BISHOP MUSEUM BULLETINS IN ENTOMOLOGY

New Guinea Flatidae (Homoptera): Species Collected on Economic and Other Plants, with Descriptions of New Species

JOHN T. MEDLER

Bishop Museum Bulletin in Entomology 2

Bishop Museum Press
Honolulu

The *Bulletin of the Bernice P. Bishop Museum* (ISSN 0005–9439) was begun in 1922 as a series of monographs presenting the results of research in many scientific fields throughout the Pacific. Beginning in 1987, the *Bulletins* continued with a slightly modified title as four new series: *Bishop Museum Bulletins in Anthropology* (ISSN 0893–3111), *Bishop Museum Bulletins in Botany* (ISSN 0893–3138), *Bishop Museum Bulletins in Entomology* (ISSN 0893–3146), and *Bishop Museum Bulletins in Zoology* (ISSN 0893–312X). Each series is sequentially numbered, beginning with number 1. *Bulletins* are issued irregularly.

For subscription information or guidelines on submission of manuscripts, please write:

The Editor
Bishop Museum Press
P.O. Box 19000-A
Honolulu, Hawai'i 96817

Bishop Museum Bulletin in Entomology 2

NEW GUINEA FLATIDAE (HOMOPTERA)

JOHN T. MEDLER is an Honorary Associate, Bishop Museum, Honolulu, Hawai'i.

New Guinea Flatidae (Homoptera): Species Collected on Economic and Other Plants, with Descriptions of New Species

JOHN T. MEDLER

Bishop Museum Bulletin in Entomology 2

Bishop Museum Press
Honolulu, 1989

PUBLISHED BY
Bishop Museum, Honolulu
W. Donald Duckworth, Director

The paper used in this publication meets the minimum requirements of American National Standards for Information Sciences–Permanence of Paper for Printed Library Materials
ANSI Z39.48–1984

ISBN 0–930897–38–2
ISSN 0893–3146
Library of Congress Catalog Card No. 88-63409

Contents

I WISH TO EXPRESS my deep gratitude to Dr. John Ismay and the late Drs. J.J.H. Szent-Ivany and Wayne Gagné for helpful comments given during preparation of the final manuscript.

Abstract

DISTRIBUTION RECORDS are given for 31 species of Flatidae in the New Guinea geographical region, based mostly on collections in the Bernice P. Bishop Museum and Papua New Guinea Department of Primary Industry. Records of plants associated with each of the species are listed, including economic crop plants such as tea, coffee, cacao, and rubber seedlings.

Keys to genera and species, descriptions, and illustrations of tegmina and male genitalia are presented to help future workers with identification of the species.

New genera proposed are *Taparella* and *Talopsus*.

New species are *Colgar bespectum, Colgar elatum, Colgar ligorum, Colgar missior, Colgar orisum, Neodaksha marginata, Papuanella affinis, Papuanella bistigma, Papuanella destituta, Papuanella dilexa, Papuanella flexior, Papuanella jacata, Papuanella rufilis, Papuanella similata, Sephena conforma, Sephena infumata, Sephena stigmatica, Talopsus albastum, Talopsus variabilis*, and *Taparella minima*.

New synonymies are *Phyllyphanta birarae* and *Euphanta pokiana*, both junior synonyms of *Nephesa chlorospila; Phymoides rubromaculatus* and *Colgar similata*, both junior synonyms of *Nephesa bistriguttata; Paratella discoidalis* and *Paratella miniata*, both junior synonyms of *Nephesa amata*. *Phymoides* Distant is a new junior synonym of *Neocromna* Distant.

Three appendices summarize or supplement data presented in the report.

Introduction

THIS IS A REPORT ON THIRTY-ONE species of Flatidae in the New Guinea geographical subregion that are associated with plant records. Many of the species are common and sometimes locally abundant on economic crop plants such as tea, coffee, cacao, and rubber seedlings. Dr. John W. Ismay, then Senior Entomologist with the Papua New Guinea Department of Primary Industry, Konedobu, requested my help in 1984 in the identification of Flatidae that had been collected in connection with a research project on vectors of plant virus diseases. A large number of the specimens submitted by Ismay were labeled with the names of plants on which the insects were collected. Additional data on insect-plant associations were obtained from labels on specimens examined during my research on the Flatidae of New Guinea. Collections of major importance that I examined were (1) specimens collected by Dr. J.J.H. Szent-Ivany and co-workers in connection with insect pest surveys on economic crops in Papua New Guinea, (2) general collections accumulated during faunal surveys in New Guinea under direction of Dr. J. L. Gressitt, and (3) collections loaned by the museums, which are identified as depositories of types of new species described in this report.

The Flatidae comprise one of the larger families of Homoptera Auchenorrhyncha Fulgoroidea. Close relatives are known commonly as leafhoppers, planthoppers, and cicadas. These insects feed exclusively by sucking plant juices. The immature stages of flatids produce long, wax filaments, and adult females produce wax filaments that provide a protective covering for egg deposits. In all Flatidae the tegmina have wide precostal margins traversed by numerous crossveins, and the base of the clavus is pustulate.

No flatid pest of vegetable, grain, or forage legume has been reported in Papua New Guinea, according to Young (1984), who reviewed the literature. Some species of flatids are common and sometimes locally abundant on economic crop plants, such as coffee, cacao, and rubber seedlings, according to Szent-Ivany (1961, 1963), Szent-Ivany & Catley (1960), Szent-Ivany & Dun (1964), and Szent-Ivany & Stevens (1966). Szent-Ivany & Ardley (1963) stated that on some plantations the leaves, branches, and pods of cacao were literally covered with waxy filaments, but damage was considered insignificant. Incidentally, many flatids in the Szent-Ivany publications were recorded under provisional names. My examination of specimens on

which determinations were based has enabled application of corrected names to the species involved.

This report provides new information on a wide range of flatid-plant associations. It should be expected that some labels on adult insect specimens may designate a plant that is not obligatory during the life cycle of the insect. Complete host information is obtained by knowing the feeding habits of both the immature and adult stages. Nevertheless, constant association of an adult insect with a plant species should indicate an important relationship and is valuable information to have during investigations on insect vectors of plant virus diseases.

This report is limited to 31 species of Flatidae bearing labels that associate the respective specimens with plant names, particularly the names of economic crop plants. The 31 species comprise 41 per cent of the 76 species that are presently known from New Guinea and its outlying islands. A checklist presented in Appendix 1 summarizes the current taxonomic status of the family.

Methods

LABEL INFORMATION such as locality, date, and collector is recorded in entirety for type specimens of new species, except that dates on labels have been transcribed to a consistent sequence of day, month, and year.

Paratype records are grouped under the respective depository museums.

Records of economic plants are listed alphabetically under the common names of economic plants. Plants without common names are cited by their scientific names. Incidentally, very few labels carried generic and specific names of noneconomic plants. An alphabetical list of all cited plants along with the family classification of each is presented in Appendix 2.

All label names of collecting localities in New Guinea were verified in the *Papua New Guinea Gazetteer,* the *Australia and Indonesia Official Standard Names Gazetteer, Pacific Island Names* (Motteler 1986), and an unpublished mimeographed list of New Guinea localities visited by Bishop Museum collectors.

Data from Papua New Guinea are listed by abbreviations of provinces as follows: BGL, Bougainville; CEN, Central; CBU, Chimbu; EHD, Eastern Highlands; ENB, East New Britain; ENG, Enga; ESP, East Sepik; GLF, Gulf; MAD, Madang; MBE, Morobe; MNB, Milne Bay; NID, New Ireland; NTH, Northern; SHD, Southern Highlands; WES, Western; WHD, Western Highlands; WSP, West Sepik. Irian Jaya, Indonesia (West New Guinea), is abbreviated as IJA.

Outlying geographical localities are placed in political subdivisions with the following abbreviations: Independent State of Solomon Islands, SOL; Indonesia: Maluku (Moluccas), MAL; and Australia: Queensland, QLD. The terminology of Motteler (1986) is used for Solomon Islands standard names and options. An alphabetical list of place names cited in this publication along with latitude and longitude coordinates is presented in Appendix 3.

All measurements are given in millimeters. Except for the overall length (measured with a ruler), the measurements were made with a binocular microscope having a 20 × 20 grid in a 15 × eyepiece. Grid units were converted to millimeters. Normally, measurements were made on the right tegmen in lateral view. Characters were measured as follows:

Lengths. Overall in side view along the midline from anterior margin of the head to posterior margin of the tegmen. Vertex (v) along the dorsal midline of the head

from the transverse posterior carina to anterior margin, including projection of the frontal carina, if present. Pronotum (p) and mesonotum (m) along the dorsal midline. Front or frons (f) along the midline from dorsal apex to the frontoclypeal suture. (Note: vertex and front are descriptive terms used for convenience only and do not apply in a conventional morphological sense.) Tegmen (t) from origin of the basal stem to maximal apical margin midway between the costal and sutural margins. Tegmen postclaval sutural margin (pcl) from the tip of the clavus to the apex of the sutural angle, or to the midpoint of the arc if the sutural angle is convex.

Widths. Vertex (v) transversely along the posterior carina between its junction points with the lateral carinae dorsad of eyes. Front (f) at the maximal point, usually but not always, on a plane near antennal insertions. Tegmen (t) at a maximal point between the costal and sutural margins in the postclaval apical area.

In cases where the holotype was a female and no male was present among the syntypes, a representative male (plesiotype) was selected for dissection and illustration of the genitalia. A blue plesiotype label has been attached to these males. Also, certain male and female specimens used for measurements may bear a blue label. The term plesiotype has no status under taxonomic rules, but specimens so labeled are accurately identified as having special treatment or use in relation to published data. The depository of each plesiotype is cited so that future workers may locate the specimen for examination.

The following acronyms are used for the depository museums that were sources of the specimens examined:

AM	Amsterdam Museum, Amsterdam, Netherlands
AMNH	American Museum of Natural History, New York, USA
BMNH	British Museum (Natural History), London, England
BPBM	Bernice P. Bishop Museum, Honolulu, Hawai'i, USA
CAS	California Academy of Sciences, San Francisco, USA
DSMT	Dresden Staatliches Museum für Tierkunde, Dresden, DDR
IRSN	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
MCSN	Museo Civico di Storia Naturale, Genova, Italy
MNH	Hungarian Natural History Museum, Budapest, Hungary
MV	Museum of Victoria, Abbotsford, Australia
NCSU	North Carolina State University, Raleigh, North Carolina, USA
PNGDPI	Department of Primary Industry, Konedobu, Papua New Guinea
RNHL	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
SAM	South Australian Museum, Adelaide, Australia
USNM	United States National Museum, Washington, DC, USA

To aid future workers studying flatids in New Guinea, practical keys, illustrations, and descriptions are provided. Conventional characters used in keys relate mostly to

morphology of the head and tegmina. Viewed in dorsal and frontal aspects, the head has variations in length, width, and convexity that are best described as character states of the vertex and frons. In some cases the vertex is defined by an anterior margin that visibly separates the dorsum of the head from the frons. The margin may be ledgelike, carinate, or only a carinal remnant. In other cases, the anterior margin is not clearly defined and the frons extends convexly across the dorsum until it reaches a transverse carina adjacent to, or covered by, the anterior margin of the pronotum. The shape and arrangement of certain longitudinal and transverse carinae on the head have considerable significance taxonomically.

The tegmina display diagnostic characters especially in their shape and venation. Considerable attention is given to the longitudinal veins arising from the node of the basal stem. These veins are named Radius, Sector, and Media (R, S, M). Most flatids have the 3 veins arising separately at the node, but some have veins R + S or M + S united in a common stem for a short distance before forking.

The metatibiae of all genera treated in this publication have a single, black-tipped, preapical lateral spine. All females have a curiously modified ovipositor consisting of much reduced valvulae I that are enclosed by modified valvulae III. The apical margins of valvulae III each have an unarmed, unsclerotized process that is directed posteriorly.

Illustrations of the head and tegmina in Figs. 1–17 are intended to help in placement of genera by depicting characters given in the key. The keys presented for determination of species should be supplemented by examination of male genital characters, if possible.

Seventy-six percent of the named species in New Guinea can be assigned to the 8 genera treated in this report.

Key to Genera of the Species Treated in This Report

1. Tegmen with veins R + S and M arising from basal stem, branches of vein S extending parallel to R, posterior margin with interveinal red dashes. Length not more than 10 mm (Figs. 9, 17) ..... *Siphanta*
   Not as described 2
2. Head produced acutely or obtusely; tegmen sutural angle acutely pointed, right-angled, or sometimes convex (Figs. 1, 2, 4) 3
   Head truncate or nearly so; vertex much wider than long; tegmen sutural angle obtusely convex, or sometimes right angled (Figs. 11, 13, 14, 16) 5
3. Frons acutely pointed dorsally, V-shaped lateral carinae united with median carina at the apex ..... *Colgar*
   Frons not acutely pointed; lateral carinae U-shaped, if present 4

4. Head elongate conical, upturned, apex blunt; tegmen with 3 red spots aligned longitudinally across disc (Figs. 1, 12) ..... *Neocromna*
   Head short, broadly obtuse; tegmen spots black, if present (Figs. 2, 5) ..... *Neodaksha*
5. Tegmen with 2 longitudinal veins (R + S, M) arising from the basal stem (Figs. 3, 5, 8) 6
   Tegmen with 3 longitudinal veins (R, S, M) arising from the basal stem (Figs. 6, 7) 7
6. Anterior margin of vertex sharply carinate along its entire width; tegmen postclaval sutural margin elevated convexly (Figs. 3, 13) .... *Talopsus,* n. gen.
   Anterior margin of vertex not carinate along entire margin; smooth areas between vertex and front laterally ..... *Sephena*
7. Vertex flat, anterior margin sharply carinate along its entire width (Fig. 14) ..... *Papuanella*
   Vertex convexly rounded to merge with the front, the margin medially formed by U-carina of the front (Fig. 16) ..... *Taparella,* n. gen.

Genera and Species Associated with Plant Data

Genus **Siphanta** Stål

Siphanta Stål, 1862: 69.—Metcalf, 1957: 231.—Fletcher, 1985: 3.

Type species. Poeciloptera acuta Walker, 1851: 448, designated by Melichar, 1902: 36.

Diagnosis. Dorsum of head, pro-, and mesonota flattened, rugulose; tegmen costal margin and most of clavus pustulate, corium with scattering of small pustules often colored reddish brown, apical margin narrowly red except where interrupted by unpigmented terminal veinlets. Tegmen basal stem giving rise to 2 strong longitudinal veins consisting of vein M and long-stemmed vein R + S, branches of vein S extending parallel to R. Metatibial spines 1:6. Fletcher (1985) has revised the genus, presenting descriptions and illustrations of 40 species.

Distribution. Most members of this genus are found in Australia only. *Siphanta patruelis* (Stål) was described from the Philippines and occurs widely in Indonesia, Southern New Guinea, and Northern Australia. *Siphanta acuta* (Walker) is known in New Zealand and the Hawaiian Islands as an introduced species.

Siphanta patruelis (Stål) Figs. 9, 17, 41

Phyllyphanta patruelis Stål, 1859: 283.
Siphanta toga Kirkaldy, 1906: 454.—Fletcher, 1985: 19 (synonymy).—Medler, 1987: 123.
Siphanta toga var. *maculata* Lallemand, 1935: 662.—Fletcher, 1985: 19 (synonymy).
Siphanta patruelis Metcalf, 1957: 239.—Fletcher, 1985: 19.

Type locality. PHILIPPINE ISLANDS: Manila.

Diagnosis. Overall color grass green or yellow-green; vertex angularly convex, slightly longer than pronotum; center of small cells of tegmen may lack normal green or stramineous color of membrane, thus giving whitish, finely mottled pattern. Specimens may have oblique whitish or pale yellowish band along vein M for length of tegmen, which gives distinctive appearance illustrated clearly by Kirkaldy (1907, pl. III, fig. 3). Hind leg spine formula 1:6:9. Male genitalia of paralectotype of *S. toga* from Cairns, Queensland, illustrated in Fig. 41. The variety *maculata* Lallemand

is distinctly marked with solid brown pigment that covers the claval and postclaval area of the tegmen. Specimens with these markings are no more than color variants, as differences were not found in characters of the genitalia among specimens from Australian populations containing *patruelis* and an occasional *maculata.*

Measurements (♂, ♀). From lectotype ♂ and paralectotype ♀ of *S. toga* Kirkaldy from N Queensland, Cairns (BPBM). Length: overall 8.25, 9.50; v 0.62, 0.66; f 0.91, 1.16; p 0.50, 0.54; m 1.66, 1.70; t 6.81, 7.64; pcl 1.49, 1.49. Width: v 0.75, 0.83; f 1.00, 1.08; t 3.65, 4.48.

Determinations. Representative specimens of *Siphanta* in the Bishop Museum were examined by M. J. Fletcher (1985) in connection with his revision of the genus, including specimens segregated at an earlier time as *S. toga.* These specimens bear Fletcher's determination labels. Materials examined in the Department of Primary Industry collection have Medler determination labels. Also, M.S.K. Ghauri determination labels "*S.* sp. ? *toga*" are attached to 2 ♀: Oriomo Agric. Sta., 13.X.1960, *Pueraria phaseoloides,* Szent-Ivany, #3868–69, C.I.E. #17341.

Locality records

CENTRAL PROV: Aroa, Bisianumu, Boroko, Dogura, Gordon, Itikinumu, Konedobu, Laloki, Port Moresby and environs, Taurama, Rouna. One ♀ var. *maculata,* Boroko.

WESTERN PROV: Daru Island, Oriomo Agric. Sta.

IRIAN JAYA: Eramboe, including one ♀ var. *maculata.*

Plant records

Citrus: Laloki, 2.II.1979.

Eucalyptus: Aroa, 30.IX.1958 (Gressitt); Port Moresby, 5–6.VI.1955 (Gressitt).

Grasses: Boroko, 6–7.XI.1960 (Gressitt).

Guava: Laloki, 25.V.1983 (Szent-Ivany).

Kudzu: Oriomo Agric. Sta., 13.X.1960 (Szent-Ivany).

Manihot utilissima orn. var.: Boroko, 3.VII.1958 (Szent-Ivany).

Rattlebox: Bisianumu, 16.IX.1955 (Szent-Ivany); Oriomo Agric. Sta., 13.X.1960 (Szent-Ivany).

The only other species of *Siphanta* known from New Guinea are *S. lucindae* Kirkaldy and *S. expatria* Fletcher, which were recorded by Fletcher (1985) from Goroka and Eramboe, respectively. The Goroka locality is based on a label with a spelling error. A duplicate specimen with identical collection data otherwise reads "Boroko, Port Moresby."

Genus Colgar Kirkaldy

Colgar Kirkaldy, 1900: 242.—Metcalf, 1957: 260.
Cromna Melichar, 1901: 199 (not Walker, 1857: 85).—Kirkaldy, 1906: 458 (synonymy).

Type species. Cromna peracuta Walker, 1858: 120, designated by Kirkaldy, 1900: 242.

Diagnosis. Head subacutely conical, as long as or longer than pronotum; median longitudinal carina of front meeting lateral V-carina at apex; vertex, pro-, and mesonota with sharp median longitudinal carina, mesonotum with lateral carinae. Tegmen R, S, and M veins arising together from basal stem, discal cell formed by M_1–M_2 crossvein, often marked with red spot; Cu forking, oblique branch joining M_2; sutural angle obtusely convex, right angled, or acutely pointed. Metatibial spines 1:6.

Distribution. Australia, New Guinea Subregion, Irian Jaya, Maluku.

