevillea robusta*) tree by boring in the trunk, Mount Hagen, W.H.D., March.

FIELD CROPS

SUGAR CANE (*Saccharum officinarum*)*Atractomorpha crenaticeps* Blanch. (Pyrgomorphidae)

Adults common on cane at Popondetta, N.D., throughout the year. Foliar damage only of minor importance.

Gesonula mundata sanguinolenta Kr. (Acrididae)

Adults common on cane at Popondetta, N.D., throughout the year. Foliar damage only of minor importance.

Hypolixus ritsemae Pasc. (Curculionidae)

Adults collected in numbers on young cane at Popondetta, N.D., throughout the year. Foliar damage slight.

Mulciber linnaei Thoms. (Cerambycidae)

Adults and larvae common in sugar cane stands in the Popondetta area, N.D., throughout the year. Larvae bore in the cane stems and can cause slight to moderate damage to stands.

Oxya gavisa (Walk.) (Acrididae)

Adults collected from young cane at Popondetta, N.D., throughout the year. Foliar damage slight.

TOBACCO (*Nicotiana tabacum*)*Heliothis armigera* (Hubn.) (Noctuidae)—Budworm

Larvae common, feeding on foliage and flowers, Popondetta/Sangara area, N.D., throughout the year.

GRAIN CROPS

MAIZE (*Zea mays*)*Ostrinia* sp. (Pyralidae)

Larvae infested 50 per cent of plants in a $\frac{1}{8}$ acre school garden at Aitape, West Sepik District, June.

RICE (*Oryza sativa*)

Cerambycidae, gen. et sp. indet.

One preserved larva was received from Dreikikir, East Sepik District, in May. It was reported to have been boring in a rice stem.

Chilo sp. (Pyralidae)

Larvae boring in rice stems, Dreikikir, East Sepik District, May.

Sesamia inferens Walk. (Noctuidae)—Pink Stem Borer

Larvae boring in rice stems, Dreikikir, East Sepik District, May.

VEGETABLES

BEAN (*Phaseolus vulgaris*)*Henosepilachna signatipennis* Bois. (Coccinellidae)

Adults common, feeding on foliage, Popondetta, N.D., July to September.

Melanagromyza phaseoli (Tryon) (Agromyzidae)—Bean Fly

Larvae caused severe damage to beans, Popondetta, N.D., July to September.

Riptortus annulicornis Bois. (Alydidae)—Pod Sucking Bug

Adults numerous, feeding on developing and ripe pods, Popondetta, N.D., throughout year. Damage severe.

CABBAGE (*Brassica oleracea* var. *capitata*)*Papuana* sp. (Dynastinae)

Adults fed on stems at or below ground level, Mount Hagen, W.H.D., November.

CAPSICUM (*Capsicum frutescens*)

Plautia sp. (Pentatomidae)

Adults and nymphs fed on and caused deformation of young fruit, Keravat, E.N.B., April to June.

CUCUMBER (*Cucumis sativus*)

Aulacophora sp. ? *similis* Oliv. (Galerucinae)

Adults chewed leaves and caused extensive damage to young plants, Keravat, E.N.B., March to April.

Leptoglossus australis F. (Coreidae)

Adults fed on flowers and young fruits, Keravat, E.N.B., April to June.

POTATO (*Solanum tuberosum*)

Papuana sp. (Dynastinae)

Adults caused minor damage to tubers at Mount Hagen, W.H.D., and Aiyura, Eastern Highlands District, in November and June, respectively.

Papuana sp. ? *woodlarkiana* (Montr.) (Dynastinae)

Adults fed on developing potato tubers, Aiyura, Eastern Highlands District, June.

PUMPKIN (*Cucurbita pepo*)

Aulacophora sp. nr *similis* Oliv. (Galerucinae)

Adults fed on foliage and flowers of pumpkin vine, Kagamuga, W.H.D., December; Keravat, E.N.B., March to April.

Leptoglossus australis F. (Coreidae)

Adults observed feeding on flowers and young fruit, Keravat, E.N.B., May to June.

Paradacus sp. (Tephritidae)

Pumpkin fruit of all ages attacked by this species, Keravat and Vudal, E.N.B., April to June. Few, if any, fruits mature in areas where this species occurs.

TARO (*Colocasia* sp.)

Dermolepida noxium Britton (Melolonthinae)

Adults collected from taro garden, Laloki, C.D., October.

Papuana woodlarkiana woodlarkiana Montr. (Dynastinae)

Adults damaged tubers in an experimental taro planting at Laloki, C.D., October.