Key to Species of *Colgar*

1. Vertex pointed acutely, about 2 × longer than pronotum; tegmen sutural angle prolonged acutely ..... *surrectum*
   Vertex moderately acute or obtuse, not longer than pronotum; tegmen sutural angle obtusely convex or right angled 2
2. Overall length less than 12 mm, tegmen sutural angle obtusely rounded 3
   Overall length 12 mm or longer, tegmen sutural angle at 90° or nearly so 6
3. Overall length less than 9 mm, three large red spots lengthwise across disc of tegmen ..... *bespectum*, **n. sp.**
   Overall length more than 9 mm, tegmen without red spots, or spots small if present . 4
4. Tegmen discal cell crossvein usually with red spot or remnant, apical coil of aedeagus with thick dorsal process and thin elongate ventral process (Fig. 24) . *chlorospilum*
   Tegmen discal cell crossvein without any trace of red spot, apical coil of aedeagus with dorsal process 5
5. Vertex moderately acute, apex uplifted, tegmen apical margin boldly red, aedeagus as shown (Fig. 29) ..... *missior*, **n. sp.**
   Vertex slightly obtuse, shorter in length than pronotum, aedeagus as shown (Fig. 28) ..... *orisum*, **n. sp.**
6. Three red spots of tegmen composed of fine stippling of red dots, aedeagus as shown (Fig. 30) ..... *tricolor*
   Red spots of tegmen appearing to be formed by solid pigment, apical margin and vein terminations red 7
7. Postclaval sutural margin slightly convex, apical coil of aedeagus with short dorsal process (Fig. 26) ..... *ligorum*, **n. sp.**
   Postclaval margin straight. Apical coil of aedeagus with long dorsal process (Fig. 25) ..... *elatum*, **n. sp.**

Colgar chlorospilum (Walker) Fig. 24

Nephesa chlorospila Walker, 1870: 173.
Nephesa monoleuca Walker, 1870: 177.—Melichar, 1902: 61 (synonymy).
Cromna quadripunctata Walker, 1870: 182.—Melichar, 1902: 61 (synonymy).
Cromna obtusa Melichar, 1902: 61, misidentified, not *Nephesa obtusa* Walker, 1870: 177.
Phyllyphanta birarae Kirkaldy, 1905: 335. **New synonymy.**
Euphanta pokiana Distant, 1910b: 324. **New synonymy.**
Euphanta chlorospila: Distant, 1910b: 324.—Metcalf, 1957: 242.
Colgar chlorospilus: Kirkaldy, 1913: 20.—Medler, 1986e: 208.

Type locality. MALUKU: Aru Islands.

Diagnosis. Overall color light green or bleached green, often light stramineous, ochraceous, or off-white; thorax and underside of body ochraceous in contrast to green dorsally; tarsi light pink. Tegmen unicolorous except where margins are narrowly red, including vein terminations; red margin lacking or evanescent along basal ¾ of costal margin and claval margin. Normally, red spots, sometimes small concentration of red on discal cell crossvein. Sutural and apical angles of nearly similar obtuse configuration, sutural angle less convex; apical margin shallowly convex. Hind leg spine formula 1:6:7. Genitalia of lectotype illustrated in Fig. 24.

Notes on synonymy. The lectotype of *N. chlorospila* is a male in MV designated by Medler (1986e: 208). The lectotypes of *N. monoleuca, C. quadripunctata,* and *P. birarae* are females in BMNH. The lectotype of *E. pokiana* is a male in BMNH. Melichar's misidentified specimens of *C. obtusa* from New Guinea, Kei Island, and Roon Island are in MNH and MCSN. All types listed above have been examined personally to provide an accurate basis for the new synonymies. None of the above specimens could be distinguished from *chlorospilum.* It was not unexpected that the true status of this widespread and abundant species had been confused for many years. Considerable variation in the degree of green and red pigmentation exists, caused either by lack of color development or by bleaching. Morphological character states in this species are difficult to interpret, possibly because of environmental influences or because the presence of mixed populations with cryptic species is known only through study of the male genitalia.

Measurements (♂, ♀). From ♂ and ♀, Irian Jaya, Fak Fak, S coast of Bomberai (BPBM). Length: overall 9.5, 10.0; v 0.58, 0.54; f 1.66, 1.66; p 0.50, 0.50; m 1.83, 1.83; t 8.13, 8.47; pcl 2.32, 2.82. Width: v 0.91, 0.95; f 1.25, 1.20; t 5.15, 5.31.

Determinations. M.S.K. Ghauri determination label "Colgar sp. 1975": Lejo Pltn,

Kemure Blk, 2.VII.1973 (Knowles); M. R. Wilson det. 1982 "Euphanta pokiana Distant": Laloki, ex citrus lime, 16.VI.1982, Brough, C.I.E. No. 14497.

Locality records

CENTRAL PROV: Bereina, Bisianumu, Bisiatabu, Bomana, Brown River, Cape Rodney, Crystal Rapids nr Sogeri Forest, Daradae, Eilogo, Itikinumu, Javarere, Kapagere, Koitaki, Kokebagu, Laloki, Lejo Pltn, Loloipa, Lolorua, Mafulu, Mamai, Mondo, Mororo, Otomata, Owers Corner, Port Moresby, Redscar Bay, Rodney Cape, Roku, Rouna, Subitana, Sirinumu, Sogeri, Tapini, Ukua, Varirata.

EASTERN HIGHLANDS PROV: Bena Bena, Goroka, Karimui, Mondo.

EAST SEPIK PROV: Igora Pltn, Kinbangwa, Tamaui Pltn.

GULF PROV: Iriri, Kerema, Kikori, Murua River, Petoi.

MADANG PROV: Dylup.

MILNE BAY PROV: Bemberi, KB Pltn, Milne Bay, Sinaeada, Woodlark Island.

MOROBE PROV: Bulolo, Garaina.

NORTHERN PROV: Awala Pltn, Buna, EPA Pltn, Kokoda, Kura, Mamba, Mamoo, Mt Lamington, Pitoki, Popondetta, Wararota.

SOUTHERN HIGHLANDS PROV: Betege, Mendi, Tugiri.

WESTERN PROV: Atkamba, Daru Island, Kiunga, Komokpin, Kuin, Kungim, Middle Fly River, Moian Island, Ningerum, Oriomo, Tabuil, Vailala River.

WESTERN HIGHLANDS PROV: Nondugl.

IRIAN JAYA: Aitinjo, Ajamaroe, Ayam, Binnen, Bujakori, Cyclops Mts, Danowaria, Digoel, Djidmaoe, Eramboe, Etna Bay, Fakfak, Gariau, Genjam, Hollandia, Ifar, Inanwatan, Jef Lio Island, Kampong Baroe, Katem, Kebar Valley, Kei Island, Kulima, Manoiwa, Manokwari, Marjan, Merauke, Nabire, Orokola, Roon Island, Sabron, Seroei, Sorong, Star Mts, Tanah Merah, Toem, Triton Bay, Waigeu Island, Wasian.

MALUKU: Dobbo, Ureiuning, Wokan.

QUEENSLAND: Murray Island, Rennel Island, Yorke Island.

Plant records

Aibika: Atkamba, 22.XI.1985 (Ismay); Komokpin, 22.XI.1985 (Ismay); Tabuil, 21.XI.1985 (Ismay).

Amaranth: Iriri, 7.V.1959 (Catley).

Avocado: Javerere, 30.VII.1958 (Szent-Ivany).

Banana: Kungim, 20.XI.1985 (Ismay).

Cacao: Brown River, 10.II.1965 (Szent-Ivany & Kanjiri); Dylup, 5.IX.1962 (Szent-Ivany); Dylup, 17.X.1964 (Dun); Kapagere, 1–4.V.1965 (Jolley); KB Pltn, IX.1959 (Cole); Kokebagu, 8.VII.1966 (Kanjiri); Kokebagu, 9.VII.1966 (Fenner); Koitaki,

28.III.1956 (Szent-Ivany); Koitaki, 24.IX.1960 (Szent-Ivany and Dun); Mamai, 18.XI.1963 (Szent-Ivany); Mamba, 1.III.1983 (Ismay); Mamoo, 5.XII.1956 (Szent-Ivany); 27.IX.1957 (Kanjiri); Mororo, 22.X.1959 (Szent-Ivany); Mororo, 22.X.1957 (Catley & Cronin); Tamavi Pltn, 14.X.1957 (Szent-Ivany); Wararota, 17.VIII.1964 (Dun).

Cashew: Laloki, 10.VII.1985 (Ismay).

Citrus: Awala Est., 7.XII.1955 (Szent-Ivany); Bomana, IX.1959 (Szent-Ivany); Kapagere, 1–4.V.1965 (Jolley); Laloki, 14.VII.1959 (Szent-Ivany & Simmonds); Laloki, 6.II.1960 (Catley & Szent-Ivany); Laloki, 9.XI.1979, 16.VI.1982 (Brough).

Coconut: Oriomo, 30.VII.1960 (Szent-Ivany).

Coffee: Bena Bena, IX.1964 (Dun); Brown River, 10.II.1965 (Szent-Ivany & Kanjiri); Brown River, 7.VI.1966 (Kanjiri); Goroka, 2.III.1962 (Barrett); Kimbangua, 29.II.1960 (Szent-Ivany); Mendi, 14.IX.1960 (Szent-Ivany); Oriomo, 31.VII.1960 (Szent-Ivany).

Coffea canephora: Bemeri, IX.1959 (Cole); Brown River, 10.II.1965 (Szent-Ivany & Kanjiri); Igora Pltn, 24.IX.1957 (Szent-Ivany & Kanjiri); Kapagere, 24.VI.1969 (Jolley); Ukua, 13.X.1957 (Szent-Ivany).

Eggplant: Brown River, 30.III.1956.

Eucalyptus sp.: Port Moresby, 5–6.VI.1955 (Gressitt); Varirata, 18.II.1956 (Gressitt).

Gardenia sp.: Javerere, 31.VII.1958 (Szent-Ivany).

Guava: Laloki, 25.V.1983 (Dori); Laloki, 5.VIII.1985 (Ismay & Sui); Moian Island, 23.XI.1985 (Ismay); Ningerum, 20.XI.1985 (Ismay).

Hibiscus rosa sinensis: Tapini, 12.VI.1960 (Szent-Ivany).

Ipomoea pescaprae: Irian Jaya, 23.III.1952 (Brongersma).

Kudzu: Brown River, 7.VI.1966 (Fenner).

Lemon: Kapagere, 24.VI.1969 (Jolley).

Lime: Laloki, 16.VI.1982 (Brough); Mamba, 4.III.1983 (Ismay).

Orange: Nondugl, 18.X.1954.

Papaya: Port Moresby, 4.VII.1958 (Szent-Ivany).

Pipturus sp.: Brown River, 23.X.1960 (Gressitt).

Pomelo: Wosa, 18.VII.1957 (Hardy).

Rattlebox: Kerema, 7.V.1959 (Catley); Kerema, 5.VIII.1959 (Szent-Ivany); Oriomo, 13.X.1960 (Szent-Ivany).

Rice: Bereina, 14.V.1957 (Charles).

Rubber: Bisianumu, 14.VI.1963 (Kanjiri); Bisianumu, 17.VII.1959 (Van Ha'aren); Daradae, 31.VII.1958 (Szent-Ivany); Koitaki, 28.II.1956, 14.VIII.1958, 24.V.1959 (Szent-Ivany); Koitaki, 25.VIII.1959, 10.VIII.1960 (Szent-Ivany & Kanjiri); Lolorua, 29.V.1958 (Szent-Ivany); Mamai, 20.XI.1963 (Szent-Ivany); Mororo, 14.X.1957 (Catley); Oriomo, 30.VII.1960 (Szent-Ivany).

Silk-oak: Garaina, 9.X.1957 (Szent-Ivany).

Sorghum: Garaina, 9.X.1957 (Szent-Ivany).
Sugarcane: Nabire, 3.VII.1962 (Gressitt).
Sweet potato: Oriomo, 30.VII.1960 (Szent-Ivany); Sorong, 23.III.1952 (Brongersma); Tabuil, 21.XI.1985 (Ismay).
Tea: Garaina, 22.II.1961 (Ardley); Garaina, III.1964 (Dun); Garaina, 19.VI.1967 (Fenner); Garaina, 9.X.1957 (Szent-Ivany).
Teak: Bisianumu, 9.VII.1957 (Szent-Ivany); Brown River, 9.VII.1957 (Szent-Ivany); Brown River, 22.X.1960 (Gressitt).

Colgar elatum Medler, new species — Figs. 4, 10, 25

Diagnosis. Color of holotype dull green overall. Median longitudinal carina of front, vertex, pro-, and mesonotum strongly outlined with minute red dots; frontal V-carina outlined with minute red dots. Tegmen longitudinal veins darker green than membrane color, conspicuously marked with 3 red spots, 1 basally in M-Cu cell, 1 on discal cell crossvein, and 1 halfway between latter spot and apical margin; crossveins outlined by minute red dots; apical margin and posterior portion of costal and sutural margin narrowly red, red interrupted at vein terminations on apical margin. Cells of tegmen bleached whitish between veinlets, giving finely mottled appearance. Sutural angle nearly right angled, apical margin straight, as shown in Fig. 10. Hind leg spine formula 1:6:9. Genitalia are illustrated in Fig. 25. Considerable variability exists among paratype and other specimens. Tegmina are faded green, mottled greenish, tawny or bleached to pale ochraceous, 3 spots variable in sizes, with size of basal or apical spot often reduced relative to discal spot. Posterior portion of tegmen with network of crossveins often outlined in red, red tending to be concentrated at midpoints, narrow red margins may be bleached. Dorsal median longitudinal carina of thorax outlined by contiguous orange, ochraceous, or ivory background color.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 12.5, 13.0; v 0.79, 0.83; f 2.16, 2.24; p 0.62, 0.62; m 2.32, 2.32; t 9.46, 9.79; pcl 3.15, 3.49. Width: v 1.08, 1.08; f 1.33, 1.41; t 6.64, 6.81.

Determinations. Specimens bear following determination labels: det. N.C.E. Miller 1955 "*Colgar* sp.," Wau, 10.XI.1955 (Szent-Ivany), C.I.E. No. 13988; det. N.C.E. Miller 1956 "*Colgar* sp.," Kainantu, 15.X.1955, *Coffea arabica* (Szent-Ivany), C.I.E. No. 16839; det. R. G. Fennah "*Colgar ?* sp. nov.," Wau, 1.VII.1963 (Szent-Ivany & Kebby); det. R. G. Fennah "*Colgar tricolor* Dist.," Karkar Island, 19.IX.1958 (Ardley); det. H. Synave 1980 "*Colgar tricolor* Dist.," Laing Island, 11–12.VI.1978 (van Goethem); det. M.S.K. Ghauri 1978 "*Colgar* sp. nr *tricolor* Dist.," Stony logging area, 23.XII.1976 (T. Hobiagi), C.I.E. No. A10074; det. N.C.E. Miller 1957

"*Euphanta* sp. not in BMNH," Wau, 17.II.1957 (Ardley), C.I.E. No. 15285; det. M.S.K. Ghauri "*Euphanta* sp.," Madang, 8.X.1959, coffee, (Healy); det. M.S.K. Ghauri 1965 "*Euphanta* sp.," Bulolo, 8.II.1968 (Cray & Berama), C.I.E. No. A2891; det. M.S.K. Ghauri 1969 "*Euphanta* sp. ? *quadripunctata* (Walk.)," Samarai, IX.1959 (Mann), No. AM207.

Type data

Holotype ♂ (BPBM 13,433), PNG, Morobe Prov: Wau, 1,200 m, 28.VI.1961, light trap, J. Sedlacek. Allotype ♀, PNG, Morobe Prov: Wau, 1,100–1,200 m, VII.1968, N.L.H. Krauss. BPBM. Paratypes, as follows:

AM. MOROBE PROV: Wau, 1,250 m, 10–20.XI.1972, J.v.d. Vecht, 5 ♂, 6 ♀.

BPBM. MOROBE PROV: Bulolo, 850 m, 24.VIII.1965, J. & M. Sedlacek, 1 ♀; 900 m, 28.III.1968 [no collector name], 1 ♀; 680 m, 2.II.1969, J. Sedlacek, 1 ♂; 700 m, 18.VI.1969, J. Sedlacek, 1 ♀; 700 m, 29.VII.1969, Y. Hirashima, 1 ♂, 1 ♀; 950 m, 5–8.XI.1982, *Eucalyptus torrelliana,* W. C. Gagné, Acc. 1983–90, 1 ♂; 2,200–2,350 m, VII.1968, N.L.H. Krauss, 1 ♂, 1 ♀; Lae, 21.VIII.1978, UV light, J. L. Gressitt, 1 ♀; Salawaket Range, Lambaeb, 900 m, 16.IX.1956, E. J. Ford, Jr., 1 ♀; Salawaket Range, Sepal Kambang, 1,920 m, 15.IX.1956, E. J. Ford, Jr., 11 ♂, 2 ♀; Salawaket Range, Tuwep, 1,350 m, 9.IX.1956, E. J. Ford, Jr., 1 ♀. Wau, following specimens from 1,200 m (except where shown otherwise): 1.VI.1961, J. Sedlacek, 1 ♀; 26–28.VI.1961, light trap, J. Sedlacek, 2 ♂; 30.VI.1961, light trap, J. & M. Sedlacek, 1 ♀; 7–22.VII.1961, malaise trap, J. & M. Sedlacek, 1 ♂, 2 ♀; 8–29.VII.1961, malaise trap, J. Sedlacek, 2 ♂; 25.VII.1961, J. Sedlacek, 1 ♀; (1050 m) 2.X.1961, J. Sedlacek, 1 ♂; 15–26.X.1961, MV light trap, J. Sedlacek, 2 ♂; 26.X.1961, light trap, J. & M. Sedlacek, 1 ♂; 22–30.VI.1962, light trap, J. Sedlacek, 1 ♂; 18.VII.1962, Y. Hirashima, 1 ♂; 18–21.I.1963, MV light trap, J. Sedlacek, 1 ♀; 24.I.1963, J. Sedlacek, 1 ♂; (1,250 m) 4.II.1963, MV light trap, J. Sedlacek, 1 ♀; 4.II.1963, J. Sedlacek, 1 ♀; 1–9.VIII.1963, J. Sedlacek, 1 ♂; 8–30.IX.1964, MV light trap, J. Sedlacek, 5 ♂, 2 ♀; 15.X.1965, J. Sedlacek, 1 ♂; 21–25.XII.1965, J. Sedlacek, 1 ♀; 14.III.1966, malaise trap, J. L. Gressitt, 1 ♂, 1 ♀; 14.III.1966, light trap, J. L. Gressitt & O. R. Wilkes, 1 ♂; 25.III.1966, malaise trap, J. L. & M. Gressitt, 1 ♀; 25.III.1966, J. L. Gressitt, 1 ♂; 5.III.1967, J.J.H. Szent-Ivany & R. Straatman, 1 ♂; (1100–1200 m) V–VII.1968, N.L.H. Krauss, 3 ♂, 2 ♀; 3.IX.1968, J. Sedlacek, 1 ♀; 3.XII.1968, M. Sedlacek & R. Straatman, 1 ♀; 10.V.1969, J. Sedlacek, 1 ♀; (1,300 m) 25.X–6.XI.1982, UV light trap, W. C. Gagné, Acc. 1983–90, 17 ♂, 16 ♀; 20.II.1983, at light, W. C. Gagné, 3 ♂.

CAS. MOROBE PROV: Finschhafen, IV–V.1944, E.S. Ross, 9 ♂, 10 ♀.

PNGDPI. MOROBE PROV: Wau, DASF Sta., 3400 ft [1036 m], 17.IV.1965, *Coffea*

arabica, J.J.H. Szent-Ivany, 15 ♂, 5 ♀; Wau Valley, Warra Estate, 17.IV.1965, *Coffea arabica,* J.J.H. Szent-Ivany, 6 ♂, 10 ♀.

SAM. IRIAN JAYA: Mt Gyifrie, sea level–1000 ft [305 m], IV.1939, L. E. Cheesman, 2 ♂, 4 ♀.

USNM. MOROBE PROV: Wau, 1,200 m, 8–14.XII.1976, MV light, G. F. Hevel & R. E. Dietz IV, 10 ♂, 5 ♀.

Locality records (not paratypes)

Many specimens were examined in addition to the more typical representatives of the species from the Wau area that were selected as paratypes. The widespread distribution of the species in northeastern and northwestern regions of New Guinea is shown by the following records:

EASTERN HIGHLANDS PROV: Aiyura, Kainantu, Kassem, Kassem Pass, Lowes.

EAST SEPIK PROV: Bainyik, Boram, Dreikikir, Karubaka, Kinbangwa, Maprik, Mokai, Negoo Pltn, Wantipi, Wewak.

MADANG PROV: Awar, Karkar Island, Laing Island, Wanuma.

MILNE BAY PROV; Milne Bay, Samarai.

MOROBE PROV: Asamba Pltn, Awar, Awelkom, Bainding, Boana, Bubia, Bulldog Road, Bulolo, Buso, Busu River, Finschhafen, Gurakor, Kabwum, Mt Kaindi, Kalolo, Lae, Lambaeb, Mirilunga, Nadzab, Namie Creek, Pindiu, Sangeman, Sepalakembang, Singaua River, Tikeling, Tuwep, Ulap, Umboi Island, Umi River, Wasu, Wau.

NORTHERN PROV: Kagona, Mt Lamington, Mamoo, Pitoki.

WESTERN PROV: Daru Island, Kiunga.

WESTERN HIGHLANDS PROV: Baiyer River, Korop.

WEST SEPIK PROV: Krisa, Sugoitei, Torricelli Mts.

IRIAN JAYA: Ambon, Biak Island, Genjam, Mt Gyifrie, Hollandia, Ifar, Kotanica, Krisa, Liki Island, Maffin Bay, Sarmi, Sobron, Sorido, Toem, Tor River, Torricelli Mts, Vanmimo, Waris.

Plant records

Abelmoschus manihot (aibika): Wau, 28.X.1978 (Gagné).

Acalypha sp.: Wau, 12.IX.1972 (Mena).

Acanthocephalus sp.: Stony Mt, 23.XII.1976 (Hobiagi).

Althoffia sp.: Wau, 25.VI.1974 (Hart).

Asparagus: Wau, 20.XII.1977, 28.IV.1978, 12.I.1979 (Gagné).

Avocado: Wau, 20.X.1977, 22.XI.1977, 20.XII.1977 (Gagné).

Breynia sp.: Wau, 19.VII.1971 (Sedlacek).

Cacao: Finschhafen, Gobari Pltn, 4.III.1966 (O'Sullivan & Wanariu); Finschhafen,

Timbulum Pltn, 19.I.1966 (Dun); Karkar Island, Kaviak Pltn, 19.IX.1958 (Ardley); Karkar Island, Kulili Pltn, 20.IX.1958 (Ardley); Kotanica, 24.IV.1959, 10.VII.1959 (Simon Thomas); Lae, Asamba Pltn, 5.XI.1954 (Szent-Ivany); Lae, Bubia Pltn, 18.X.1956 (Nango); Lae, Bubia Pltn, 13.III.1957, 29.VII.1957 (Ardley); Lae, Wanuru Pltn, 14.X.1964 (Dun); Madang Agric. Sta., 10.VI.1956 (Szent-Ivany); Wau, 8.VI.1960, Szent-Ivany; Wau, Amale Pltn, X.1964 (Dun); Wau, Buambu Pltn, 9.IX.1955 (Szent-Ivany); Wau, Dylup Pltn, 5.IX.1962 (Szent-Ivany); Wau, Mamoo Pltn, 5.XII.1955 (Szent-Ivany); Wau, Negoo Pltn, 13.X.1959 (Szent-Ivany).

Capsicum frutescens: Winduri Vill nr Wau, 11.II.1967 (Szent-Ivany).

Cashew: P.A.T.I., 16.VII.1973 (Knowles).

Castanopsis acuminatissima: Wau 21.VI.1984 (Gagné).

Castorbean: Mandi Vill nr Wewak, 26.VI.1969 (Szent-Ivany).

Coffea arabica: Wau, Blue Mts Pltn, 10.XI.1954 (Szent-Ivany); Wau, DASF Sta., 17–18.IV.1965 (Szent-Ivany); Wau, Goldfield Farm, 30.V.1957 (Szent-Ivany); Wau, Goldfield Power House Block, 23.VII.1957 (Szent-Ivany); Wau, Gurukor Pltn, 5.IX.1957 (Szent-Ivany); Wau, Kollega No. 1, 17–18.IV.1965 (Szent-Ivany); Wau, Potalloch Pltn, 17–18.IV.1965 (Szent-Ivany); Wau, Shanahan Pltn, 10.XI.1957, 10.XI.1959, (Szent-Ivany); Wau, Warra Pltn, 17–18.IV.1965, 7.VII.1957, (Szent-Ivany); Wau Pltn, 4.VII.1957 (Szent-Ivany); Wau, 17.II.1957 (Ardley); Wau, 4.IV.1960 (Simon Thomas); Wau, 16.II.1966 (Stephens); Wau, 12.X.1966 (Fenner & Fishle). Collected at Wau, 22.VII–2.VIII.1962 (Szent-Ivany & Kebby) during a survey on coffee plantations: Bencula, Bishop Museum, Blue Mts, Bubu, Clark & Fry, Crawford, Goldfield Farm, Goldfield Kunai Creek, Goldfield Power House, Kollega No. 2, Kosali, Kunai, Lane's, Pottalloch, Ropagha, Shanahan & Shuster, Sterling Chase, Waramouli, Wau, Wilson, Yallara. Recorded on the Dept. Agric. Farm, 1.VII.1963: "A dense population, with an estimated 60–70 percent killed by entomogen fungus." Specimens were labeled "*Colgar* sp. ? nov., det. R. G. Fennah, C.I.E. No. 19079." Outside the Wau area: Aiyura, 6.I.1965 (Fenner); Kainantu, 21.VII.1963 (Barrett); Kiambangua Pltn, 29.II.1960 (Szent-Ivany); Kotanica, 18.IX.1960 (Simon Thomas); Madang, 8.X.1959 (Healy).

Eucalyptus deglupta: Aiyura, 27.IV.1976 (Kapa).

Eucalyptus torrelliana: Bulolo, 8.II.1975 (Cray & Berama); Wau, 5–8.XI.1982 (Gagné).

Evodia sp.: Wau, 22.I.1974 (Otoweto).

Ficus sp.: Wau, 27.IV.1968 (Gressitt).

Ficus insulana: Wau, V.1968 (Krauss).

Ficus septica: Wau, 22.III.1969 (Sedlacek).

Gardenia sp.: Wau, 6.III.1967 (Szent-Ivany & Straatman).

Glochidion sp.: Wau, 24.I.1974, 25.VI.1974 (Hart).

Guava: Wau, VII.1979 (Gagné).

Kundi (*sic*) (kunai) grass: Hollandia, Cyclops Mts foothills, 7.III.1945 (Hoogstraal).
Lithocarpus sp.: Wau, 8.IX.1976 (Otaweto); Wau, 20.VI.1984 (Gagné).
Litsea sp.: Wau, 22.I.1974 (Otoweto).
Macaranga 4-glandulosa: 24.III.1969 (Sedlacek); Wau, 22.VIII.1973 (Bukua).
Mallotus ricinoides: Wau, 19.VII.1971 (Sedlacek).
Piper sp.: Wau, 20.IV.1962 (Sedlacek); Wau, 12.IX.1972 (Mena).
Pipturus sp.: Wau, 25.III.1969 (Sedlacek); Wau, 9.IX.1972 (Gressitt).
Passiflora edulis: Negoo Pltn, nr Borum, 13.X.1957 (Szent-Ivany).
Soursop: Bainyik, 2.III.1960 (Szent-Ivany).
Sunflower: Wau, 15.IX.1976 (Ropis); Wau, 1.V.1977 (Gagné).
Tea: Garaina, 9.X.1965 (Szent-Ivany).
Tephrosia: Wau, Pottalloch, 18.IV.1966 (Szent-Ivany).
Torenia sp.: Wau, 22.VIII.1973 (Keevisef).
Ylang-ylang: Bubia nr Lae, 31.X.1967 (Fenner).

Colgar tricolor Distant — Fig. 30

Colgar tricolor Distant, 1910a: 309.

Type locality. AUSTRALIA: QLD: Kuranda.

Diagnosis. Similar in appearance to *C. elatum* but slightly smaller in size. Green tegmina of both species have similar pattern of 3 relatively large red spots composed of dense concentration of tiny red dots. Veins and veinlets also marked with tiny red dots to varying extent, particularly in apical part of tegmen; apical margin narrowly red, red color concentrated at vein terminations. The species is distinguished by characters of the male genitalia (Fig. 30), which enable accurate identification.

Measurements (♂, ♀). From ♂ and ♀, Normanby Island, Waikaiuna, Sewa Bay (BPBM). Length: overall 11.0, 13.0; v 0.66, 0.66; f 1.99, 2.16; p 0.58, 0.66; m 1.99, 2.32; t 9.30, 10.79; pcl 2.82, 3.40. Width: v 1.00, 1.00; f 1.33, 1.41; t 6.31, 6.97.

Determinations. Colgar tricolor has been misidentified in New Guinea. This species was reported by Szent-Ivany & Stevens (1966) as the common flatid in coffee plantations in the Wau-Bulolo area. All specimens proved to be *C. elatum.* The report of Szent-Ivany & Catley (1960) on *tricolor* in dense populations on twigs of 1-year-old rubber at Koitaki Pltn is based on misidentified *C. chlorospilum.* The specimens reported on cacao at Kaviak Plantation, Karkar Island, are misidentified *C. elatum.*

Locality records
BOUGAINVILLE PROV: Bougainville Island.
MILNE BAY PROV: Fergusson Island, Iamelele, Kiriwina Island, Losuia, Normanby Island, Trobriand Island, Waikaiuna, Wawela.

WEST SEPIK PROV: Katem, Star Range, 200 m, 2.VII.1959.
IRIAN JAYA: Ambon Z., Res. Manokwari.

Plant records

Only a single male from cacao twigs, Irian Jaya, Ambon Z., Manokwari Res., VIII.1960 (G. Schneurs) RHML.

Colgar ligorum Medler, new species Fig. 26

Diagnosis. Head acute; frontal carinae sharply outlined, median carina ¾ length, lateral V-shaped carinae ½ length of front, all carinae strongly red dorsally; arcuate line of red dots extending from apex of front laterad of V-carinae; dorsal median carina of vertex narrowly outlined by ochraceous, more sharply raised on vertex than on pro- and mesonota. Tegmen green, veins more strongly green than membrane, costal margin narrowly ochraceous, apical and postclaval margins red. Three red spots conspicuous, composed of tiny red dots strongly concentrated to form dense pigment spots. Thorax ventrally ochraceous, legs not strongly tinged with red. Hind leg spine formula 1:6:7. The species resembles *C. elatum* and *C. tricolor* in external appearance, shape of tegmina, and similar pattern of three red spots on tegmen. However, shape of dorsal process arising from apex of aedeagus is different, as shown in Fig. 26.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 11.5, 12.0; v 0.66, 0.66; f 1.99, 2.08; p 0.50, 0.58; m 2.32, 2.32; t 9.46, 10.29; pcl 2.99, 3.15. Width: v 1.08, 1.08; f 1.33, 1.41; t 5.81, 5.96.

Type data

Holotype ♂ (BPBM 13,434), PNG: Northern Prov: Popondetta, 25 m, VI.1966, light trap, Shanahan-Lippert, BPBM. Allotype ♀, same label as holotype, **BPBM.** Paratypes, as follows:

BPBM. CENTRAL PROV: Laloki, 1 ♂; Mamai, 100–150 m, 4.III.1965, R. Straatman, 1 ♀.

MADANG PROV: Finisterre Range, Funyende Vill, 1,200 m, 24–30.IX.1958, W.W. Brandt, 1 ♂; Finisterre Range, Gabumi Vill, 1–21.VII.1958, W. W. Brandt. 1 ♀.

NORTHERN PROV: Popondetta, 25 m, VI.1966, light trap, Shanahan-Lippert, 10 ♂, 12 ♀.

IRIAN JAYA: Nabire, S. Geelvink Bay, 10–40 m, 1–4.IX.1962, J. Sedlacek, 1 ♂.

BMNH. NORTHERN PROV: Ishurava, 3,000 ft [914 m], VII.1933, L. E.Cheesman, B.M. 1933-427, 1 ♂; Kagona, 22.XI.1961, cacao, J.J.H. Szent-Ivany, C.I.E. #18018, 1 ♀; Kokoda, 1,200 ft [366 m], VI.1933, L. E. Cheesman, B.M. 1933-427, 1 ♂; P.A.T.I. Popondetta, 16.VII.1973, cashew, J. Knowles, C.I.E. A6940, 1 ♀.

IRIAN JAYA: Cyclops Mts, Sabron, Camp 2, 2,000 ft [610 m], VII.1936, L. E. Cheesman, B.M. 1936-271, 1 ♂; Waigeu, Camp Nok, 2,500 ft [762 m], IV.1938, L. E. Cheesman, B.M. 1938-593, 1 ♂, 3 ♀.

CAS. NORTHERN PROV: Oro Bay, 100 ft [30 m], 5.XI,1944, H. P. Chandler, 1 ♂.

IRSN. MADANG PROV: Talia Point, 8.VI.1982, Grootaert, 1 ♂.

PNGDPI. MOROBE PROV: Garaina, Govt Tea Sta., 9.X.1965, tea foliage, J.J.H. Szent-Ivany, 1 ♂.

NORTHERN PROV: Asela, 27.IX.1966, B. Kearo, 1 ♂; Awala Pltn, 1,100 ft [335 m], 7.XII.1955, citrus, J.J.H. Szent-Ivany, 1 ♂; Hahota Pltn, 14.XI.1958, cacao, J.J.H. Szent-Ivany, 1 ♀; Igora Pltn, 24.IX.1957, *Coffea canephora,* J.J.H. Szent-Ivany & E. Kanjiri, 1 ♂, 3 ♀; Mamba, 1.III.1983, cacao, J. W. Ismay, 1 ♂, 2 ♀; Mamoo, 24.I.1957, *Erythrina indica,* J.J.H. Szent-Ivany, 1 ♂; Manaru Pltn, 28.IV.1960, *Crotalaria anagyroides,* J.J.H. Szent-Ivany, 1 ♀; P.A.T.I., Popondetta, 16.XI.1972, cacao, E.S.C. Smith, 1 ♂, 2 ♀; Sopovi Pltn, 2.IV.1974, B. Keora, 1 ♂.

SAM. NORTHERN PROV: Mt Lamington, 1,300–1,500 ft [396–457 m], C. T. McNamara, 2 ♂, 1 ♀.

Plant records

Cacao: Hahota, 14.XI.1958 (Szent-Ivany); Kagona, 22.XI.1961 (Szent-Ivany); Mamba, 1.III.1983 (Ismay); P.A.T.I., 16.XI.1972 (Smith).

Cashew: P.A.T.I., 16.VII.1973 (Knowles).

Citrus: Awala Estate, 7.XII.1955 (Szent-Ivany).

Coffea canephora: Igora Pltn, 24.IX.1957 (Szent-Ivany & Kanjiri).

Crotalaria anagyroides: Manaru Pltn, 28.IV.1960 (Szent-Ivany).

Erythrina indica: Mamoo, 24.IX.1957 (Szent-Ivany).

Tea: Garaina, 9.X.1965 (Szent-Ivany).

Colgar bespectum Medler, new species

Fig. 27

Diagnosis. Vertex not sharply acute, dorsal median carina outlined with red dots, arc of red dots extending laterad from apex; frontal carinae strongly red. Tegmen green, with 3 large red spots, spots rimmed by narrow white halo, apical margin boldly red, postclaval sutural margin convexly raised, sutural angle strongly convex. Size relatively small. Hind leg spine formula 1:6:7. Male genitalia shown in Fig. 27.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 8.5, 9.0; v 0.50, 0.54; f 1.58, 1.58; p 0.46, 0.50; m 1.83, 1.83; t 6.97, 7.80; pcl 1.83, 2.16. Width: v 0.83, 0.83; f 1.08, 1.16; t 4.48, 4.65.

Type data

Holotype ♂, Hollandia, rain forest, 250 ft [76 m], 19.V.1945, H. Hoogstraal, NCSU. Allotype ♀, same label as holotype, NCSU. Paratypes, as follows:

AM. IRIAN JAYA: Kota Nica, 75 m, 20.I.1956, 10.V.1956, and 29.XI.1957, R. T. Simon Thomas, 1 ♂, 2 ♀.

BPBM. IRIAN JAYA: Hollandia, rain forest, 250 ft [76 m], 19.V.1945, H. Hoogstraal, 1 ♂, 1 ♀.

CENTRAL PROV: Tapini, 800–1,100 m, XI.1968, N.H.L. Krauss, 1 ♀.

CAS. MOROBE PROV: Huon Gulf, Lae, H. Blakemore, 1 ♂.

NCSU. IRIAN JAYA: Hollandia, Cyclops Mts foothills, 500 ft [152 m], 7.III.1945, kundi (*sic*) grass, H. Hoogstraal, 1 ♂, 12 ♀; Hollandia, 1,800 ft [549 m], 15.III.1945, edge of kunar (*sic*) grass and forest, H. Hoogstraal, 14 ♂, 5 ♀; Hollandia, 250 ft [76 m], 19.III.1945, V.1945, rain forest, H. Hoogstraal, 5 ♂, 8 ♀.

PNGDPI. CENTRAL PROV: 20 km SE of Port Moresby, 30.XII.1984, J. W. Ismay, 1 ♂.

SAM. MILNE BAY PROV: Misima Island, H. K. Bartlett, 1 ♂.

USNM. IRIAN JAYA: Hollandia, IV.1945, VI.1945, B. Malkin, 4 ♀.

Plant records

Kunai grass: Hollandia, 7.III.1945 (Hoogstraal).

Colgar orisum Medler, new species

Fig. 28

Diagnosis. General appearance green. Head without red dots. Median frontal carina more sharply raised than lateral V-shaped carinae. Tegmen shape similar to *bespectum;* tegmen without red dots, margin strongly red from tip of clavus around apical margin and costal angle, ending near terminus of R + C; veins stramineous. Hind leg spine formula 1:6:7. Male genitalia shown in Fig. 28.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 9.8, 10.5; v 0.50, 0.54; f 1.66, 1.66; p 0.50, 0.50; m 1.83, 1.83; t 8.30, 8.63; pcl 2.49, 2.82. Width: v 0.87, 0.91; f 1.16, 1.16; t 5.31, 5.48.

Type data

Holotype ♂ (BPBM 13,435), IRIAN JAYA: Hollandia-Binnen, 50 m, 12.VII.1957, D. E. Hardy, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BPBM. IRIAN JAYA: Bodem, 11 km SE of Oeberfaren, 100 m, 7–17.VII.1959, T. C. Maa, 1 ♂; Enerotadi, Wisselmeren, 1,800–1,900 m, 27.VII.1962, J. Sedlacek, 1 ♀; Genjam, 40 km W of Hollandia, 100–200 m, 1–10.III.1960, T. C. Maa, 6 ♂, 2 ♀; Hollandia-Binnen, 50 m, 12.VII.1957, D. E. Hardy, 8 ♂, 8 ♀; Hollandia-Binnen, 100 m, 1.XI.1958, light trap, J. L. Gressitt, 1 ♀; Hollandia-Kotanica, 25–28.II.1960, T. C. Maa, 1 ♂; Hollandia, rain forest behind dock V, 20 m,

14.VII.1957, D. E. Hardy, 1 ♂; Hollandia, 13.III.1960, T. C. Maa, 1 ♀; Hollandia, Kota Baru, 25–28.VI.1962, N. Wilson, 1 ♀; Ifar, 400–550 m, 23.VI.1959, T. C. Maa, 1 ♂; Ifar, E end Cyclops Mts, 150 m, 18.X.1957, J. L. Gressitt, 1 ♂; Ifar, Cyclops Mts, 300 m, 4.XI.1958, J. L. Gressitt, 1 ♂, 1 ♀; Waris, S of Hollandia, 450–500 m, VIII.1959, T. C. Maa, 7 ♂, 4 ♀.

BMNH. IRIAN JAYA: Njau-limon, S of Mt Bougainville, 300 ft [91 m], II.1936, L. E. Cheesman, BM 1936-271, 1 ♀; Sabron, Cyclops Mts, 930 ft [283 m], VI.1936, L. E. Cheesman, BM 1936–271, 1 ♂.

RNML. IRIAN JAYA: Bernhard Camp, 50 m, VII.1938 and XI.1938, J. Olthof, 1 ♂, 1 ♀; Hollandia, 24–28.VI.1938, L. J. Toxopeus, det. *Euphanta pokiana* Dist., 1 ♂, 1 ♀; 4–17.VII.1938, L. J. Toxopeus, det. *Neocromna*, H. C. Blote, 2 ♂, 4 ♀; Manokwari, 1.II.1957, G. F. Mees, 1 ♀; Hollandia, 22.II.1952, L. D. Brongersma, 1 ♂; Hollandia-Hafen, 5.VIII.1952, L. D. Brongersma, 1 ♂; Hollandia, 60 m, 10.X.1954, L. D. Brongersma, 1 ♂; Hollandia, II.1957, det. *Euphanta pokiana* Dist, W. H. Gravenstein det. 1960, 1 ♂; Hollandia, Tasangua, 22.II.1959, F. Hoekzema, 1 ♀; Hollandia base camp, Neth. N.G. Exped., 11.IV.1959, 1 ♂; Ifar, VIII.1957, G. den Hoed #39, *Neocromna* sp., W. H. Gravenstein det. 1960, 1 ♀; Ifar, VIII.1957, G. den Hoed #42, *Euphanta pokiana* Dist, W. H. Gravenstein det. 1960, 1 ♂; Ifar, XII.1957, G. den Hoed #40, *Euphanta pokiana* W. H. Gravenstein det. 1960, 1 ♂; Middelburg Island, 3.VII.1952, L. D. Brongersma & W. J. Roosdorp, 1 ♀.