TOMATO (*Lycopersicon esculentum*)

Spodoptera litura (F.) (Noctuidae)—Cluster Caterpillar

Larvae fed on developing fruit and caused heavy loss of crop, Keravat, E.N.B., throughout the year.

Valanga spp. (Acrididae)

Adults chewed off young seedling transplants, Keravat, E.N.B., June.

YAM (*Dioscorea* spp.)

Lilioceris sp. ? *bakewelli* Baly (Criocerinae)

Adults and larvae fed on foliage of yam (*Dioscorea* sp.), Port Moresby, C.D., April.

Scarabaeidae, gen. et sp. indet.

Larvae of an unidentified scarabaeid fed on yams, Kalauna Village, Goodenough Island, Milne Bay District, January to March; 50 per cent of village yam gardens affected.

PASTURES

Austracris spp. (Acrididae)—Spur-throated Locust

Adults numerous in native grasslands, Goodenough Island, Milne Bay District, July, 1967 to March, 1968, and again in May to June, 1968.

Gastrimargus musicus (F.) (Acrididae)—Yellow-winged Locust

Adults present in native grasslands, Goodenough Island, Milne Bay District, July to September. Not plentiful.

Hedylepta diemenalis Gn. (Pyralidae)

Larvae fed on pueraria (*Pueraria* sp.), Keravat, E.N.B., August.

Locusta migratoria (L.) (Acrididae)—Migratory Locust

Phase solitarious adults were observed on Goodenough Island, Milne Bay District, during the year, but not in any numbers. No damage

to either grasslands or coconuts reported. Phase solitarias females were observed ovipositing in burnt grassland areas during July to August.

Maruca testulalis Hb. (Pyralidae)

Larvae fed on pueraria (*Pueraria* sp.), Keravat, E.N.B., August.

Valanga spp. (Acrididae)

Adults common in native grasslands, Good-enough Island, Milne Bay District, July to August. At Nuatutu Plantation in July, light swarms of 4 to 8 adults per square yard were noted. Populations decreased as from July, but an increase was again noted in April to June.

WEEDS

Diacrisia niceta (Stal) (Arctiidae)

Larvae feeding on *Portulaca* sp. ? *oleracea* foliage, Mosa Plantation, W.N.B., May.

Teleonemia scrupulosa Stal (Tingidae)—Lantana Bug

Adults and nymphs present on lantana (*Lantana camara*), Wewak, East Sepik District, throughout the year. Damage to plants severe during dry season, with complete defoliation of plants in some areas.

HOUSEHOLD PESTS

Anoplolepis longipes Jerd. (Formicidae)—Crazy Ant

Heavy populations of *A. longipes* invaded houses at Gobari and Situm Land Settlement Schemes, Morobe District. They were nesting in decaying logs scattered throughout coconut plantations and nearby bush and foraging in dwellings and fowl-houses.

Lyctus brunneus (Steph.) (Lyctidae)—Powder Post Beetle

Adults and larvae were collected boring in seasoned timber of *Myristica* sp., Goroka area, Eastern Highlands District, December.

Mastotermes darwiniensis Frogg. (Mastotermitidae)—Giant Termite

The Milford Haven Road area at Lae, Morobe District, apparently remained free from infestation during 1968-1969. At the Hospital site a resurgence of activity was noted in November. This was eventually traced to a nest in a Cassia tree between two of the Hospital

buildings. A total of 11 trees and 21 shrubs were removed from this area in November and June, and the area was trap posted.

The periphery of the Hospital site on the town side was trenched to a depth of 1 ft and treated with 2 gallons of 0.5 per cent dieldrin per 10 lineal feet to guard against possible subterranean movement into the town area proper.

MEDICAL AND VETERINARY PESTS

POULTRY

Hermetia illucens L. (Stratiomyidae)

Fowl droppings at a commercial poultry farm at Lae, Morobe District were heavily infested by larvae. Adults were also present in numbers either feeding or resting on the manure heaps, which were in a very liquid condition.

PARASITES AND PREDATORS

Anoplolepis longipes Jerd. (Formicidae)—Crazy Ant

Workers were observed carrying away *Pantorhytes szentivanyi* Marsh. eggs and "harassing" *P. szentivanyi* adults, Sangara/Popondetta area, N.D.

Apleurotropis lalori Gir. (Eulophidae)

Bred from *Promecotheca papuana* Csiki larvae/pupae collected from damaged coconut palms, Toriu Plantation, E.N.B., September.

Argyrophyllax proclinata Crosskey (Tachinidae)

Bred ex pupa of undetermined tortricid feeding on pueraria (*Pueraria* sp.), Keravat, E.N.B., August.