NCSU. IRIAN JAYA: Hollandia, 250 ft [76 m], rain forest & shrub vegetation, 24.XI.1944, 2 ♂; rain forest clearing, 250 ft [76 m], 12.XII.1944, 2 ♂, 1 ♀; rain forest, 250 ft [76 m], XII.1944, 1 ♀; 18.I.1945, 1 ♂; 9.II.1945, 2 ♀; 15.III.1945, 7 ♂, 10 ♀; 19.III.1945, 3 ♀; V.1945, 3 ♂, 2 ♀; kundi grass, Cyclops Mts foothills, 500 ft [152 m], 7.III.1945, 1 ♂; edge of kunar (*sic*) grass and forest, 1,800 ft [549 m], 15.III.1945, 7 ♂, 10 ♀. All collected by H. Hoogstraal.

PNGDPI. WEST SEPIK PROV: Bembol, 15.XI.1985, sugarcane, 1 ♀; Iabru, 17.XI.1985, banana, 1 ♂; Kamberatoro, 15.XI.1985, coconut, 1 ♀; Kwek, 14.XI.1985, banana, 1 ♂; Punda, 14.XI.1985, sugarcane, 1 ♀; Schotchiao, 13.XI.1985, sugarcane, 1 ♂, 3 ♀. All collected by J. W. Ismay.

SAM. WEST SEPIK PROV: Krisa, IV.1939, L. E. Cheesman, 1 ♀.
IRIAN JAYA: Mt Gyifrie, 1,000 ft [305 m], IV.1939, L. E. Cheesman, 3 ♀.

Plant records

Banana: Iabru, 17.XI.1985 (Ismay); Kwek, 14.XI.1985 (Ismay).

Coconut: Kamberatoro, 15.XI.1985 (Ismay).

Kunai grass: Hollandia, many records (Hoogstraal).

Sugarcane: Bembol, 15.XI.1985 (Ismay); Punda, 14.XI.1985 (Ismay); Schotchiao, 13.XI.1985 (Ismay).

Colgar missior Medler, new species Fig. 29

Diagnosis. Overall color green. In lateral view, vertex strongly upturned; dorsal median carina sharp, not outlined against green background color of thorax. Median frontal carina deeply red apically, longer than outwardly bowed lateral V-carinae, arcuate line of red dots originating at acute dorsal apex of front. Tegmen with strong red margin from tip of clavus around apical margin to costal angle; membrane in center of cells dull white, giving tegmen a mottled appearance. Body venter stramineous, legs ochraceous, their apices rosy tinged. Hind leg spine formula 1:6:7. Genitalia shown in Fig. 29. This species and *C. orisum* closely resemble each other. In both species the coil-like structure at the apex of the aedeagus is without a ventral process, and the dorsal process has a somewhat similar configuration. However, the lateral flange of the aedeagus has a small triangular tooth that is positioned apically in *missior,* whereas such a tooth is not developed in *orisum.*

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 10.0, 11.0; v 0.66, 0.71; f 1.78, 1.91; p 0.50, 0.50; m 1.83, 1.91; t 8.63, 8.96; pcl 2.32, 2.82. Width: v 0.91. 0.95; f 1.16, 1.20; t 5.64, 5.81.

Type data

Holotype ♂ (BPBM 13,436), PNG: MADANG PROV: Wanuma, 600–720 m, VIII.1968, N.L.H. Krauss, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BPBM. MADANG PROV: Matoka, 0–100 m, 1.X.1968, N.L.H. Krauss, 1 ♀.
EAST SEPIK PROV: Angoram, 20–30 m, 14–16.VIII.1969, J. L. Gressitt, 2 ♂; Bainyik, S of Maprik, 150 m, 4–12.I.1960, T. C. Maa, 2 ♀; Dreikikir, 350 m, 23.VI.1961, J. L. & M. Gressitt, 1 ♂; Maprik, 160 m, 14.X.1957, light trap, J. L. Gressitt, 1 ♂, 1 ♀; Maprik, 150 m, 29.XII–17.I.1960, T. C. Maa, 3 ♂, 1 ♀; Maprik area, 160 m, 25.VIII.1957, light trap, D. E. Hardy, 2 ♂, 1 ♀.
WEST SEPIK PROV: Torricelli Mts, Sugoitei Vill, 900 m, 24.I–5.II.1959, W. W. Brandt, 1 ♀.

IRSN. MADANG PROV: Sepen Vill, 8.VII.1980, UV light trap, No. 452, P. Janssens & J. van Grethem, 1 ♂.

PNGDPI. CENTRAL PROV: Koitaki Pltn, via Port Moresby, 10.VIII.1958, *Hevea brasiliensis,* J.J.H. Szent-Ivany & E. Kanjiri, 1 ♂.
EAST SEPIK PROV: Bainyik Agric. Sta., 2.III.1960, on citrus [unknown collector], 1 ♂; Kimbangwa Pltn, 29.II.1960, on *Coffea robusta,* J.J.H. Szent-Ivany, 1 ♂.
MADANG PROV: Dylup Pltn, 5.IX.1962, on *Theobroma cacao,* J.J.H. Szent-Ivany, 4 ♂, 1 ♀; Dylup Pltn, 17.X.1964, ex Cacao, G. S. Dun, 1 ♂.

Plant records
Cacao: Dylup Pltn, 5.IX.1962 (Szent-Ivany); Dylup Pltn, 17.X.1964 (Dun).
Citrus: Bainyik, 2.III.1960 [unknown collector].
Coffee: Kimbangwa, 29.II.1960 (Szent-Ivany).
Rubber: Koitaki Pltn, 10.VIII.1958 (Szent-Ivany & Kanjiri).

Colgar surrectum (Melichar) Fig. 31

Cromna surrectum Melichar, 1902: 58.
Colgar surrectum: Metcalf, 1957: 265.—Medler, 1986c: 115.

Type locality. PNG: MADANG PROV: Erima, Astrolabe Bay.

Diagnosis. Bright green, dull green, or yellow-green. Vertex and front pale green, front apex along with median carina red, tibiae and tarsi pale red; in dorsal view an ivory stripe running from apex of vertex to apex of clavus, costal margin of tegmen narrowly ivory, vein terminations at apical margin marked with red; black spot at apex of clavus sometimes present, as also 3 red spots lengthwise across disc, these spots each formed by aggregation of minute red dots. Hind leg spine formula 1:6:7. The long acute upturned vertex, sharply elevated acute sutural angle, and large size give this species a distinctive appearance. Male genitalia, shown in Fig. 31, are distinctive.

Measurements (♂, ♀). Port Moresby, BPBM. Length: overall 13.5, 14.0; v 1.12, 1.25; f 2.32, 2.32; p 0.66, 0.75; m 2.16, 2.32; t 10.96, 10.96; pcl 3.65, 3.65. Width: v 1.12, 1.16; f 1.49, 1.49; t 8.80, 8.80.

Locality records
CENTRAL PROV: Brown River, Laloki, Port Moresby, Otomata Pltn, Tapini.
MADANG PROV: Erima.
MOROBE PROV: Bulolo, Lae, Mt Missim, Siboma.
NORTHERN PROV: Awowata Pltn, Kokoda, Mt Lamington, Popondetta.
SOUTHERN HIGHLANDS PROV: Tugiri, Mendi.
IRIAN JAYA: Agats, Waris.
MALUKU: Dobbo, Ureiuning.
QUEENSLAND: Cornwallis Island.

Plant records
Cacao: Owowata, 25.X.1972 (BenMeiv); P.A.T.I., 16.XI.1972 (Smith).
Cashew: P.A.T.I., 16.VII.1973 (Knowles).
Castanopsis acuminatissima: Mt Missim, 15.VI.1984 (Gagné & Urep).

Citrus: Laloki, 14.VII.1959 (Szent-Ivany & Simmonds); Laloki, 30.VI.1981 (Ismay). Coffee: Mendi, 14.IX.1960 (Szent-Ivany).

Genus **Neocromna** Distant

Neocromna Distant, 1910b: 329.
Phymoides Distant, 1910b: 327.—Metcalf, 1957: 214. **New synonymy.**

Type species. Nephesa bistriguttata Stål, 1863: 591, designated by Distant, 1910b: 329.

Diagnosis. Head conical, apex blunt, turned upwards; front obtusely conical, median carina united with remnant of U-carina that forms indistinct margin between front and vertex; median longitudinal carina on vertex and pronotum evanescent; lengths of vertex and pronotum about equal. Tegmen with 3 longitudinal veins R, S, and M arising together from basal stem; postclaval sutural margin prolonged apically, sutural angle acute, apical margin straight nearly to sutural and costal angles, obtusely angulate at costal angle. Metatibial spines 1:6.

Distribution. Papua New Guinea, Irian Jaya, Maluku.

Neocromna bistriguttata (Stål) Figs. 1, 12, 22

Nephesa bistriguttata Stål, 1863: 591.
Colgar similata Melichar, 1902: 116.—Metcalf, 1957: 400 (error in synonymy). **New synonymy.**
Phymoides rubromaculatus Distant, 1910b: 326. **New synonymy.**
Neocromna bistriguttata: Distant, 1910b: 330.—Metcalf, 1957: 187.

Type locality. MALUKU: Aru Islands.

Diagnosis. Variants of this species show a considerable array of colors, including light pink, tawny, light green, and opaque dark green. Tegmina in some specimens (perhaps teneral) nearly colorless. However, the fixed position of 3 round, red spots that are aligned on the distinctively shaped tegmina enables reliable identification of the species. Characters of male genitalia constant among numerous variants that I dissected. It is assumed that color variation is associated with maturity of specimens or degree of metabolism of host plant pigments. Length: 13–16 mm. Hind leg spine formula 1:6:8. The lectotype female from Aru Islands is in BMNH. All of the syntypes known to me are females or abdomens are lost. The plesiotype male from the lectotype locality is here designated to make known the genitalic characters shown in Fig. 22. Plesiotype male: MALUKU: Aru Islands, Dobbo, 20.V.1939, R.G. Wind, BPBM.

Measurements (♂, ♀). From plesiotype ♂ and ♀ from same locality. Length: overall 13.00, 15.50; v 0.75, 0.87; f 1.66, 1.83; p 0.66, 0.75; m 1.99, 2.49; t 10.96, 12.95; pcl 3.98, 4.48. Width: v 0.95, 1.00; f 1.25, 1.37; t 9.96, 11.95.

Determinations. Seven ♀ det. N.C.E. Miller "*Euphanta* sp. not in B.M.," Wau, 4.VIII. 1959, Ardley #B1164, C.I.E. No. 16809 [pink form]; 2 ♀ det. M.S.K. Ghauri 1961 "*Neocromna bistriguttata,*" Bubia, 28.III.1955, *Theobroma cacao,* Szent-Ivany, No. 4932 [tawny form]; 4 ♂, 11 ♀ det. N.C.E. Miller "*Phyllyphanta* sp. not in B.M.," Bubia Pltn, 18–19.X.1956, cacao, Nango, C.I.E. No. 15094, BM 1957-250 [green form]; 6 ♂, 7 ♀ det. M.S.K. Ghauri "*Phymoides* sp.," Wau, 4.VIII.1954, *Coffea arabica,* Szent-Ivany, #3985-89, 4915-19, C.I.E. No. 17534, 19259; Wau, Shanahan's Pltn, 4.VIII.1959, coffee, Ardley, #B1164, C.I.E. No. 16839; Wau, Rapagha Pltn, 22.VII.1963, *Coffea arabica,* Szent-Ivany, #6932 [pink form].

Locality records

MALUKU: Dobbo, Elyner.

IRIAN JAYA: Bodem, Cyclops Mts, Duroto, Enerotadi, Genjam, Guega, Itouda, Karubaka, Kebar Valley, Kulima, Kutsime, Manokwari, Nabire, Oboerfareh, Tage Lake, Utakwa River, Waris, Wasian.

MADANG PROV: Nubia Village, Wanuma.

MOROBE PROV: Buambi Pltn, Bubia, Bulolo, Lae, Wau.

EAST SEPIK PROV: Bainyik, Kumun, Maprik, Torricelli Mts, Wagu.

WEST SEPIK PROV: Eliptamin Valley, Feramin, Nengian.

NORTHERN PROV: Pitoki.

WESTERN PROV: Kiunga.

Plant records

Cacao: Awalunga Pltn, 8.IX.1955 (Szent-Ivany); Buambi Pltn, 9.IX.1955 (Szent-Ivany); Bubia, 13.III.1954 (Ardley); Bubia Plant Industry Centre, 8.XI.1954 (Szent-Ivany); Bubia, 8.III, 28 III.1955 (Szent-Ivany); Bubia Pltn, 3.X.1956 (Ardley); Bubia, 19.X.1956 (Nango); Leiwomba Pltn, 9.IX.1965(Szent-Ivany).

Coffee: Wau, Shanahan Pltn, 4.VIII.1959; Bishop Mus. Field Sta., 13.III.1964; DASF Sta., 17.VI.1965, Kolega No. 1, 18.IV.1965; Warra Pltn, 17.IV.1965; Poltalloch Pltn, 6.III.1967 (all collected by Szent-Ivany and assistants). Also pink forms collected 23–24.VII.1963 (Szent-Ivany & Kebby) during survey on Wau coffee plantations: Bencula, Bubu, Goldfield Power House Block, Poltalloch, Rapagha, Wau, and Wilson. *Lithocarpus* sp.: Wau, 20.VI.1984 (Gagné).

Genus **Neodaksha** Distant

Neodaksha Distant, 1910b: 328.—Metcalf, 1957: 153.

Type species. Flata quadriguttata Walker, 1870: 179, designated by Distant, 1910b: 328.

Diagnosis. Vertex shallowly conical, anterior margin poorly defined but slightly wider than posterior margin, which is thickly carinate and elevated; front longer than broad, median longitudinal carina extending up to and over apex, continuing weakly on dorsum of vertex, pronotum, and mesonotum, or evanescent. Pronotum lateral margin carinate, oblique, disappearing before reaching postocular eminence, which is elevated, broadly triangular. Tegmen sometimes immaculate but usually exhibiting variable patterns of black spots, lines, or bands; postclaval sutural margin and sutural angle convex or drawn out acutely, posterior margin convex or nearly straight. Metatibial spines 1:6 or 1:7.

Distribution. Papua New Guinea.

Key to Species of *Neodaksha*

1. Tegmen sutural angle convexly rounded ..... *marginata,* **n. sp.**
   Tegmen sutural angle acutely pointed 2
2. Body, legs, and tegmina pale green or pale white; tegmen immaculate, or with no more than 2 small dashlike black spots ..... *furtiva*
   Body and tegmina pale ochraceous or sordid white; legs black; tegmen sutural margin black ..... *composita*

Neodaksha composita (Melichar) Fig. 18

Colgar composita Melichar, 1902: 114.
Neomelicharia composita: Metcalf, 1957: 395.
Neodaksha composita: Medler, 1986b: 300.

Type locality. PAPUA NEW GUINEA: Moroka.

Diagnosis. Head, pro-, and mesonota ochraceous, tibiae and tarsi black; tegmen white or pink, with variable markings. Some specimens with typical pattern illustrated by Melichar (1902, pl. III, fig. 17). Others, to varying extent, have lost black pigmentation on veins, posterior margin, and 2 discal spots. However, sutural margin and front and mid tibiae and tarsi remain black. Hind leg spine formula 1:6:9. Species collected at higher altitudes. The holotype is a female from Moroka in MCSN. The plesiotype is here designated to make known the characters of the genitalia, as shown in Fig. 18. Plesiotype male: PNG: EASTERN HIGHLANDS PROV: DASF Korofeigu, 1.IX.1966, on secondary bush, E. Kanjiri, BPBM.

Measurements (♂, ♀). From plesiotype ♂ and ♀ with same collection labels. Length: overall 16.00, 18.00; v 0.46, 0.46; f 1.58, 1.74; p 0.83, 0.83; m 2.49, 2.66; t 14.11, 16.43; pcl 4.15, 4.32. Width: v 1.12, 1.16; f 1.49, 1.58; t 9.96, 11.95.

Determinations. Three ♂, 1 ♀ det. M.S.K. Ghauri 1965 "Gen. nr. *Paratella,*" Aiyura Agr. Sta., 5,400 ft [1.646 m], I.1959, *Coffea arabica,* J.H. Barrett, Nos. 7010-13.

Locality records
CENTRAL PROV: Hohola, Waitape, Yaningya.
CHIMBU PROV: Kup.
MOROBE PROV: Nami Creek, Samazing, Yaningya.
MADANG PROV: Kiambavi, Matoko.
EASTERN HIGHLANDS PROV: Aiyura, Arau, Kainantu, Korofeigu, Mondo, Purosa.
EAST SEPIK PROV: Wewak.
WESTERN HIGHLANDS PROV: Nondugl.

Plant records
Coffee: Aiyura Agric. Sta., 5,400 ft [1.646 m], I.1959 (Barrett).
Evodia sp.: Yaningya, Bulldog Rd divide, 1,200 m, 27.X.1973 (Gressitt).
Lemon: Waitape, 1,600 m, 9.VI.1986 (Ismay).

Neodaksha furtiva (Melichar) Figs. 2, 15, 20

Colgar furtiva Melichar, 1902: 115.
Neomelicharia furtiva: Metcalf, 1957: 398.
Neodaksha furtiva: Medler, 1986b: 300.

Type locality. IRIAN JAYA: Bujakori.

Diagnosis. Vertex shallowly obtuse; tegmen sutural angle acute; most of width of posterior margin truncate. Head, thorax, and tegmen pale green, pale ochraceous, or white. Tegmen sometimes immaculate powdery white but usually marked with 2 small dashlike black spots positioned on centers of M-Cu and M_1-M_2 crossveins. Hind leg spine formula 1:6:7. Species collected at lower altitudes. The lectotype is a female from Bujakori in MCSN. The plesiotype is here designated to make known genitalia characters shown in Fig. 20. Plesiotype ♂: PNG: NORTHERN PROV: Kokoda, 26.X.1965, cacao, G.S. Dun, BPBM.

Measurements (♂, ♀). From plesiotype ♂ and ♀ from Kokoda, L. E. Cheesman, BM 1933-427, BMNH. Length: overall 18.00, 20.00; v 0.75, 0.83; f 1.83, 1.99; p 0.91, 1.00; m 2.66, 2.82; t 14.94, 17.93; pcl 6.24, 6.72. Width: v 1.12, 1.16; f 1.49, 1.58; t 13.45, 13.90.

Determinations. Labels of "*Paradaksha* sp." det. M.S.K. Ghauri, were attached as follows: Davana Pltn, 25.VI.1962, citrus, A. Catley, #4360-61; Javunie Pltn nr Popondetta, 28.XI.1961, cacao, J.J.H. Szent-Ivany, #4123, C.I.E. No. 18054; Sumvarapa Pltn, 22.XI.1961, cacao, J.J.H. Szent-Ivany, #PO 27, C.I.E. No. 8018; Kui, 10.XI.1970, leafy shrub, L. Radunz, No. 526-28, C.I.E. No. A3734.

Locality records
EAST SEPIK PROV: Maprik.
MILNE BAY PROV: Waigani.
MOROBE PROV: Komiatum, Kui, Zenag-Lae.
NORTHERN PROV: Awawota, Javunie, Koitaki, Kokoda, Oro Bay, Popondetta, Sumvarapa.
WESTERN PROV: Kiunga.
WEST SEPIK PROVINCE: Torricelli Mts.
IRIAN JAYA: Waris.

Plant records
Cacao: Awowota Pltn, 14.X.1971 (Baker); Javunie Pltn, 28.XI.1961(Szent-Ivany); Kokoda, 26.X.1965 (Dun); Sumvarapa Pltn, 22.XI.1961 (Szent-Ivany); Waigani Pltn, 15.I.1958 (Fairfax-Ross).
Citrus: Popondetta, Davana Pltn, 25.VI.1962 (Catley).
Coconut: Popondetta, VIII.1963 (Dun).
Coffea canephora: Komiatum Village, 7.III.1967 (Fenner).

Neodaksha marginata Medler, new species — Fig. 19

Diagnosis. Holotype male head and thorax ochraceous, anterior margin of mesonotum, tegulae, and legs black; black pigment also diffused on lower parts of head, thorax, and abdomen. Tegmina dull white, margined boldly with black on sutural and apical margins, evanescent black on costal margin; clavus widely black on each side of vein A_2. Hind leg spine formula 1:7:9. Male genitalia shown in Fig. 19. Among the paratypes are 2 males and 1 female with extensive gray-black pigmentation along the R, S, and M veins basally, and across the apex, forming a very wide apical margin. The genitalia dissected from a male color variant showed no difference from the holotype genitalia.

The new species differs from *composita* and *furtiva* in convex shape of sutural angle of tegmen. Male genitalia illustrated in Fig. 19 show characteristic shape of pygofer found in each of 3 species given in this report.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 18.00, 21.00; v 0.58, 0.62; f 1.83, 1.99; p 0.75, 0.83; m 2.82, 3.49; t 15.77, 18.92; pcl 4.48, 4.98. Width: v 1.16, 1.29; f 1.66, 1.91; t 10.13, 11.45.

Determinations. A label "Gen. nr. *Paratella*" det. M.S.K. Ghauri 1965, is attached to paratype ♂ in PNGDPI.

Type data
Holotype ♂ (BPBM 13,437), PNG: SOUTHERN HIGHLANDS PROV: Mendi, 5,000 ft [1,524 m], 15.X.1961, citrus, J. H. Barrett, BPBM. Allotype ♀, labeled as holotype, BPBM. Paratypes, 5 ♂, 3 ♀, same labels as holotype deposited as follows: 1 ♂, 1 ♀ each in PNGDPI, BMNH, USNM; 2 ♂ in BPBM.

Plant record
Citrus: Mendi, 15.X.1961 (Barrett).

Genus **Taparella** Medler, **new genus**

Type species: Nephesa amata Walker, 1870: 175, here designated.

Diagnosis. Head truncate; vertex about 4 × wider than long, vertex posterior margin with strongly elevated thick carina, anterior margin delimited from front in middle part by frontal U-shaped carina that is shallow and not well developed; front slightly broader than long, with strong median longitudinal carina connected to U-carina dorsally, continuing across vertex and pronotum where it is partially lost; pronotum lateral carina downturned, almost reaching postocular eminence, which is raised ridgelike; mesonotum with 3 longitudinal carinae, laterals converging slightly at rear. Tegmen R, S, and M veins arising together from basal stem, R unbranched, S forked about halfway between M fork and discal cell crossvein, Cu forked, branch Cu1 oblique, joining vein M_2. Apical margin of tegmen oblique, costal and sutural angles of nearly similar configuration, obtuse. Metatibial spines 1:6.

Distribution. Papua New Guinea, Irian Jaya.

The new genus is erected to contain a group of species that were listed by Metcalf (1957) under *Paratella* but are not congeneric with *Ricania iodipennis* Guerin-Meneville, 1838: 191, type species of the genus.

Taparella amata (Walker), **new combination** Figs. 16, 21

Nephesa amata Walker, 1870: 175.
Paratella amata: Metcalf, 1957: 374.
Paratella discoidalis Melichar, 1902: 120.—Metcalf, 1957: 375. Medler, 1986a: 112.
Paratella miniata Melichar, 1902: 120.—Metcalf, 1957: 377.—Medler, 1986a: 112.

Type locality. IRIAN JAYA: Waigeo Island.

Diagnosis. Specimens show very wide range of color variation. Tegmina may be unicolorous dark or light red, orange, pale pink, or white; margins may be outlined in black or fuscous. Degree of color loss in discal area is variable. In specimens darkly red, black also invades the frons, sometimes frontal aspect entirely black. Hind leg spine formula 1:6:6–7. A study of male genitalia of variants showed all specimens belonged to the same species. There is some variation in length of aedeagus ventral process, with shorter lengths thickened, but differences seem to be no more than intraspecific. The plesiotype is here designated to make known the male genitalia (Fig. 21), as all known syntypes of *N. amata* and its synonyms are females. The crenulate dorsal ridge of the aedeagus appears to be a stable character state that enables reliable identification of this species. Plesiotype male: IRIAN JAYA: Hollandia-Kotanica, 28–29.II.1960, T. C. Maa, BPBM.

Notes on synonymy. The lectotype ♀ of *N. amata* in BMNH has light red tegmina with costal margins more intensely red and apical margins suffused with fuscous. A paler area is faintly discernible on disc. Head, thorax, and legs faded yellow. The lectotype ♀ of *P. discoidalis* in DSMT designated by Medler (1986a) has red color pattern of *amata* but tegminal margins are intense black or dark red. The lectotype ♀ of *P. miniata* in DSMT designated by Medler (1986a) has tegmina mostly red except basally where tegmina are concolorous with stramineous head and thorax. All syntypes known to me have been examined.

Measurements (♂, ♀). From plesiotype ♂ and ♀ from same locality. Length: overall 15.00, 17.00; v 0.33, 0.37; f 1.74, 1.83; p 0.66, 0.71; m 2.66, 3.15; t 12.95, 14.94; pcl 3.82, 4.32. Width: v 1.44, 1.58; f 1.74, 1.83; t 7.47, 8.47.

Locality records

MADANG PROV: Amele Pltn, Astrolabe Bay, Awar, Benap, Dylup, Karkar Island, Madang, Nubia Mission.

MOROBE PROV: Boana, Bulolo, Gabumi, Ulap, Wau.

EAST SEPIK PROV: Bainyik, Dreikikir, Karubaka, Maprik, Megafin, Sugoitei, Wewak.

WEST SEPIK PROV: Aitape, Bewani, Eliptamin Valley, Torricelli Mts.

IRIAN JAYA: Binnen, Bodem, Bonga, Cyclops Mts, Genjam, Hollandia, Ifar, Japen Island, Kotanica, Maffin Bay, Nabire, Seroei, Sumberbaba, Toem, Waigou, Waris.

Plant records

Cacao: Amele Pltn, X.1964 (Dun); Benap Pltn, 5.IX.1962 (Szent-Ivany); Dylup Pltn, 8.III.1960 (Szent-Ivany); Dylup Pltn, 17.X.1964 (Dun); Genjam, 7–8.XI.1960 (Simon Thomas); Madang, 5.VIII.1966 (Bourke); Madang Agric. Sta., 16.X.1964 (Dun); Karkar Island, Kaviak Pltn, 19.IX.1958 (Ardley); Karkar Island, Kulili Pltn, 20.IX.1958 (Ardley); Kulili Pltn, 8.V.1960 (Szent-Ivany); Magafin Village

Pltn, N of Dagua, 7.III.1960 (Szent-Ivany); Japen Island, Seroei, 12.V.1960 (Simon Thomas). Also recorded from Karkar Island, Kaviak Pltn, under the name *Parartella (sic) miniata* Mcl. by Szent-Ivany & Catley (1960).

Citrus: Wau Ecology Inst., 10.IX.1981 (Brough).

Coffee: Kotanica, 18.IX.1960, 17.X.1960 (Simon Thomas); Madang, 8.X.1959 (Healy).

Coffea canephora: Madang, 9.I.1956 (Szent-Ivany).

Guava: Bewani, 13.XI.1985 (Ismay).

Kunai grass: Hollandia, 7.III.1945 (Hoogstraal).

Xanthosoma sp.: Wau, VII.1979 (Gagné).

Taparella minima Medler, new species

Figs. 7, 23

Diagnosis. Holotype male nearly unicolorous, without distinguishing markings; head, thorax, and legs light stramineous; tegmina basally same color as thorax, remainder of tegmina appearing white, with powdery deposits of white wax; veins in part very pale green. Frons U-shaped carina slightly angulate at apex. Hind leg spine formula 1:6:7. Genitalia illustrated in Fig. 23. Among paratypes, overall lengths range from 10 to 14 mm, and there are subtle differences in shades of white, ochraceous and stramineous. The head, thorax, and tegmina basally are shaded more deeply than the tegmina proper. Specimens of *T. minima* and *T. decolor* (Walker) have similar pale stramineous coloration, but *minima* is smaller and the frontal U carina is somewhat better defined. The aedeagus of *minima* has a small, sharp medial spine on the dorsal margin that is a helpful recognition character.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 12.5, 13.5; v 0.33, 0.33; f 1.66, 1.74; p 0.58, 0.66; m 2.82, 2.82; t 10.29, 10.79; pcl 3.15, 3.32. Width: v 1.33, 1.37; f 1.78, 1.83; t 6.14, 6.47.

Type data

Holotype ♂ (BPBM 13,438), PNG: CENTRAL PROV: Aroa Estate, E. of Redscar Bay, 1 m, 30.IX.1958, J. L. Gressitt, BPBM. Allotype ♀, PNG: CENTRAL PROV: Port Moresby, 5–6.VI.1955, *Eucalyptus,* J. L. Gressitt, BPBM. Paratypes, as follows:

AM. IRIAN JAYA: Dojo, IV.1958, #43, G. den Hoed, *Paratellaerrudita* Mel., det. W. H. Gravestein 1960.

BPBM. CENTRAL PROV: betw. Laloki River and Brown River, 35 m, 15.III.1956, J. L. Gressitt, 1 ♀; Laloki, 1909, F. Muir, 2 ♂, 3 ♀; Port Moresby, 11–12.VI.1961, J. H. Sedlacek, 1 ♂; Ruka, 9 m, 12.VIII.1964, light trap, H. Clissold, 1 ♂.
IRIAN JAYA: Hollandia-Binnen, 100 m, 2.XI.1958, #3236, J. L. Gressitt, 10 ♂, 8 ♀.

BMNH. CENTRAL PROV: Port Moresby area, 1.IV.1947, E. Guthrie, Ho. 30, Imp. Inst. Entomol. #10644, 1 ♂.

RISB. MADANG PROV: Sisimangum, 1.VII.1981, P. Janssens & J. van Goethem, 19 ♂, 7 ♀.

MCSN. CENTRAL PROV: Port Moresby, 23.VIII.1889, Loria, 1 ♂, 1 ♀; 11.Ramoi.1875, Beccari, *Paratella errudita* Mel., det. Melichar, 1 ♂, 1 no abdomen.

NCSU. IRIAN JAYA: Hollandia, V.1945, 250 ft [76 m], rain forest, H. Hoogstraal, 1 ♀; Hollandia, 1,800 ft [549 m], 15.III.1945, edge of kunai grass and forest, H. Hoogstraal, 1 ♂.

PNGDPI. CENTRAL PROV: Bisianumu, 17.VI.1959, rubber seedlings, A. J. Van Ha'aren, 1 ♂; Brown River, 25.IX.1955, *Eucalyptus deglupta* in large populations, J.J.H. Szent-Ivany, Dep. Agric. #805, C.I.E. #14737, 1 ♂, 1 ♀; Laloki, Plant Introd. Quar. Sta., 19.I.1957, E. Kanjiri, 1 ♀; Laloki, 16.VI.1982, citrus lime, E. J. Brough, 4 ♂, 5 ♀; Laloki, 25.V.1983, guava fruit stalks and stems, F. Dori, 1 ♂, 2 ♀; Laloki, 5–12.VII.1984, guava, N. Sui and J.W. Ismay, 8 ♂, 6 ♀; Port Moresby, Lawes Rd Hill, 29.XI.1955, at lights, E. Anderson, 3 ♂, 1 ♀; Port Moresby, Lawes Rd, 8–12.I.1959, light, E. Anderson, 1 ♂, 1 ♀; Port Moresby, Gordon Estate, 28.IV.1968, at light, T. L. Fenner, 1 ♀.

MILNE BAY PROV: Samarai, IX.1959, #AM 206, A. H. Mann, *Paratella* sp., det. M.S.K. Ghauri 1965, 1 ♀.

WESTERN PROV: Mabaduan Vill, 28.XI.1967, mango, T. L. Fenner, 1 ♂; Moian #1, 23.XI.1985, guava, J. W. Ismay. 3 ♂, 1 ♀.

RNHL. IRIAN JAYA: Tanah Merah, boven Digoel, 17 m, 5–18.IV.1955, L. D. Brongersma, 10 ♂, 4 ♀; Sorong Val, 6.III.1957, G. F. Mees, 1 ♂.

Plant records

Eucalyptus deglupta: Brown River, 25.IX.1965 (Szent-Ivany). *T. minima* was the flatid reported by Szent-Ivany and Womersley (1958), under the misidentified name of *Paratella miniata* Mel. This insect and two other hemipterons were responsible for a damaging attack on young trees.

Eucalyptus sp.: Port Moresby, 5–6.VI.1955 (Gressitt).

Guava: Laloki, 25.V.1983 (Dori); Laloki, 5–12.VII.1984 (Sui & Ismay); Moian Island, 23.XI.1985 (Ismay).

Lime: Laloki, 16.VI.1982 (Brough).

Mango: Mabaduan, 28.XI.1967 (Fenner).

Rubber: Bisianumu, 17.VII.1959 (Van Ha'aren).

Genus **Taparella** New Combinations

The following species heretofore placed in *Paratella* Melichar (1902) are transferred to the new genus *Taparella,* as follows:

Nephesa decolor Walker, 1870: 176. **New combination.**
Flata doryca Boisduval, 1835: 621.—Medler, 1986d: 167. **New combination.**
Paratella errudita Melichar, 1902: 118. **New combination.**
Flatta flava Montrouzier, 1855: 111. **New combination.**
Nephesa intacta Walker, 1870: 171. **New combination.**
Paratella roseoalba, Melichar, 1902: 119. **New combination.**
Flatta rubra Montrouzier, 1855: 111. **New combination.**
Paratella spectra Distant, 1914: 355. **New combination.**
Paratella subcincta Distant, 1910b: 333. **New combination.**
Paratella variegata Schmidt, 1904: 370. **New combination.**

Note: *Paratella subflava* Melichar, 1902: 119, is neither *Paratella* nor *Taparella.* The taxon represents an undescribed genus near *Sabaethis* Jacobi, 1916: 314.

Genus Sephena Melichar

Sephena Melichar, 1902: 123.—Metcalf, 1957: 366.

Type species. Nephesa spargula Walker, 1870: 173, designated by Melichar, 1902: 123.

Diagnosis. Vertex much wider than long, anterior margin slightly convex, curvature approximately same as anterior margin of pronotum; frons wider than long, median longitudinal carina strong dorsally, evanescent on vertex. Tegmen apical margin shallowly convex, costal and sutural angles obtuse, with approximately same configuration, basal stem emitting R + S and M longitudinal veins, R + S distinct, Cu forked, oblique branch Cu1 joining M_2; discal crossvein usually, but not always, marked by distinct pigment spot. Metatibial spines 1:6. Metcalf (1957) listed 26 species names in the genus *Sephena.* A revisional study of taxa in New Guinea has shown that about half the species assigned to *Sephena* are not congeneric with the type of the genus. Their disposition will be detailed in subsequent publications (Medler, in prep.). The tegmina of the following species have a short, distinct R + S stem, such as shown in Fig. 8. This is the same venational pattern as found in *S. spargula.* Whenever possible, male genitalia should be used to check determinations, as external color patterns are variable, and undescribed species are known that have closely similar color patterns.

Distribution. New Guinea Subregion, Solomon Islands.

Key to Species of *Sephena*

1. Dorsum of head convex, merging with front anteriorly without any indication of transverse carinate margin; margins of tegmen usually red ..... *rubrovenosa*
   Head with distinct transverse carina, or remnant of a carina, which forms anterior margin of a discernible vertex 2
2. Anterior margin of vertex defined medially by sharp U-shaped frontal carinae; tegmen stramineous, bright red spot on discal cell crossvein similar in color and size to several nearby spots ..... *stigmatica,* n. sp.
   Transverse carina separating vertex and front not sharply defined, not forming distinct U-shaped carina; spot on discal cell crossvein differing in size from other spots on tegmen 3
3. Tegmen appearing brown; veins, spots, and apical margin heavily infuscated, with vein terminations strongly dark brown or black ..... *infumata,* n. sp.
   Tegmen not fuscous; usually green, stramineous, or bleached ochraceous; vein terminations usually red 4
4. Sutural angle of tegmen 90°; apical margin slightly concave at sutural angle; size of spots variable, with spots in cubital cell not larger than other spots on tegmen .. .. *conspersa*
   Sutural angle of tegmen broadly obtuse; spot on discal cell crossvein, if present, small relative to larger spots in cubital cell adjacent to claval suture .... *conforma,* n. sp.

Sephena conforma Medler, new species — Figs. 8, 11, 45

Diagnosis. Holotype overall color tawny; vertex anterior margin formed by a shallow rounded carina that is not completely transverse, ends downturned slightly before reaching lateral margins. Pronotum and mesonotum median carina accentuated with red. Tegmen red spots disposed as follows: 1 basally in M-Cu cell; 3 large and 1 small spot basally in cells between Cu and A_1; many very small spots scattered on discal crossveins. Hind leg spine formula 1:6:7. Genitalia illustrated in Fig. 45. Paratypes include specimens that are faded, with typical spots on tegmen reduced, indistinct, or lost. Reliable determination of species requires examination of male genitalia characters.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 7.50, 8.00; v 0.13, 0.17; f 0.91, 1.00; p 0.33, 0.33; m 1.49, 1.49; t 6.64, 6.97; pcl 1.66, 1.99. Width: v 1.00, 1.04; f 1.29, 1.29; t 3.32, 3.65.

Type data

Holotype ♂ (BPBM 13,439), PNG: NORTHERN PROV: Popondetta, 60 m, 2–4.IX.1963, J. Sedlacek, BPBM. Allotype ♀, PNG: NORTHERN PROV: Sangara area, 22.VI.1965, cacao pods, J. B. Donohue, BPBM. Paratypes, as follows:

BPBM. NORTHERN PROV: Popondetta, 60 m, 2–4.IX.1963, J. Sedlacek, 1 ♀.

BMNH. NORTHERN PROV: Arehe Pltn, 30.XI.1961, J.J.H. Szent-Ivany, R. J. Cheetham & E. Kanjiri, Dep. Agric. # 4003, C.I.E. No. 18054, 1 ♂; Carberry Pltn, 23.XI.1961, on cacao, J.J.H. Szent-Ivany, C.I.E. No. 18018, det. *Sephena* sp., M.S.K. Ghauri, 1 ♂; Jumburu Pltn, 1.XII.1961, on *Theobroma cacao,* J.J.H. Szent-Ivany & R. J. Cheetham, C.I.E. No. 18054, 4 ♀.

PNGDPI. NORTHERN PROV: Bisi Pltn, 1,000 ft [305 m], 21–13.I.1964, cacao foliage, J.J.H. Szent-Ivany & C. Mayoh, 1 ♀; Hahota Pltn, 14.XI.1958, cacao foliage, J.J.H. Szent-Ivany, 1 ♀; Mamoo Pltn., 25.IX.1957, in forest clearing, J.J.H. Szent-Ivany, 1 ♂; Mamoo Pltn, 29.V.1957, in cacao, J.J.H. Szent-Ivany & E. Kanjiri, 1 ♂; Popondetta, VIII.1963, cacao, G. S. Dun, 1 ♀; Popondetta, Azerita Agric. Coll., 29.V.1965, G. S. Dun, 1 ♀; Popondetta, Dimark Pltn, 18.X.1966, cacao under bush, C. Baker & T. V. Bourke, 3 ♀; Popondetta, Scrovi bl 15, 24.VIII.1973, J. Knowles, 2 ♂; Sangara Pltn, 1,000 ft [305 m], 9.XII.1955, cacao pods, J.J.H. Szent-Ivany, 1 ♂.

SAM. NORTHERN PROV: Mt Lamington, 1,300–1,500 ft [396–457 m], C. T. McNamara, 2 ♂, 2 ♀.

Plant records

Cacao: Azerita Agric. College, 29.V.1965 (Dun); Bisi Pltn, 21–23.I.1964 (Szent-Ivany & Mayoh); Dimark Pltn, 18.X.1966 (Baker & Bourke); Hahota Pltn, 14.XI.1958 (Szent-Ivany); Mamoo Pltn, 29.V.1957 (Szent-Ivany & Kanjiri); Popondetta, VIII.1963 (Dun); Sangara Pltn, 9.XII.1955 (Szent-Ivany); Sangara area, 22.VI.1965 (O'Donohue).