Brachymeria euploae Westw. (Chalcididae)

Parasitized 23.1 per cent, 7.7 per cent, 6 per cent and 13 per cent of samples of pupae of *Pericyma cruegeri* (Butl.) collected from foliage of *Delonix regia* in September, March and April and from other sites (trunks, walls, eaves) in April respectively, Konedobu area, C.D.

Bred from *Pericyma cruegeri* (Butl.) pupae, Popondetta, N.D., February to April.

Brachymeria salomonis Cam. (Chalcididae)

This pupal parasite was responsible for bringing under control an outbreak of *Pinzu-*

lenza kukisch larvae which were defoliating cacao at Kulili Plantation, Karkar Island, Madang District, August to September.

Brachymeria sp. (Chalcididae)

Bred ex *Panseptia teleturga* Meyr. larva, collected Tavilo Plantation, E.N.B.

Campsomeris sp. ? *manokwariensis* (Cam.) (Scoliidae)

Adults resting on oil palm, Mosa Plantation, W.N.B., May.

Carcelia spp. (Tachinidae)

Two species bred ex *Cephrenes moselyi* (Butl.) larvae collected Talasea area, W.N.B., April.

Bred ex pupae of undetermined lymantriid collected Vunapau Plantation, E.N.B., August.

Bred ex *Tiracola plagiata* (Walk.) pupae, collected Madang, August.

Coccinella arcuata F. (Coccinellidae)

Adult resting on oil palm, Mosa Plantation, W.N.B., May.

Cryptolaemus affinis Crotch. (Coccinellidae)

Adults noted feeding on *Maconellicoccus birsutus* (Green) at Rabaul and *Planococcus citri* (Risso) at Keravat and Gela Gela Plantation, E.N.B., throughout the year.

Closteroceros splendida Kowalski (Eulophidae)

Oothecae of *Promecotheca papuana* Csiki collected from coconut palms, Toriu Plantation, E.N.B., September, yielded *C. splendida* adults.

Cuphocera varia F. (Tachinidae)

Ex *Spodoptera litura* (F.) pupae which were bred from larvae feeding on oil palm foliage, Mosa Plantation, W.N.B., May.

Dirbinomorphia sp. (Chalcididae)

Bred ex *Panseptia teleturga* Meyr. larvae collected Tavilo Plantation, E.N.B., October.

Echthromorpha insidiator Smith (Ichneumonidae)

Parasitized 2.6 per cent and 2 per cent of samples of pupae of *Pericyma cruegeri* (Butl.) collected from foliage of *Delonix regia* in March and April respectively, but was not bred from pupae of this host ex foliage (September)

or ex trunks, walls and eaves (April), Konedobu area, C.D.

Bred from *Pericyma cruegeri* (Butl.) pupae, Popondetta, N.D., February to April.

Euagorus sp. nr *dolosus* Stal (Reduviidae)

Adults observed preying on early instar *Spodoptera litura* (L.) larvae feeding on oil palm foliage, Mosa Plantation, W.N.B., May.

Euagorus sp. (Reduviidae)

Adults and nymphs commonly found feeding on 1st to 4th instar larvae of *Tiracola plagiata* (Walk.) and *Ectropis sabulosa* Warr., Sangara/Popondetta area, N.D.

Exorista fallax Mg. (Tachinidae)

Parasitized 7.7 per cent, 0.8 per cent, 3 per cent and 2 per cent of samples of pupae of *Pericyma cruegeri* (Butl.) collected from foliage of *Delonix regia* in September, March and April and from other sites (trunks, walls, eaves) in April, respectively, Konedobu area, C.D.

Exorista sorbillans Wied. (Tachinidae)

Bred from *Tiracola plagiata* Walk. pupae collected from coffee gardens, Togahau, N.D., May to June.

Exorista sp. (Tachinidae)

Bred from *Clania* sp. larvae collected from oil palm seedlings, Mosa Plantation, W.N.B., April. The larvae were heavily parasitized by both this tachinid and also *Strobliomyia orbata* Wied.

Helenotus exsugiens Stal (Reduviidae)

Adults and nymphs commonly found feeding on 1st to 4th instar larvae of *Tiracola plagiata* (Walk.) and *Ectropis sabulosa* Warr., Sangara/Popondetta area, N.D.

Leefmansia bicolor Waterst. (Encyrtidae)

A small sample of *Segestidea* sp. ? *insulana* Willemse oothecae collected from the Volupai area, W.N.B., in March indicated 10 to 15 per cent parasitism by *L. bicolor*. *L. bicolor* had previously been introduced from New Hanover in July.