Sephena conspersa Melichar — Fig. 47

Sephena conspersa Melichar, 1902: 125.—Medler, 1986c: 111.
Sephena punctulosa, Distant, 1911: 384. **New synonymy.**

Type locality. SOLOMON ISLANDS: Shortland Island.

Diagnosis. Overall color of tegmina and body green, ochraceous, or ivory white, tegmina showing considerable variation in intensity of red spots and vein markings. Vertex, pro-, and mesonotum with red median stripe, tip of scutellum red, sides of pronotum with small red dots, sides of mesonotum with red stripes similar to median stripe. Tegmen spots greatly variable but often disposed as follows: ca. 4 small spots in clavus adjacent to claval suture; 4 larger spots in cubital cell adjacent to claval suture; prominent spot basally in cubital cell, on discal cell crossvein, and M_{1-2} crossvein; small spots on crossveins between branches of M in discal and apical areas. Red dots basally in clavus and in cell along costal margin; vein terminations on apical and postclaval margins red. Concave apical margin adjacent to the 90° sutural angle is a helpful recognition character; postclaval sutural margin slightly convex, margin

incised at apex of clavus. Hind leg spine formula: male 1:5:6, female 1:6:7. Characters of male genitalia shown in Fig. 47.

Measurements (♂, ♀). From ♂ and ♀, Bougainville, Buin, J. L. Gressitt, BPBM, and Tokinoitu, J. L. Gressitt, BPBM. Length: overall 8.00, 9.00; v 0.17, 0.21; f 1.08, 1.16; p 0.42, 0.42; m 1.49, 1.74; t 6.81, 7.64; pcl 2.16, 2.49. Width: v. 0.95, 1.08; f 1.25, 1.33; t 3.98, 4.48.

Locality records
CENTRAL PROV: Aroa Pltn, Brown River, Port Moresby environs.
BOUGAINVILLE PROV: Bougainville.
SOLOMON ISLANDS: Florida, Guadalcanal, Kolombangara, Malaita, Mono, Munda Russell, San Cristobal, Santa Ysabel, Shortland, Treasury, Vella Lavella.
QUEENSLAND: Cairns.

Plant records
Casuarina: Tulagi, 3.VII.1933 (Pagden).
Coffea canephora: Brown River, 10.III.1965 (Szent-Ivany, Kanjiri & Bart).
Fig (banyan): Common host plant in the Solomon Islands (Krauss, personal communication).
Freycinctia sp.: Arawa, 22–23.IV.1980 (Gressitt).
Glochidion sp.: Munda, 20.VII.1959 (Gressitt).
Macaranga 4-glandulosa: Kirakira, 3–4.XI.1980 (Gressitt).
Mallotus ricinoides: Kirakira, 3–4.XI.1980 (Gressitt).
Palm: Brown River, 5.X.1958 (Gressitt); Kirakira, 3–4.XI.1980 (Gressitt).
Pipturus sp.: Mono Island, 6–11.XI.1980 (Gressitt); Waitabuna, 6.VI.1956 (Ford).
Teak: Brown River, 22.X.1960 (Gressitt).
Wedelia sp.: Mono Island, 6–11.XI.1980 (Gressitt).

Sephena infumata Medler, new species — Figs. 5, 46

Diagnosis. Holotype vertex with anterior margin carinate, carina incompletely transverse, with ends turned slightly downward on front before reaching lateral margins. Head and thorax dark brown; tegmen appearing brown because of brown spots and veins, especially terminal veins that are heavily outlined in fuscous. Tegmen M_1–M_2 crossvein weak, suppressed by a large brownish spot, discal cells with a scattering of small brown spots. Hind leg spine formula 1:6:7. Genitalia illustrated in Fig. 46. Among paratypes are specimens with faded color and variation in size and intensity of tegminal spots. The overall brown color prevails, however, and this species usually is recognized by the distinctive brown appearance not found in other species of *Sephena.*

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 7.00, 8.00; v 0.13, 0.17; f 1.00, 1.08; p 0.33, 0.33; m 1.41, 1.66; t 5.81, 6.81; pcl 1.66, 1.99. Width: v 0.95, 1.04; f 1.25, 1.29; t 3.32, 3.82.

Type data

Holotype ♂ (BPBM 13,440), PNG: CENTRAL PROV: Laloki, nr Port Moresby, 30.VIII–2.IX.1959, T. C. Maa, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BPBM. CENTRAL PROV: Daradae, nr Javerere, Musgrove River, 100 m, 3.X.1958, J. L. Gressitt, 1 ♂; Laloki, nr Port Moresby, 30.VIII–2.IX.1959, T. C. Maa, 1 ♂, 1 ♀; Port Moresby, 21 mi [13 km] radius, VI.1928, Pemberton, 6 ♂, 3 ♀; Port Moresby, 5–6.VI.1955, *Eucalyptus,* J. L. Gressitt, 1 ♀; Port Moresby, 18–20.V.1956, E. J. Ford, Jr., 5 ♀; Port Moresby, 25.IV.1959, C. D. Michener, 1 ♂; Port Moresby, 11–12.VI.1961, J. Sedlacek, 1 ♂.
WESTERN PROV: Kiunga, Fly River, 28–31.VIII.1957, W. W. Brandt, 1 ♂, 1 ♀; Daru Island, 2 m, 24.X.1960, mangroves, J. L. Gressitt, 1 ♂.

MCSN. Kapakapa, 2.Giu [VI].1891, L. Loria, 2 ♂, 3 ♀; Dilo, VI–VII.1890, L. Loria, 1 ♂, 2 ♀.

PNGDPI. CENTRAL PROV: Aieme River, 400 m, 4.XII.1984, starfruit, J. W. Ismay, 1 ♂, 1 ♀; Kokebagu Pltn, Rigo subdiv., 8.VII.1966, *Theobroma cacao,* T. L. Fenner, 1 ♂, 3 ♀; Kapagere Agric. Train. Centre, nr Rigo, 1–4.V.1965, *Coffea canephora,* J.J.H. Szent-Ivany, No. 7014-17, 2 ♂, 3 ♀; Laloki, 16.VI.1982; lime, E. J. Brough, 2 ♂, 3 ♀; Laloki, 9.II.1979, citrus, E. J. Brough, 1 ♂, 1 ♀; Laloki, 12.VIII.1984, guava, J. W. Ismay & N. Sui, 1 ♀; Poligolo, 16.IX.1984, J. W. Ismay, 3 ♀; 20 km SE of Port Moresby, 11–26.II.1983, bushes, 1 ♂, 3 ♀; Port Moresby, 31.III.1984, 28.IV.1984, 23.VI.1984, and 23.XII.1984, bushes, 5 ♂, 2 ♀; Port Moresby, 5–20.I.1985, 6.VII.1985, bushes, J. W. Ismay, 4 ♂, 3 ♀; Port Moresby, 23.XII.1984, 5–20.I.1985, and 6.VII.1985, bushes, J. W. Ismay, 4 ♂, 3 ♀; Sirinumu, 500 m, 13.VII.1983, bushes, J. W. Ismay, 1 ♂.

Plant records

Cacao: Kokebagu Pltn, 8.VII.1966 (Fenner).
Citrus: Laloki, 9.II.1979 (Brough).
Coffea canephora: Kapagere, 1–4.V.1965 (Szent-Ivany).
Eucalyptus sp.: Port Moresby, 5–6.VI.1955 (Gressitt).
Guava: Laloki, 12.VIII.1984 (Ismay & Sui).
Lime: Laloki, 16.VI.1982 (Brough).
Mangrove: Daru Island, 24.X.1960 (Gressitt).
Starfruit: Aieme River, 4.XII.1984 (Ismay).

Sephena rubrovenosa Melichar — Fig. 48

Sephena rubrovenosa Melichar, 1902: 126.—Metcalf, 1957: 370.—Medler, 1986a: 112.

Type locality. NEW BRITAIN: Gazelle Peninsula.

Diagnosis. Longitudinal orange red stripe extending across pronotum bifurcates on anterior margin of mesonotum, forming 2 diverging stripes. In male specimens rosy pink veins on a dull colored membrane give tegmina a distinctive pattern. If this character state is lost, specimens may have tegminal margins reddened to a varying extent. Some specimens exist with bleached appearance and reliable indentification requires examination of male genitalia. Hind leg spine formula 1:5:6. It was noted in some specimens that 2 small spines were displaced from the normal row of apical spines on tarsal segment I.

Male genitalia illustrated in Fig. 48 were drawn from the holotype, New Britain, Gazelle Peninsula, in DSMT.

Measurements (♂, ♀). From ♂ and ♀, Huon Peninsula, Finschhafen, BPBM. Length: overall 8.00, 8.50; v 0.17, 0.33; f 1.00, 1.08; p 0.37, 0.46; m 1.49, 1.58; t 6.64, 7.30; pcl 1.66, 1.99. Width: v 0.91, 0.95; f 1.20, 1.20; t 3.82, 3.98.

Locality records
MADANG PROV: Madang.
MOROBE PROV: Bubia, Finschhafen, Lae.

Plant record
Ylang-ylang: Bubia, 31.X.1967 (Fenner).

Sephena stigmatica Medler, new species — Fig. 44

Diagnosis. Holotype head, thorax, and tegmina tawny. Vertex without median carina, anterior margin delineated by frontal U-shaped carina, which extends ventrad for ca. ½ length of front. In dorsal view, space between this carina and lateral margins of head on each side same as vertex length. Pronotum length ca. 2 × vertex, without median longitudinal carina; mesonotum with 3 carinae, median carina less distinct than laterals. Tegmen with at least 3 conspicuous spots, 1 basally in Cu cell, 1 medially on discal cell crossvein, and 1 between M_2 and M_3 branches about halfway between discal spot and apical margin; 6 small red spots on crossveins in preapical discal area; 5 reddened crossveins in clavus along claval suture. Hind leg spine formula 1:6:8. Holotype genitalia illustrated in Fig. 44. Among paratypes are specimens with faded body color and with the red spots reduced to varying extents. Some specimens have a hind leg spine formula of 1:6:7.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 7.50, 8.50; v 0.21, 0.29; f 1.08, 1.20; p 0.33, 0.37; m 1.41, 1.58; t 6.31, 6.97; pcl 1.99, 2.32. Width: v 1.00, 1.12; f 1.25, 1.45; t 3.15, 3.65.

Type data

Holotype ♂ (BPBM 13,441), PNG: MOROBE PROV: Wau, 1,200 m, 30.I.1963, malaise trap, J. Sedlacek, BPBM. Allotype ♀, PNG: MOROBE PROV: Wau, 1,200 m, 1.IX.1961, malaise trap, J. Sedlacek, BPBM. Paratypes, as follows:

BPBM. CENTRAL PROV: Goilala, Bome, 1,950 m, 16–30.IV.1958, W. W. Brandt, 1 ♀; Guar Island, 1,900–2,100 m, X.1968, N.L.H. Krauss, 1 ♀.

MOROBE PROV: Bulldog Rd, 60 km S of Wau, 2,070 m, 22–31.V.1969, J. Sedlacek, 1 ♀; Edie Creek, 2,100 m, 5.IV.1968, on *Homolanthus,* J. L. Gressitt, 1 ♀; Mt Kaindi, 2,350 m, 13.X.1964, 31.XII.1964, J. Sedlacek, 1 ♂, 1 ♀; Mt Kaindi, 2,350 m, 7.IV.1966, J. L. Gressitt, 1 ♀; Mt Kaindi, 1,290 m, 20–23.VII.1977, malaise trap, J. L. Gressitt, 1 ♀; Wau, 1,400 m, 16.VI.1961, J. L. Gressitt, 1 ♀; Wau, 1,200 m, 29.VI.1961, 15.VIII.1961, 27.X.1961, J. Sedlacek, 2 ♂, 1 ♀; Wau, 1,200 m, 8–15.VIII.1961, J. & M. Sedlacek, 2 ♀; Wau, 1,200 m, 1–4.IX.1961, 21.XII.1961, malaise trap, J. Sedlacek, 1 ♂, 2 ♀; Wau, 1,400 m, 20.XII.1961, L. W. Quate, 1 ♀; Wau, 1,200 m, 26.XII.1961, G. Monteith, 1 ♂; Wau, 2,400 m, 9–12.I.1962, J. Sedlacek & G. Monteith, 2 ♂; Wau, 2,400 m, 20–26.V.1962, 7.VI.1962, J. Sedlacek, 5 ♂, 1 ♀; Wau,1,200 m, 30.I.1963, 10.V.1963, malaise trap, J. Sedlacek, 1 ♂, 1 ♀; Wau, 1,200–1,300 m, 1–11.IX.1965, J. & M. Sedlacek, 1 ♂, 2 ♀; Wau, 1,200–1,300 m, 20–29.IX.1965, malaise trap, 1 ♂, 1 ♀; Wau, 1,200–1,300 m, 14.IX.1965, 22.X.1965, J. Sedlacek, 3 ♂, 1 ♀; Wau, 1,150–1,600 m, 9.II.1968, J. Sedlacek, 1 ♂.

EASTERN HIGHLANDS PROV: Kabebe, below Mt Otto, 2,200 m, 24.VI.1955, J. L. Gressitt, 1 ♂, 3 ♀; 20 km SW of Kainantu, 1,800 m, 16.I.1966, L. & M. Gressitt, 1 ♂; Kassam, 48 km E of Kainantu, 1,350 m, 30.X–7.XI.1959; T. C. Maa, 4 ♂, 4 ♀.

SOUTHERN HIGHLANDS PROV: 8 km W of Mendi, 2,150 m, 5–12.XII.1967, malaise trap, P. Colman, 1 ♂.

AMNH. EASTERN HIGHLANDS PROV: Okapa area, 6th Archbold Exped. No. 10 Purosa Camp, 1,950 m, 21–26.IX.1959, L. J. Brass, 2 ♂.

BMNH. MOROBE PROV: Wau Valley, Bencula Pltn, 4,300 ft [1311 m], 23.VII.1963, on *Coffea arabica,* J.J.H. Szent-Ivany & B. Kebby, No. 6925-26, 1 ♂, 1 ♀; Mondo, 5,000 ft [1524 m], II.1934, L. E. Cheesman, BM 1934-321, 1 ♂, 2 ♀.

PNGDPI. MOROBE PROV: Wau Valley, Bencula Pltn, 4,300 ft [1311 m], 23.VII.1963, *Coffea arabica,* J.J.H. Szent-Ivany & B. Kebby, 6 ♂, 7 ♀.

Plant records
Coffee: Bencula Pltn, 23.VII.1963 (Szent-Ivany & Kebby).
Homolanthus sp.: Edie Creek, 5.IV.1968 (Gressitt).

Genus **Papuanella** Distant

Papuanella Distant, 1914: 352.—Metcalf, 1957: 71.

Type species. Papuanella mirabilis Distant, 1914: 353, by monotypy.

Diagnosis. This genus is misplaced in the tribe Phromniini between *Lechaea* and *Delostenopium* in Metcalf's (1957) catalog. It belongs to the *Sephena* complex of genera in the tribe Nephesini. *Papuanella* is distinguished from *Sephena* by the ledgelike vertex, tegmina without R + S stem, and usually a dark spot at clavus apex. Vertex a distinct narrow flat ledge bordered anteriorly by sharp carina along entire width; front about as long as broad, with sharp median longitudinal carina; pronotum lateral carina turned ventrad, nearly reaching postocular eminence, which is ridgelike. In profile, vertex and front meeting nearly at right angle, space dorsad of compound eye and along front of same width. Tegmen basal stem emitting R, S, and M veins from nodal point; precostal marginal cell terminated apically by junction of veins C and R. Metatibial spines 1:5. Species in this taxon have considerable color variability. The red, blue, green, yellow, orange, and black pigmentation, which forms distinctive patterns, may be lost to varying degrees in both sexes. Therefore, positive identification should be aided by knowing characters of the male genitalia.

Distribution. Papuanella is a relatively large genus limited in distribution to Papua New Guinea, Irian Jaya, and Maluku. Undescribed species are known to me in addition to those given in the following key.

Key to Species of Papuanella

1. Length 8 mm or less ..... *dilexa*, **n. sp.**
   Length 9 mm or more 2
2. Red spots in cubital cell or on discal cell crossvein. New Britain 3
   Tegmen without red spots 4
3. Tegmen blue-green or faded green, apical margin narrowly black, red spots in cubital cell relatively small ..... *cyanea*
   Tegmen ochraceous or nacreous, apical margin not black, red spots in cubital cell relatively large ..... *jacata*, **n. sp.**
4. Apical margin of tegmen black, apex of clavus with black spot. Species requiring examination of male genital characters for precise identification 7
   Apical margin of tegmen red or no more than dusky brown 5

5. Brownish orange, with color intensity of head, thorax, and tegmina about same; tegmen costal margin bright red, apex of clavus and tip of sutural angle each with dark brown spot. Central Prov ..... *bistigma*, n. sp.
   Stramineous or green, with head in contrasting color to tegmen; tegmen brightly margined with red 6
6. Apex of clavus and sutural angle each with black spot ..... *similata*, n. sp.
   Neither apex of clavus nor sutural angle marked with black spot ..... *flexior*, n. sp.
7. Aedeagus with long basal spine directed posteriorly 8
   Aedeagus without long basal spine. Morobe Prov ..... *destituta*, n. sp.
8. Lateral carinate margin of aedeagus with 4–6 teeth. Morobe Province .. *rufilis* n. sp.
   Lateral carinate margin of aedeagus without teeth. Northern Province .....
   ..... *affinis*, n. sp.

Papuanella dilexa Medler, new species

Fig. 36

Diagnosis. Front blue-green, with median and lateral carinae orange-red; vertex orange-red, pro-, and mesonotum blue-green. Tegmen green, margined with red, blue-green band contiguous to red margin; black spot at apices of clavus and sutural angle. Hind leg spine formula 1:5:6. Male genitalia illustrated in Fig. 36. This species is easily recognized by its small size, being the smallest *Papuanella* known to me.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 7.50, 8.00; v 0.17, 0.17; f 1.00, 1.16; p 0.37, 0.37; m 1.41, 1.66; t 6.14, 7.30; pcl 1.83, 2.16. Width: v 0.79, 0.83; f 1.00, 1.08; t 3.65, 3.98.

Type data

Holotype ♂ (BPBM 13,442), PNG: CENTRAL PROV: Idler's Bay, 15.VIII.1984, mangroves, J. W. Ismay, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BPBM. CENTRAL PROV: Idler's Bay, 15.VIII.1984, mangroves, J. W. Ismay, 1 ♂, 1 ♀; Port Moresby, IX.1949, N.L.H. Krauss, 1 ♀.
GULF PROV: Petoi Vill nr Kerema, 9.V.1959, village garden, guava, J.J.H. Szent-Ivany, 1 ♂.

PNGDPI. CENTRAL PROV: Aroa Pltn, 10.VIII.1959, ornamental garden, *Plumeria acutifolia*, J.J.H. Szent-Ivany, 2 ♀; Idler's Bay, 15.VIII.1984, mangroves, J. W. Ismay, 7 ♂, 2 ♀; Loloata Island, coast, 31.III.1985, J. W. Ismay, 1 ♀.
GULF PROV: Petoi Vill nr Kerema, 9.V.1959, village garden, guava, J.J.H. Szent-Ivany, 1 ♂.

Plant records

Guava: Petoi, 9.V.1959 (Szent-Ivany).

Mangrove: Idler's Bay, 15.VIII.1984 (Ismay).
Plumeria: Aroa Pltn, 10.VIII.1959 (Szent-Ivany).

Papuanella affinis Medler, **new species** Figs. 6, 14, 35

Diagnosis. Holotype vertex orange; front medially green, laterally faded orange; pronotum widely green on anterior margin; mesonotum with some green along lateral carinae. Tegmen mostly bronze-orange, costal margin contrasting black or blue-green, claval apex with black spot, wide dark margin running from claval apex around apical margin to point on costal margin where vein R terminates. Hind leg spine formula 1:5:6. Male genitalia as shown in Fig. 35. Paratypes include specimens with color variation. The tegminal markings of black and dark green are more intense in males. Some specimens of both sexes are bleached to paler shades of color.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 9.50, 10.00; v 0.21, 0.25; f 1.29, 1.33; p 0.42, 0.42; m 2.16, 2.08; t 8.47, 8.47; pcl 2.49, 2.49. Width: v 0.95, 1.00; f 1.25, 1.25; t 4.98, 5.06.

Determinations. Labels attached on 3 ♂, 5 ♀, Jumbura Pltn, 1.XII.1961, Szent-Ivany & Cheetham, C.I.E. No. 18054, read "*Papuanella* sp.," det. M.S.K. Ghauri.

Type data
Holotype ♂ (BPBM 13,443), PNG: NORTHERN PROV: Popondetta, 25 m, VI.1966, light trap, Shanahan-Lippert, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

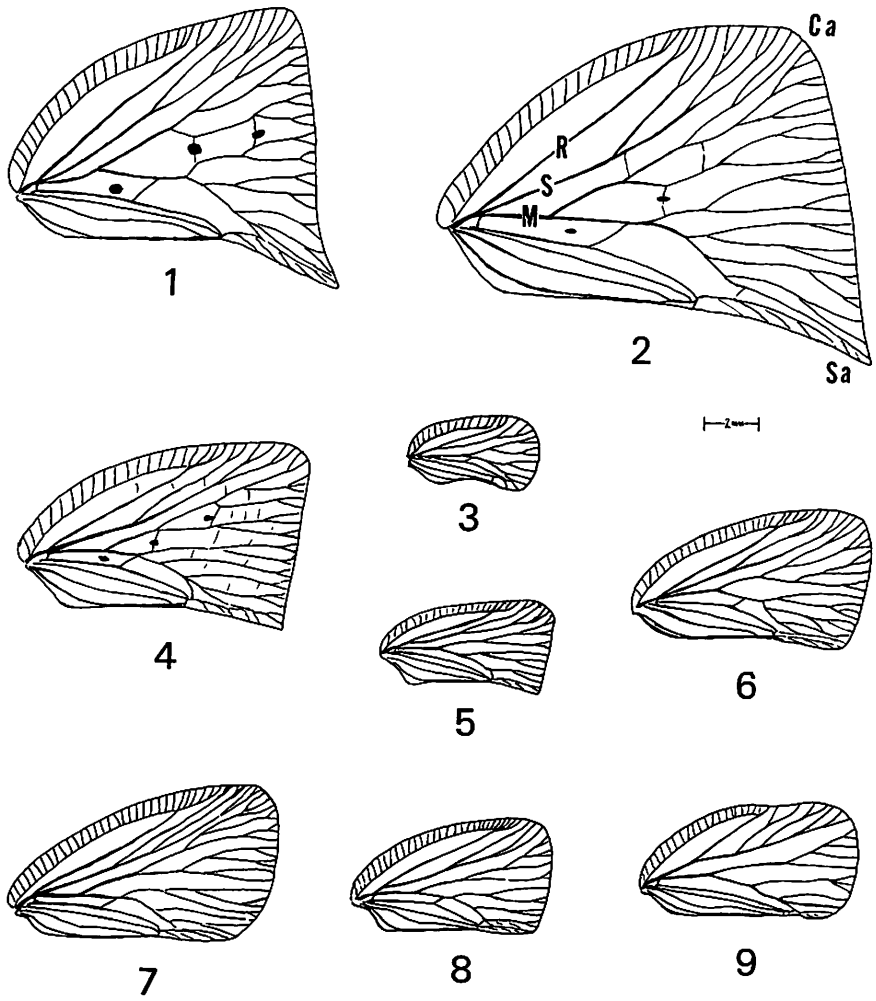
BMNH. NORTHERN PROV: Jumbura Pltn, 1.XII.1961, *Theobroma cacao,* J.J.H. Szent-Ivany and R. J. Cheetham, Nos. 4100–13, 4116–18, C.I.E. No. 18054, 3 ♂, 5 ♀.

BPBM. NORTHERN PROV: Popondetta, 25 m, VI.1966, light trap, Shanahan-Lippert, 4 ♂, 4 ♀; Killerton Cape, 2–12.V.1965, W. A. Steffan & Y. M. Huang, 1 ♂.

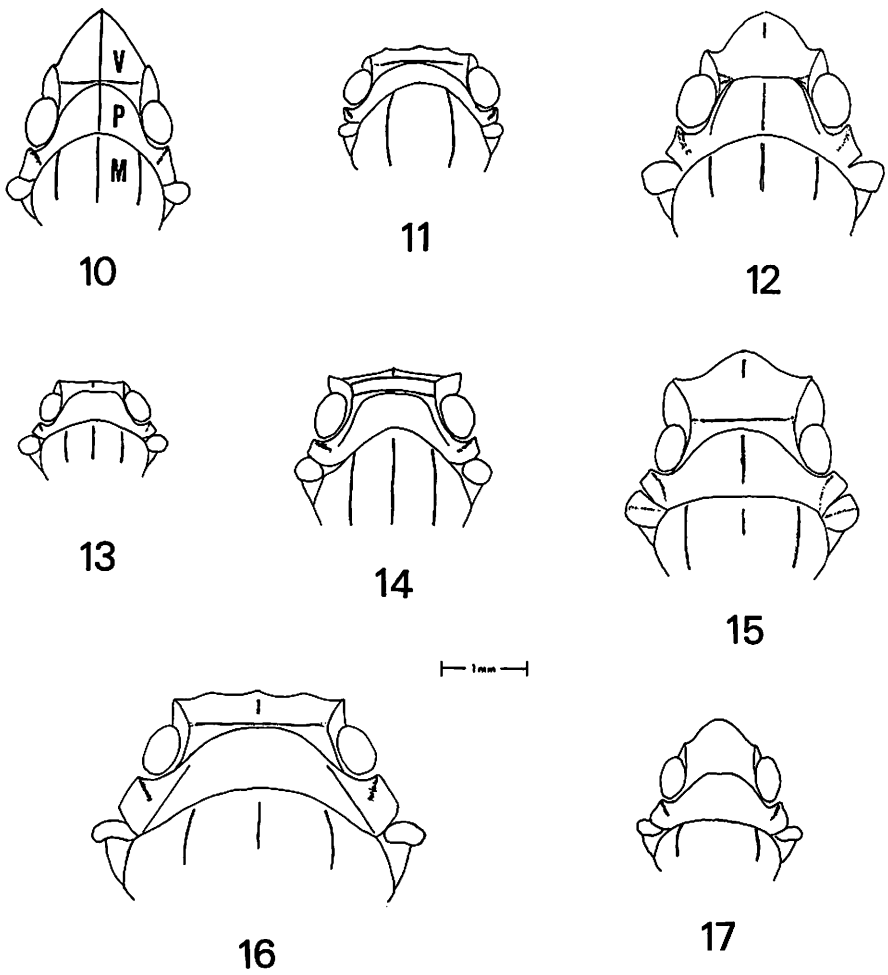
PNGDPI. NORTHERN PROVINCE: P.A.T.I. [Popondetta], 16.II.1972, cacao flush, E.S.C. Smith, 5 ♂, 4 ♀; Wararota Pltn, 17.VIII.1964, cacao flush, G. S. Dun, 4 ♂, 6 ♀.

SAM. NORTHERN PROV: Saiho, nr Popondetta, 800 ft [244 m], V.1966, Burnard, 1 ♂.

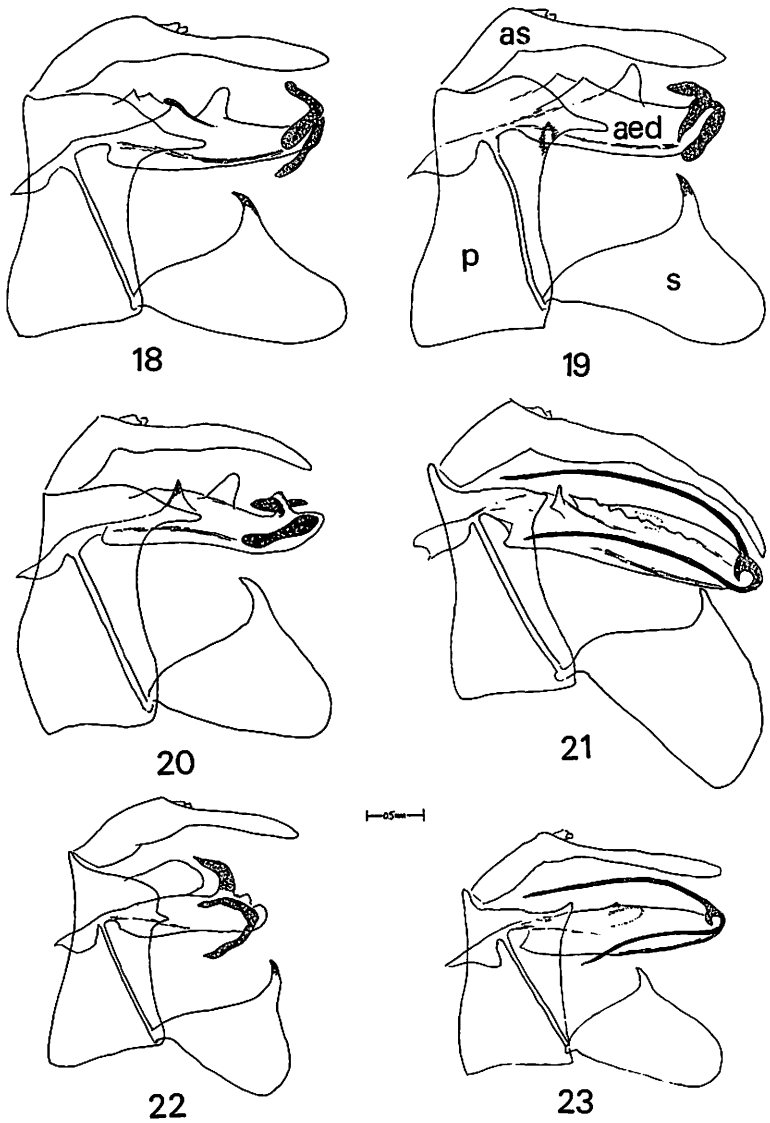
Plant records
Cacao: Jumbura Pltn, 1.XII.1961 (Szent-Ivany & Cheetham); P.A.T.I., 16.II.1972 (Smith); Wararota Pltn, 17.VIII.1964 (Dun).



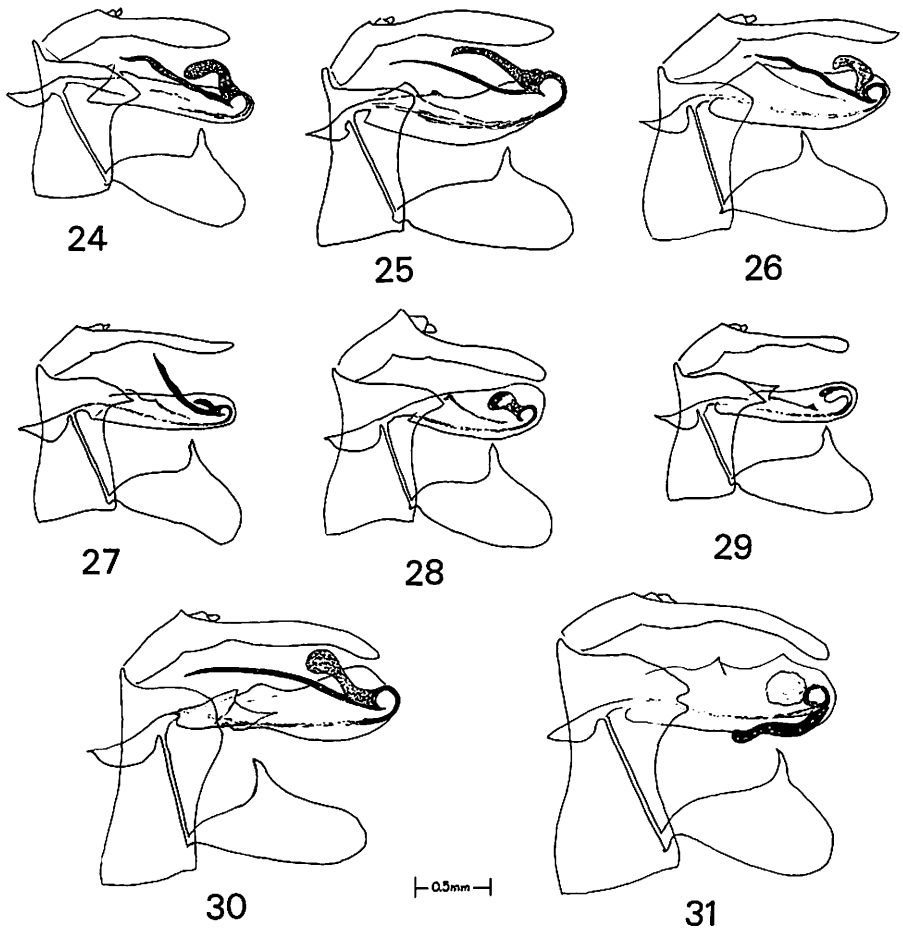
Figs. 1–9. Right tegmen. 1, *Neocromna bistriguttata*. 2, *Neodaksha furtiva*. 3, *Talopsus albastum*. 4, *Colgar elatum*. 5, *Sephena infumata*. 6, *Papuanella affinis*. 7, *Taparella minima*. 8, *Sephena conforma*. 9, *Siphanta patruelis*. R = radius, S = sector, M = media, Ca = costal angle, Sa = sutural angle.



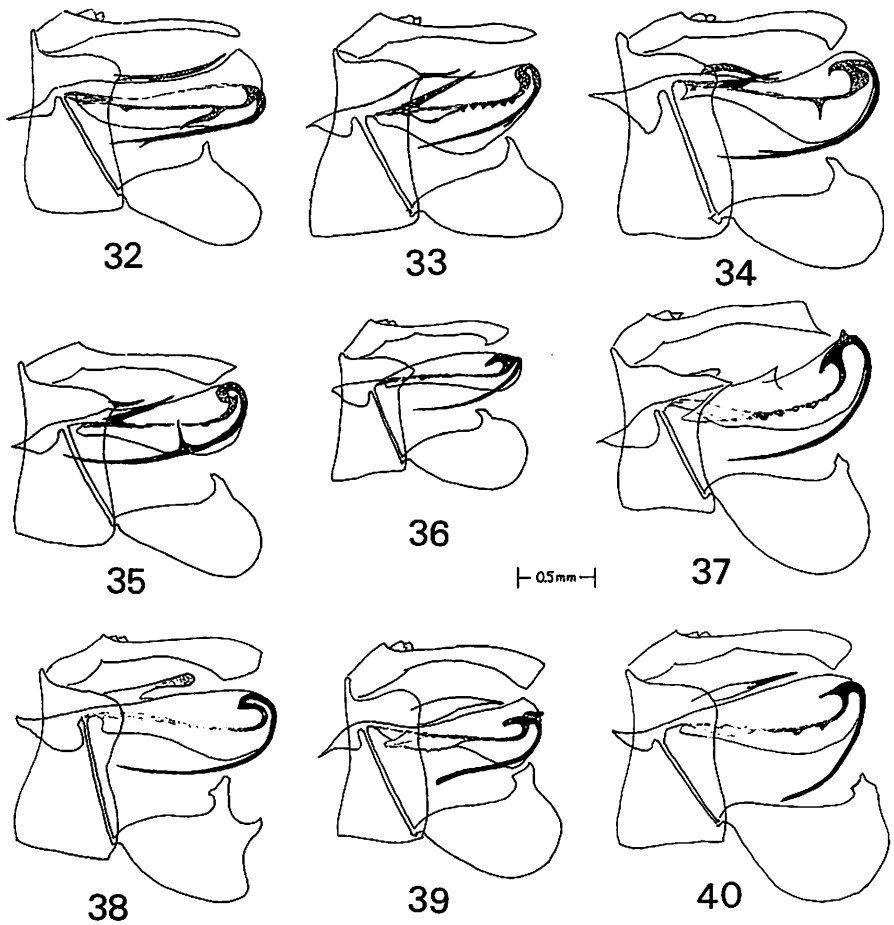
Figs. 10–17. Dorsal view of head and thorax. 10, *Colgar elatum*. 11, *Sephena conforma*. 12, *Neocromna bistriguttata*. 13, *Talopsus albastum*. 14, *Papuanella affinis*. 15, *Neodaksha furtiva*. 16, *Taparella amata*. 17, *Siphanta patruelis*. V = vertex, P = pronotum, M = mesonotum.



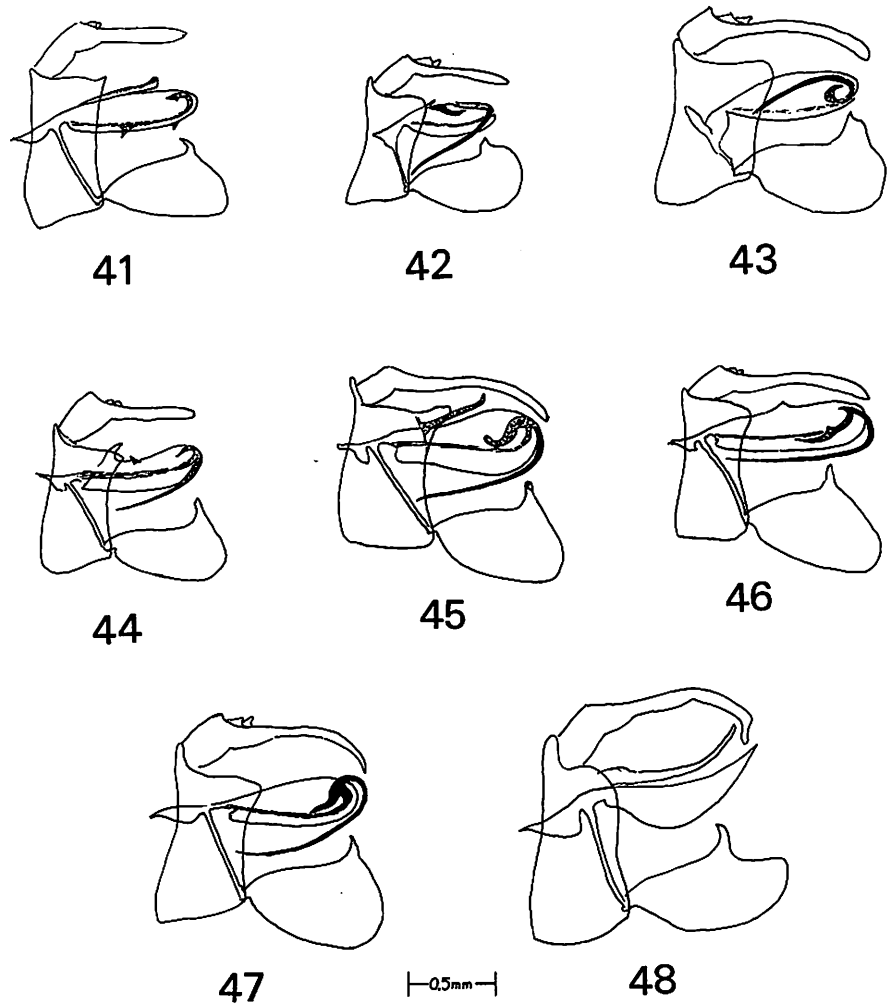
Figs. 18–23. Left lateral view of male genitalia. 18, *Neodaksha composita*. 19, *Neodaksha marginata*. 20, *Neodaksha furtiva*. 21, *Taparella amata*. 22, *Neocromna bistriguttata*. 23, *Taparella minima*. aed = aedeagus, as = anal segment, p = pygofer, s = style.



Figures 24–31. Left lateral view of male genitalia. 24, *Colgar chlorospilum*. 25, *Colgar elatum*. 26, *Colgar ligorum*. 27, *Colgar bespectum*. 28, *Colgar orisum*. 29, *Colgar missior*. 30, *Colgar tricolor*. 31, *Colgar surrectum*.



Figs. 32–40. Left lateral view of male genitalia. 32, *Papuanella destituta*. 33, *Papuanella rufilis*. 34, *Papuanella bistigma*. 35, *Papuanella affinis*. 36, *Papuanella dilexa*. 37, *Papuanella simulata*. 38, *Papuanella flexior*. 39, *Papuanella jacata*. 40, *Papuanella cyanea*.



Figs. 41–48. Left lateral view of male genitalia. 41, *Siphanta patruelis*. 42, *Talopsus albastum*. 43, *Talopsus variabilis*. 44, *Sephena stigmatica*. 45, *Sephena conforma*. 46, *Sephena infumata*. 47, *Sephena conspersa*. 48, *Sephena rubrovenosa*.