Monomorium floricola (Jerd.) (Formicidae)

Workers observed feeding on *Pantorhytes szentivanyi* Marsh. eggs placed on *Pipturus argenteus*, Serovi area, N.D., August.

Neoarcesius sp. (Reduviidae)

Adult female observed feeding on *Pantorhytes szentivanyi* Marsh. larva, Bisi Plantation, Sangara area, N.D., January.

Neophryxe sp. (Tachinidae)

Bred ex pupae of undetermined psychid, Navuvu Plantation, E.N.B., September.

Nerthra laticollis (G. & M.) (Gelastocoridae)

Adult collected from oil palm, Mosa Plantation, W.N.B., May.

Pediobius parvulus (Ferriere) (Eulophidae)

Bred from *Promecotheca papuana* Csiki larvae/pupae collected from damaged coconut palms, Toriu Plantation, E.N.B., September.

Pheidole megacephala (F.) (Formicidae)—Coastal Brown Ant

Workers observed carrying off *Pantorhytes szentivanyi* Marsh. eggs, Sangara/Popondetta area, N.D., throughout the year. Workers have also been observed carrying away tipulid larvae* which were living in *Pantorhytes* channels and preying on *Pantorhytes* larvae.

Platynopus melacanthus Boisd. (Pentatomidae)

Collected from oil palms, Mosa Plantation, W.N.B., May; preying on *Spodoptera litura* (F.) larvae.

Adults and nymphs commonly found feeding on 1st to 4th instar larvae of *Tiracola plagiata* Walk., *Ectropis sabulosa* Warr. and *Pinzulenza kukisch* Her., Sangara/Popondetta area, N.D.

Pristhesancus femoralis Horv. (Reduviidae)

Adults and nymphs commonly found feeding on 1st to 4th instar larvae of *Tiracola plagiata* Walk. and *Ectropis sabulosa* Warr., Sangara/Popondetta area, N.D.

Pristhesancus sp. (Reduviidae)

Collected from oil palms, Mosa Plantation, W.N.B., May.

Prosapegus atrellus Dodd (Scelionidae)

Wasp parasites bred from *Segestidea* sp. oothecae collected Kandrian, W.N.B., June.

Spoggosia sp. (Tachinidae)

One specimen reared from *Pinzulenza kukisch* Her. larvae, collected from cacao, Baubaguina Plantation, C.D., October to November.

*Subsequently identified as *Nephrotoma* sp. and *Limonia* sp.

Spoggosia grandis Macq. (Tachinidae)

Bred from *Thosea sinensis* (Walk.) larvae, collected from coconut foliage, Hula, C.D., August.

Strobliomyia orbata Wied. (Tachinidae)

Bred from *Clania* sp. larvae collected from oil palm seedlings, Mosa Plantation, W.N.B., April. The larvae were heavily parasitized by both this tachinid and also *Exorista* sp.

Telenomus sp. (Scelionidae)

Bred ex eggs lymantriid (? *Euproctis* sp.), collected Vunapau Plantation, E.N.B., August.

Tetrastichus sp. (Eulophidae)

Hyperparasite bred ex cocoon of *Charops* sp. (Ichneumonidae), Vunapau Plantation, E.N.B., August.

Winthemia sp. ? *diversa* Mall. (Tachinidae)

Bred from *Tiracola plagiata* (Walk.) larvae/pupae in the Sangara/Popondetta area, N.D., throughout the year.

BIOLOGICAL CONTROL PROJECTS

A. INSECTS

Coconut Dynastines

The *Platyeris laevis* Dist. distribution programme continued during the year, but on a reduced scale. In all, 550 *Platyeris* were distributed, as follows:—

Stockholm Plantation, E.N.B.	} 250 adults (October, 1967)
Manibu Plantation, E.N.B.	
Kurindale Plantation, E.N.B.	
Mosa Plantation, W.N.B.	} 300 adults (January, 1968)

Towards the end of the year stocks were being built up so as to provide a large supply of *Platyeris* for the new oil palm development area at Cape Hoskins, West New Britain. The policy of distribution of adults only has been maintained in order to provide the best chances for establishment. To date there has been little information to suggest successful establishment of the species in any of the island regions.

Maconellicoccus hirsutus (Green) (Coccidae)

Shipments of *M. hirsutus* predators, all adults, were received from India (Commonwealth Institute of Biological Control, Indian Station) during the year, as follows:—

Brumus suturalis F. (Coccinellidae)

410 shipped (4 shipments),
300 released in the field.

Pullus pallidicollis (Muls.) (Coccinellidae)

75 + shipped (4 shipments),
47 + released in the field.

Hyperaspis maindroni Sic. (Coccinellidae)

120 shipped (1 shipment),
57 released in the field.

Hyperaspis maindroni var. *brumoides* Sic. (Coccinellidae)

270 shipped (2 shipments),
213 released in the field.

All the above releases were made in Rabaul, E.N.B.

One shipment of 215 *H. maindroni* var. *brumoides* forwarded from India was also received at Popondetta, N.D., in May. 183 adults were subsequently released at Popondetta.

Telenomus sp. (Hymenoptera: Scelionidae)

Two trial shipments of *Telenomus* sp., egg parasites of a number of species of Lepidoptera including *Achaea janata* L., were forwarded to Commonwealth Institute of Biological Control, Bangalore, India, for maintenance of their stock colonies.

Unfortunately the population of *Achaea janata* and other cacao flush defoliators has continued very low during the year and it was not possible to forward further supplies.

B. WEEDS

Puncture vine—*Tribulus cistoides*

No further shipments of the stem weevil *Microlarinus lypriformis* (Woll.) were received from Hawaii. However, *M. lypriformis* has apparently established successfully at the release site at Koki with adults and larvae being located in the area every time an inspection was made. By the end of the year, *Tribulus* had been almost eliminated in the immediate vicinity of the release site and the weevil was to be found on plants up to 1 mile away.

In October, 60 adult weevils collected in the Koki area were released in a patch of *Tribulus* at Boroko. It was later reported that the weed had died off there, but a subsequent search in the vicinity located odd plants which did not show signs of infestation.

C. GIANT SNAIL

Further collections of the predatory snail *Gonaxis quadrilateralis* Preston were made during the year in response to a request from the Department of Agriculture, Malaysia. The *Gonaxis* specimens were all collected from two of the original release sites on the Gazelle Peninsula (Tokaya and Keravat).

Live specimens of *Gonaxis quadrilateralis* were found about 2 miles from the original release site at Tokaya, indicating that the species is firmly established in this area. A relatively high population occurs at Keravat.

QUARANTINE INTERCEPTIONS

Agrotis munda Walk. (Noctuidae)—Brown Cutworm

One adult collected inside an aircraft ex Sydney and Brisbane, Port Moresby, October.

Araecerus fasciculatus (Deg.) (Anthribidae)

Adults infested a package of dried shrimps ex Singapore, Port Moresby, November.

Locusta migratoria L. (Acrididae)—Migratory Locust

A female (phase solitarious) was collected alive in a crate of lettuce ex Queensland, Port Moresby, April.

Phthorimaea operculella (Zell.) (Gelechiidae)
—Potato Moth

Adults were reared from larvae infesting a cargo of potatoes ex Queensland, Samarai, April.

Strumeta tryoni (Frogg.) (Tephritidae)—Queensland Fruit Fly

Adults were bred from larvae infesting nectarines and tomatoes ex Sydney, Port Moresby, February. Both lots of fruit were in aircraft passengers' hand luggage.

APPENDIX I—INDEX OF INSECTS MENTIONED

<i>Acanthotyla</i> sp.	181, 186, 191	<i>Clania</i> sp.	186, 195, 196
<i>Achaea janata</i>	181, 197	<i>Closteroceros splendida</i>	195
<i>Adoxophyes fasciculana</i>	181	<i>Coccinella arcuata</i>	186, 195
<i>Adoxophyes</i> sp.	181	? <i>Coelophora inaequalis</i>	186
<i>Adoxophyes</i> sp. nov.	188	<i>Coelophora inaequalis</i> var. ?	186
<i>Agapophyta</i> sp.	191	<i>Coelophora ripponi</i>	186
<i>Agrilus occipitalis</i>	189	<i>Collembola</i> (? <i>Sminthuridae</i>)	188
<i>Agrotis munda</i>	197	<i>Cryptolaemus affinis</i>	195
<i>Aiteta iridias</i>	190	<i>Cryptophlebia ombrodelta</i>	191
<i>Alcidodes</i> sp.	186	<i>Cuphocera varia</i>	188, 195
<i>Aleurodicus destructor</i>	183	<i>Dasychira mendosa</i>	182
<i>Amarygmus hydrophiloides</i>	183	<i>Dermolepida noxium</i>	193
<i>Amblypelta cocophaga cocophaga</i>	183	<i>Diacrista niceta</i>	186, 194
<i>Amblypelta theobromae</i>	181	<i>Diadlaspia fabricii</i>	186
<i>Anchiale maculata</i>	182	? <i>Dibammus</i> sp.	182
<i>Anoplolepis longipes</i>	194	<i>Dindymus</i> sp. ? <i>pyrochrous</i>	186
<i>Apleurotropis lalori</i>	194	<i>Dirhinomorphia</i> sp.	195
<i>Araecerus fasciculatus</i>	197	<i>Doirania leefmansi</i>	184
<i>Argyrophylax proclinata</i>	194	<i>Echthromorphia insidiator</i>	191, 195
<i>Asiadacus curvifer</i>	190	<i>Ectocemus decemmaculatus</i>	184
<i>Aspidomorphia quadriradiata</i>	186	<i>Ectropis sabulosa</i>	182, 195, 196
<i>Atractomorphia crenaticeps</i>	192	<i>Elythrocheilus coeruleatus</i>	182, 189
<i>Aulacophora</i> sp. ? <i>similis</i>	193	<i>Eoporus elegans</i>	186
<i>Aulacophora</i> sp.	183	<i>Euagorus</i> sp. nr <i>dolosus</i>	195
<i>Austracris</i> sp.	193	<i>Euagorus</i> sp.	195
<i>Axiagastus cambelli</i>	183, 184	<i>Eudecatoma</i> sp.	189
<i>Baryrrhynchus schroederi</i>	184	<i>Eupholus schonherri</i>	187
<i>Basicyrtus</i> sp. nr <i>rugicollis</i>	186	<i>Euproctis</i> sp.	182, 196
<i>Brachymeria euploeae</i>	191, 194	<i>Eurycania tristicula</i>	187, 189
<i>Brachymeria salomonis</i>	183	<i>Exorista fallax</i>	195
<i>Brachymeria</i> sp.	195	<i>Exorista sorbillans</i>	186, 195
<i>Brevipalpus californicus</i>	188	<i>Exorista</i> sp.	186, 195, 196
<i>Brontispa longissima</i>	184	<i>Galela</i> sp.	180
<i>Brumus suturalis</i>	197	<i>Gastrimargus musicus</i>	193
<i>Campsomeris</i> sp. ? <i>manokwariensis</i>	186, 195	<i>Gesonula mundata sanguinolenta</i>	192
<i>Carcelia</i> sp.	184, 195	<i>Glenea aluensis</i>	182
<i>Cardiodactylus novae-guineae</i>	186	<i>Grylotalpa</i> sp.	187
<i>Carpophilus</i> sp.	186	<i>Hedylepta diemenalis</i>	193
<i>Cephrenes augiades</i>	186	<i>Heliothis armigera</i>	192
<i>Cephrenes moselyi</i>	184, 186, 195	<i>Helenotus exsugiens</i>	195
<i>Cerambycidae</i> gen. et sp. indet.	182, 192	<i>Helopeltis clavifer</i>	182, 191
<i>Ceresium pachymerum</i>	186	<i>Hemitarsonemus latus</i>	188
<i>Chariotbeca</i> sp.	184	<i>Henosepilachna doryca</i>	187
<i>Charops</i> sp.	196	<i>Henosepilachna guttatopustulata</i>	187
<i>Chilo</i> sp.	192	<i>Henosepilachna signatipennis</i>	192
<i>Chunrocerus niveosparus</i>	190		

<i>Henosepilachna</i> sp.	187	<i>Panseptia teleturga</i>	182, 195
<i>Hermetia illucens</i>	194	<i>Pantorhytes chrysomelas</i>	182
<i>Homona coffearia</i>	182	<i>Pantorhytes batesi batesi</i>	183
<i>Homona</i> sp. ? <i>coffearia</i>	188	<i>Pantorhytes plutus</i>	183
<i>Hyperaspis maindroni</i>	197	<i>Pantorhytes szentivanyi</i>	183, 194, 195, 196
<i>Hyperaspis maindroni</i> var. <i>brumoides</i>	197	<i>Papilio aegaeus</i>	189
<i>Hypolixus ritsemae</i>	192	<i>Papilio</i> sp.	189
? <i>Hypolixus</i> sp.	187	<i>Papuana woodlarkiana</i>	187, 188
<i>Hyposidra talaca</i>	182	<i>Papuana woodlarkinana woodlarkiana</i>	193
<i>Idiophantis</i> sp. nov. nr <i>chirodaeta</i>	189	<i>Papuana</i> sp. ? <i>woodlarkiana</i>	193
<i>Idiopsis caerulea</i>	182	<i>Papuana</i> sp.	188, 192, 193
<i>Idioscopus clypealis</i>	190	<i>Paradacus</i> sp.	193
<i>Ischiopsopha bifasciata</i>	190	<i>Pediobius parvulus</i>	196
<i>Lanelater</i> sp.	187	? <i>Peribleptus</i> sp.	187
<i>Leefmansia bicolor</i>	184, 185, 195	<i>Pericyma cruegeri</i>	180, 191, 194, 195
<i>Leptoglossus australis</i>	187, 193	<i>Pheidole megacephala</i>	196
<i>Lilioceris</i> sp. ? <i>bakewelli</i>	193	<i>Phthorimaea operculella</i>	197
<i>Limonia</i> sp.	196	<i>Phyllocnistis citrella</i>	189
<i>Lobobasis niveimaculata</i>	182	<i>Pinzulenza kukisch</i>	183, 194, 196
<i>Locusta migratoria</i>	193, 197	<i>Planococcus citri</i>	191, 195
<i>Lycius brunneus</i>	194	<i>Platyeris laevicollis</i>	196
<i>Lynamorpha diluta</i>	187	<i>Platynopus melacanthus</i>	196
<i>Maconellicoccus hirsutus</i>	191, 195, 197	<i>Plautia</i> sp.	193
<i>Maruca testulalis</i>	194	<i>Plutorectis</i> sp. nr <i>boisduvali</i>	187
<i>Mastotermes darwiniensis</i>	191, 194	<i>Priochirus</i> sp.	187
<i>Melanagromyza phaseoli</i>	192	<i>Priocnemicoris flaviceps</i>	183
<i>Mettriona papuana</i>	187	<i>Pristhesancus femoralis</i>	196
<i>Mezira membranaceus</i>	187	<i>Pristhesancus</i> sp.	196
<i>Microlarinus lypriformis</i>	197	<i>Promecotheca papuana</i>	184, 194, 195, 196
<i>Miolispa papuana</i>	184	<i>Prosapegus arellus</i>	196
<i>Monohammus</i> sp.	182	<i>Protaetia</i> sp. ? <i>fusca</i>	191
<i>Monolepta nigroapicata</i>	187	<i>Pseudodoniella typica</i>	183
<i>Monomorium floricola</i>	195	<i>Psychidae</i> , gen. et sp. indet.	187
<i>Mulciber linnaei</i>	192	<i>Psyllidae</i> , gen. et sp. indet.	191
<i>Nacaduba berenice dobbensis</i>	182	<i>Pterolophia arrowwiana</i>	184
<i>Nacoleia octasema</i>	189	<i>Pullus pallidicollis</i>	197
<i>Neolieftinckana fuscata</i>	182	<i>Rhinoscaptha schmeltzi</i>	187
<i>Neoarcesius</i> sp.	196	<i>Rhinoscaptha thomsoni</i>	187
<i>Neophryxe</i> sp.	196	<i>Rhynchophorus bilineatus</i>	184
<i>Nephrotoma</i> sp.	196	<i>Rhynchophorus</i> sp.	184, 185
<i>Nerthra laticollis</i>	187, 196	<i>Rhyparida fasciata</i>	187
<i>Nysius villicus</i>	187	<i>Riptortus annulicornis</i>	192
<i>Olethreutes</i> sp.	182	<i>Riptortus</i> sp. ? <i>annulicornis</i>	191
? <i>Oligonychus coffeae</i>	189	<i>Salina</i> sp.	183
<i>Oribius cruciatus</i>	189	<i>Scapanes australis</i>	187
<i>Oribius</i> spp.	188	<i>Scapanes australis grossepunctatus</i>	184
<i>Oryctes rhinoceros</i>	184	<i>Scarabaeidae</i> , gen. et sp. indet.	193
<i>Ostrinia</i> sp.	192	<i>Scolytotplatypus papuana</i>	189
<i>Oxya gavisia</i>	192		

<i>Segestidea</i> sp. ? <i>insulana</i>	184, 195	<i>Telenomus</i> sp.	196, 197
<i>Segestidea</i> sp.	185, 196	<i>Teleonemia scrupulosa</i>	194
<i>Selenothrips rubrocinctus</i>	189	Tetranychidae (? <i>Oligonychus coffeae</i>)	189
<i>Sesamia inferens</i>	192	<i>Tetrastichus</i> sp.	196
<i>Sodates</i> sp.	188	<i>Thosea sinensis</i>	185, 189
<i>Sparganobasis subcruciatu</i> s	185	<i>Tiracola plagiata</i>	183, 185, 195
<i>Spodoptera litura</i>	185, 188, 193, 195, 196	<i>Tirathaba rufivena</i>	185
? <i>Spoggosia</i> sp.	183, 196	<i>Toxoptera aurantii</i>	183, 189
<i>Spoggosia grandis</i>	196	<i>Tmesisternus politus</i>	188
<i>Stenocatantops angustifrons</i>	188	<i>Tmesisternus yorkensis</i>	188
<i>Stethynium</i> sp.	184	<i>Uropteroides gestroi</i>	185
<i>Strobliomyia orbata</i>	186, 195, 196	<i>Valanga</i> sp.	188, 193, 194
<i>Strumeta bryoniae</i>	190	<i>Winthemia</i> sp. ? <i>diversa</i>	196
<i>Strumeta frauenfeldi</i>	190	<i>Xanthodes transversa</i>	191
<i>Strumeta musae</i>	189, 190	<i>Xyleborus compactus</i>	180
<i>Strumeta tryoni</i>	190, 197	<i>Xyleborus destruens</i>	183, 192
<i>Strumeta</i> sp. 'A'	190	<i>Xyleborus exiguus</i>	185
<i>Strumeta</i> sp. 'B'	190	<i>Xyleborus fornicatus</i>	192
<i>Strumeta</i> sp. 'C'	190	<i>Xyleborus potens</i>	189
<i>Sybra</i> sp.	188	<i>Xylotrupes gideon</i>	192
<i>Symphylites</i> sp.	183	<i>Zeuzera coffeae</i>	186, 189
<i>Tarundia boadicea</i>	188	<i>Zeuzera</i> sp.	192
<i>Tarundia</i> sp.	185	<i>Zophiuma lobulata</i>	185

APPENDIX II—INDEX OF PLANT HOSTS MENTIONED

Avocado	<i>Persea gratissima</i>	189
Banana	<i>Musa</i> spp.	189
Bean, French	<i>Phaseolus vulgaris</i>	192
Cabbage, European	<i>Brassica oleracea</i> var. <i>capitata</i>	192
Cacao	<i>Theobroma cacao</i>	181-183
Cashew	<i>Anacardium occidentale</i>	189
Capsicum	<i>Capsicum frutescens</i>	193
Cassia	<i>Cassia</i> sp.	191
	<i>Cassia fistula</i>	191
Casuarina	<i>Casuarina oligodon</i>	192
Citrus	<i>Citrus</i> spp.	189
	<i>Citrus sinensis</i>	189
Coconut	<i>Cocos nucifera</i>	183
Coffee	<i>Coffea arabica</i>	185, 186
	<i>Coffea canephora</i>	185, 186
Cucumber	<i>Cucumis sativus</i>	193
Eucalypt	<i>Eucalyptus deglupta</i>	191
	<i>Eucalyptus papuana</i>	191
Eugenia	<i>Eugenia</i> sp.	189, 190
Flemingia	<i>Flemingia</i> sp.	191
	<i>Flemingia strobilifera</i>	191
Gliricidia	<i>Gliricidia maculata</i>	180
Hibiscus	<i>Hibiscus rosa-sinensis</i>	191
Indigofera	<i>Indigofera teysmani</i>	191
Leucaena	<i>Leucaena leucocephala</i>	183
Lantana	<i>Lantana camara</i>	194
Lime	<i>Citrus aurantifolia</i>	189
Maize	<i>Zea mays</i>	192
Mango	<i>Mangifera indica</i>	190
Muli	<i>Citrus aurantifolia</i>	189
Mundulea	<i>Mundulea sericea</i>	192
Myristica	<i>Myristica</i> sp.	194
Orchid	fam. <i>Orchidaceae</i>	191
Palm, coconut	<i>Cocos nucifera</i>	183-185
Palm, oil	<i>Elaeis guineensis</i>	186-188
Pawpaw	<i>Carica papaya</i>	190
Pigweed	<i>Portulaca</i> sp. ? <i>oleracea</i>	186, 194
Pipturus	<i>Pipturus argenteus</i>	195
Poinciana	<i>Delonix regia</i>	192, 194, 195
Potato, European	<i>Solanum tuberosum</i>	193
Pueraria	<i>Pueraria</i> sp.	193, 194
Pumpkin	<i>Cucurbita pepo</i>	193
Puncture vine	<i>Tribulus cistoides</i>	197
Rice	<i>Oryza sativa</i>	192
Silky oak	<i>Grevillea robusta</i>	192
Sugar-cane	<i>Saccharum officinarum</i>	192
Taro	<i>Colocasia</i> sp.	193
Tea	<i>Camellia sinensis</i>	188, 189
Terminalia	<i>Terminalia catappa</i>	190
Tobacco	<i>Nicotiana tabacum</i>	192
Tomato	<i>Lycopersicon esculentum</i>	193
Yam	<i>Dioscorea</i> sp.	193

Printed and published by R. D. Sholl, Acting Government Printer,
Port Moresby.—B6430/5.72.