Papuanella bistigma Medler, new species Fig. 34

Diagnosis. Holotype vertex red-orange, transverse carina of anterior margin red, front light tan, median carina and carinae of lateral margins red; pronotum faded orange anteriorly; mesonotum tawny median stripe wider than on pronotum. Tegmen orange-bronze, sutural margin red, apical margin narrowly red-brown with contiguous green, costal margin red with contiguous green, apex of clavus with red-brown spot. Hind leg spine formula 1:5:6. Male genitalia as illustrated in Fig. 34. Intensity of markings varies among paratype specimens. Tegmina of males usually more heavily pigmented. In faded specimens, reddened costal margin may be suffused with black, and black apical spot stands out in bold contrast.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 9.50, 10.00; v 0.21, 0.25; f 1.25, 1.29; p 0.33, 0.42; m 1.83, 1.99; t 8.13, 8.47; pcl 2.32, 2.66. Width: v 0.95, 0.95; f 1.20, 1.25; t 5.15, 5.15.

Type data

Holotype ♂ (BPBM 13,444), PNG: CENTRAL PROV: Brown River, 5 m, 23.X.1960, J. L. Gressitt, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BPBM. CENTRAL PROV: Bisianumu, E of Port Moresby, 500 m, 22.IX.1955, J. L. Gressitt, 1 ♀; Daradae, nr Javerere, Musgrave River, 100 m, 3.XI.1958, J. L. Gressitt, 1 ♀; Brown River nr Port Moresby, 17.VI.1957, D. E. Hardy, 1 ♀; Brown River, 30.VIII.1959, T. C. Maa, 1 ♀; Brown River, 5 m, 23.X.1960, malaise trap, rain forest, J. L. Gressitt, 8 ♂, 5 ♀; Otamata Pltn, E of Port Moresby, 1 m, 2.XI.1960, J. L. Gressitt, 1 ♀.

PNGDPI. CENTRAL PROV: Brown River, DASF Block 1, 21.X.1966, cacao, J.J.H. Szent-Ivany, E. Kanjiri & J. Bart, 2 ♀.

Plant record

Cacao: Brown River, 21.X.1966 (Szent-Ivany, Kanjiri & Bart).

Papuanella destituta Medler, new species Fig. 32

Diagnosis. Holotype tegmina mostly bronze; front blue-green, vertex orange; pronotum anterior ⅓ and disc of mesonotum blue-green, dorsum medially with narrow separation of color. Tegmen apical margin dark red-brown, costal margin narrowly red with contiguous wider band of blue-green, fuscous sutural margin with similar contiguous band of blue-green; clavus apex with dark spot, no dark spot at apex of sutural angle. Hind leg spine formula 1:5:6. Male genitalia as illustrated in Fig. 32. Female paratypes are less intensely pigmented, with reds and greens faded to lighter shades.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 10.00, 11.00; v 0.25, 0.29; f 1.33, 1.41; p 0.42, 0.42; m 1.99, 2.16; t 8.63, 8.96; pcl 2.32, 2.82. Width: v 1.04, 1.08; f 1.33, 1.37; t 5.15, 5.31.

Type data

Holotype ♂ (BPBM 14,021), PNG: MOROBE PROV: Komiatum Vill, 7.III.1961, *Coffea canephora,* T. L. Fenner, BPBM. Allotype ♀ same label as holotype, BPBM. Paratypes, as follows:

BPBM. MOROBE PROVINCE: Lae, Singuawa River, 147°10′ E, 6°45′ S, 30 m, 8.IV.1966, light trap, primary forest, O. R. Wilkes, 1 ♂, 1 ♀; Lae. Busu River, 16.IV.1969, J. Sedlacek, 1 ♀.

PNGDPI. MADANG PROV: Madang Agric. Exp. Sta., 16.X.1964, cacao, G. S. Dun, 1 ♂, 2 ♀.

MOROBE PROV: Komiatum Vill, 7.III.1967, *Coffea canephora,* T. L. Fenner, 2 ♂, 1 ♀.

EAST SEPIK PROV: Negoo Pltn, nr Boram, Wewak area, 13.X.1957, cacao, J.J.H. Szent-Ivany, 1 ♂; Negoo Pltn, 13.X.1957, *Passiflora edulis,* J.J.H. Szent-Ivany, 1 ♀.

Plant records

Cacao: Madang Agric. Exp. Sta., 16.X.1964 (Dun); Negoo Pltn, 13.X.1957 (Szent-Ivany).

Coffea canephora: Komiatum Vill, 7.III.1967 (Fenner).

Passiflora edulis: Negoo Pltn, 13.X.1957 (Szent-Ivany).

Papuanella rufilis Medler, new species

Fig. 33

Diagnosis. Holotype overall appearance brownish orange; head and thorax not as deep orange as tegmina; legs red-orange. Front green, median longitudinal carina orange; pronotum anterior ⅓ blue-green; mesonotum dorsum orange-red, faded to lighter shade laterally. Tegmen veins green apically, apical margin widely black with blue-green contiguous, black extending marginally nearly full length of costal margin and most of sutural margin, apex of clavus with black spot; precostal marginal cell almost entirely blue-green, with underlying red showing narrowly along outer margin. Hind leg spine formula 1:5:6. Male genitalia illustrated in Fig. 33. Genitalia characters have the same general appearance as those found in *P. bistigma* and *P. affinis,* but in *rufilis* dorsal margin contour of aedeagus is shallowly triangular. Allotype mesonotum orange-red dorsally, edged with green laterally. There are specimens with faded colors among the paratypes. The underwing in this species may be tinged with pink coloration.

Determinations. "*Euphanta* sp." det. N.C.E. Miller 1956 labels, attached to following specimens: Bubia Pltn, 18.X.1956, cacao, M. Nango #71, C.I.E. No. 15094; Bubia Lae, 1.XI.1956, light trap, #85, C.I.E. No. 15094.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 9.50, 10.50; v 0.21, 0.25; f 1.33, 1.33; p 0.33, 0.42; m 2.15, 2.16; t 8.63, 8.96; pcl 2.49, 2.82. Width: v 1.00, 1.08; f 1.29, 1.33; t 4.81, 5.31.

Type data

Holotype ♂ (BPBM 14,022), PNG: MOROBE PROV: Bubia Lae, 13.V.1957, cacao, J. H. Ardley, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BMNH. MOROBE PROV: Buso, IX–X.1979, #1980-150, J. Martin, 3 ♀.

BPBM. MOROBE PROV: Lae, Bubia Agric. Sta., 15 m, 6.VII.1957, D. Elmo Hardy, 1 ♂; Bubia, Markham Valley, 50 m, 17–19.IX.1955, J. L. Gressitt, 1 ♂, 1 ♀.

PNGDPI. MOROBE PROV: Bubia Pltn, 15.X.1956, cacao, M. Nango, #71, C.I.E. No. 15094, *Euphanta* sp. 1 ♂, 2 ♀; Lae, Bubia, 1.XI.1956, light trap, #85, C.I.E. No. 15094, 1 ♀; Lae, Bubia, 13.III.1957, 13.V.1957, and 29.VII.1957, cacao, J. H. Ardley, 7 ♂, 3 ♀; Lae, Bubia, 31.X.1967, ex *Canagra odorata,* T. L. Fenner, 1 ♂.

Plant records

Cacao: Bubia Pltn, 15.X.1956 (Nango); Lae, Bubia, 13.III.1957, 13.V.1957, 29.VII.1957 (Ardley).

Ylang-ylang: Lae, Bubia, 31.X.1967 (Fenner).

Papuanella similata Medler, new species — Fig. 37

Diagnosis. Vertex orange, front blue-green, median and lateral carinae orange, with front narrowly faded adjacent to lateral carinae; clypeus orange; mesonotum with broad dorsal band, continuation on pronotum more faintly colored; pronotum same green color as tegmina; venter pale orange, legs darker orange with extremities red-orange. Tegmina grass green, margins strongly bordered with red, which is lined narrowly with ivory on costal and claval margins; distinct black spots at claval apex and sutural angle. Holotype and allotype with similar markings, but in females green faded to ochraceous or stramineous with red margins of tegmina still in strong contrast. Some specimens have a bleached tawny appearance, with venter of body pale stramineous. Hind leg spine formula 1:5:6. Male genitalia as shown in Fig. 37.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 9.0, 10.0; v 0.29, 0.29; f 1.33, 1.41; p 0.46, 0.42; m 1.99; 2.08; t 8.13, 8.80; pcl 2.49, 2.82. Width: v 1.00, 1.00; f 1.33, 1.25; t 4.98, 4.32.

Type data

Holotype ♂ (BPBM 14,023), PNG: EAST SEPIK PROV: Dreikikir, 350 m, 22.VI.1961, light trap, J. L. & M. Gressitt, BPBM. Allotype ♀, PNG: EAST SEPIK PROV: Dreikikir, 400 m, 24.VI.1961, J. L. & M. Gressitt, BPBM. Paratypes, as follows:

BPBM. EAST SEPIK PROV: Maprik area, 160 m, 29.VIII.1957, D. E. Hardy, 1 ♀; Maprik, 150 m, 29.XII.1959–17.I.1960, T. C. Maa, 1 ♀.
MADANG PROV: Karkar Island, Kurum, 0–100 m, VIII.1968, N.L.H. Krauss, 4 ♂, 1 ♀.
IRIAN JAYA: Waris, S of Hollandia, 450–500 m, 8–31.VIII.1959, T. C. Maa, 1 ♂, 2 ♀; Japen Island, Serui (Seroei), 14.IX.1962, light trap, H. Holtmann, 1 ♂; Japen Island, SSE Sumberbapa, Dawai River, 15.X.1962, along river, H. Holtmann, 2 ♂; Vogelkop, Kebar Valley, W of Manokwari, 550 m, 4–31.I.1962, malaise trap, S. & L. Quate, 1 ♀; Vogelkop, Kebar Valley, W of Manokwari, 550 m, 4–31.I.1962, sweeping, L. W. Quate, 1 ♀.

BMNH. EAST SEPIK PROV: Maprik, 28.X.1957, J. Smart, 1 ♂ [headless].
IRIAN JAYA: Cyclops Mts, Mt Lina, 3,500 ft [1,067 m], III.1936, L. E. Cheesman, B.M. 1936-271, 1 ♀.

IRSN. MADANG PROV: Bak Vill, 18.VII.1981, UV light, J. van Goethem #482, 1 ♂; Boroi Vill, 17.VI.1982, P. Grootaert #1341, 1 ♂; Nubia Vill, 6.VII.1981, UV light, J. van Goethem #445, 1 ♂; Numbia Vill, nr river, 6.VI.1979, J. van Goethem #249, 1 ♀; Sisimangum Vill, UV light, 1.VII.1981, J. van Goethem 413, 1 ♂, 1 ♀.

MNH. MADANG PROV: Stephansort, Astrolabe Bay, 1897, Biro, 1 ♂, det. *rufomarginata* Melichar.

NCSU. IRIAN JAYA: Cyclops Mts foothills, 500 ft [152 m], 7.III.1945, kunai grass, H. Hoogstraal, 1 ♀; Hollandia, rain forest, 250 ft [76 m], 12.XII.1944, 31.I.1945, 7.II.1945, and V.1945, H. Hoogstraal, 1 ♂, 4 ♀; Hollandia, 1,800 ft [549 m], 15.III.1945, edge of kunar (*sic*) grass and forest, H. Hoogstraal, 1 ♀.

PNGDPI. EAST SEPIK PROV: Tamaui Pltn, 14.X.1959, *Coffea canephora*, J.J.H. Szent-Ivany, 1 ♂.

RNHL. IRIAN JAYA: Araucaria Camp, 800 m, 10–24.III.1939, L. J. Toxopeus, 3 ♂, 2 ♀; Hollandia, 8.VII.1938, Neth. Ind.-Amer. New Guinea Exped., 1 ♀; Ifar, 22.IV.1957, G. F. Mees, 1 ♀.

Plant record

Cacao: Tamaui Pltn, 14.X.1959 (Szent-Ivany).

Papuanella flexior Medler, **new species** Fig. 38

Diagnosis. Vertex extended medially, anterior margin slightly concave on each side

of apex, in dorsal view upper margin of front exposed by concavities. Front light green, median and lateral carinae red, vertex uniformly orange-red, pronotum light green, with wide median reddish stripe that continues across mesonotum and extends full length along claval margins. Tegmina stramineous, strongly margined with red on costal, apical, and sutural margins, costal and claval red margins narrowly bordered interiorly with green tinged ivory. Venter of body light ochraceous, tibiae and apices of femora red. Allotype of similar appearance to holotype, but with lighter coloration. Metatibial spine formula 1:5:6. Male genitalia shown in Fig. 38. Projection on posterior margin of pygofer in addition to dorsal spur are unique in this genus. The species closely resembles *P. similata* but lacks black spot at claval apex and sutural angle.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 10.5, 11.0; v 0.25, 0.25; f 1.29, 1.33; p 0.37, 0.42; m 1.83, 1.99; t 8.80, 9.68; pcl 2.99, 3.15. Width: v 0.91, 0.91; f 1.16, 1.25; t 4.90, 5.48.

Type data

Holotype ♂ (BPBM 14,024), PNG: SOUTHERN HIGHLANDS PROV: Dimifa, SE of Mt Giluwe, 2,200 m, 10.X.1958, J. L. Gressitt, BPBM. Allotype ♀, same label as holotype, BPBM. Paratypes, as follows:

BPBM. CHIMBU PROV: W of Pari, 6,000 ft [1.829 m], 18.I.1963, coffee, J. H. Barrett, 1 ♂, 1 ♀.
SOUTHERN HIGHLANDS PROV: Aiyuro-Rumpi, 14.X.1958, J. L. Gressitt, 1 ♀; Dimifa, SE of Mt Giluwe, 2,000 m, 9.X.1958, J. L. Gressitt, 1 ♂, 1 ♀.
WESTERN HIGHLANDS PROV: Tapibagar, upper Jimi Vall, 1,400 m, 19.VII.1955, *Pipturus,* J. L. Gressitt, 1 ♀.

PNGDPI. CHIMBU PROV: W of Pari, 6,000 ft [1,829 m], 18.I.1963, coffee, J. H. Barrett, 3 ♂, 7 ♀.
EASTERN HIGHLANDS PROV: Aiyura Agric. Exp. Sta., 6,000 ft [1,829 m], 21.X.1954, *Coffea arabica,* J.J.H. Szent-Ivany, 3 ♀; Aiyura, 6,000 ft [1,829 m], 23.II.1959, bush, J. H. Barrett, 1 ♀; Aiyura Agric. Exp. Sta., 1,550 m, 23.IV.1976, citrus mandarin, E.S.C. Smith, C.I.E. No. 9461, *Papuanella* sp. det. M.S.K. Ghauri 1977, 2 ♀; Kainantu, Punano Vill, 5.I.1965, coffee, T. L. Fenner, 1 ♀.

Plant records

Coffee: Aiyura Agric. Exp. Sta., 21.X.1954 (Szent-Ivany); Kainantu, 5.I.1965 (Fenner); W of Pari, 18.I.1963 (Barrett).
Mandarin: Aiyura Agric. Exp. Sta., 23.IV.1976 (Smith).
Pipturus: Tapibagar, 19.VII.1955 (Gressitt).

Papuanella jacata Medler, new species — Fig. 39

Diagnosis. Head and thorax green, median and lateral carinae of front red-orange, vertex red-orange, pronotum with median red-orange band narrow anteriorly, broad posteriorly, continuing on mesonotum along with distinct lateral bands of same color. Tegmina ivory suffused with red, distinctly marked with round red spots in Cu cell, at base of vein M, and discal cell crossvein; a few smaller spots on crossveins along claval suture. Venter light ochraceous, legs faintly flushed with pink. The 90° configuration of sutural angle helps distinguish *jacata* from related species having tegminal red spots and convex sutural angles. Hind leg spine formula 1:5:6. Male genitalia illustrated in Fig. 39. There is some variation in color among paratypes, with loss of red or green color and reduction of spots giving a tawny or stramineous appearance.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 9.5, 10.0; v 0.25, 0.29; f 1.25, 1.33; p 0.42, 0.50, m 1.74, 1.99; t 7.64, 8.47; pcl 2.32, 2.82. Width: v 0.91, 1.00; f 1.25, 1.33; t 4.81, 5.48.

Type data

Holotype ♂ (BPBM 14,025), PNG: EAST NEW BRITAIN PROV: Gazelle Peninsula, Bainings, St. Paul's, 350 m, 5.IX.1955, J. L. Gressitt, BPBM. Allotype ♀, same labels as holotype, BPBM. Paratypes, as follows:

BPBM. EAST NEW BRITAIN PROV: Bainings, St. Paul's, 4–7.IX.1955, J. L. Gressitt, 2 ♀; Vudal, SW of Keravat, 13.XII.1959, T. C. Maa, 2 ♀; Vunabakan, 10 km E of Keravat, 180 m, 16–20.XI.1959, T. C. Maa, 1 ♀; Gazelle Peninsula, Warangoi Vall, 100 m, 24–25.V.1956, 1 ♂, 1 ♀; Umboi Island, ca. 8 km WNW of Lab Lab, 300 m, 8–19.II.1967, ginger, G. A. Samuelon, 1 ♂, 1 ♀.

BMNH. EAST NEW BRITAIN PROV: L.A.E.S, Keravat, 23.IX.1983, ex Citrus, #C 654, E. J. Brough, C.I.E. # 15570, 1 ♂.

PNGDPI. EAST NEW BRITAIN PROV: Dailena Pltn, 3.XI.1965, cacao pods and shoots, F. D. MacLean, C.I.E. # 3841, 1 ♂, 1 ♀; Tuna Puna Pltn, 10.VIII.1965, cacao, T. L. Fenner, 1 ♂, 2 ♀.

Plant records

Cacao: Dailena Pltn, 3.XI.1965 (MacLean); Tuna Puna Pltn, 10.VIII.1965 (Fenner).
Citrus: Keravat, 23.IX.1983 (Brough).
Ginger: Lab Lab, 8–19.II.1967 (Samuelson).

Papuanella cyanea (Melichar) — Fig. 40

Sephena cyanea Melichar, 1902: 127.—Metcalf, 1957: 368.
Papuanella cyanea: Medler, 1986c: 112.

Type locality. NEW BRITAIN, Kinigunang.

Diagnosis. Overall color of tegmina blue-green; vertex red-orange; front blue-green, lateral and median carinae red; pro- and mesonotum ochraceous, heavily infused with orange on dorsum and each side; thorax and body light ochraceous, legs nearly concolorous. Tegmina strongly margined with black along apical margin, postclaval sutural margin, and apical ⅓ of costal margin; claval suture and vein A_2 red; main veins and crossveins orange, veins basally more intensely orange; blue-green of tegmina replaced by orange in area of basal stem and origin of R, S, and M veins. Small red-orange spots present on crossveins in cubital cell and discal cell crossvein. Coloration more intense in males, with both sexes showing various degrees of bleaching from blue-green to stramineous. Hind leg spine formula 1:5:6. Genitalia of male from Dailena Plantation, New Britain, shown in Fig. 40, are same as holotype genitalia illustrated by Medler (1986c: fig. 11).

Determinations. Specimens from Dailena Plantation carry the label "C.I.E. #3841, *Papuanella* sp. det. M.S.K. Ghauri 1967."

Measurements (♂, ♀). From ♂ and ♀, New Britain, Dailena Plantation, BPBM. Length: overall 10.0, 11.0; v 0.25, 0.29; f 1.33, 1.41; p 0.50, 0.50; m 2.16, 2.16; t 8.47, 8.96; pcl 2.32, 2.82. Width: v 1.04, 1.08; f 1.29, 1.33; t 5.31, 5.81.

Locality records
EAST NEW BRITAIN PROV: Bainings, St. Paul's, Dailena Pltn, Keravat Agric. Exp. Sta.
BOUGAINVILLE PROV: Numa Numa Pltn.

Plant records
Cacao: Dailena Pltn, 3.XI.1965 (MacLean).
Coconut: Numa Numa Pltn, 21.VI.1957 (Barrett).

Genus Talopsus Medler, new genus

Type species. Talopsus albastum Medler, n. sp., here designated.

Diagnosis. Head truncate, vertex a narrow flat ledge, anterior margin carinate, carina extending transversely to lateral margins apparently without interruption; front slightly broader than long, median longitudinal carina short and not raised strongly. In profile, vertex and front meeting at almost a right angle, lateral carina of pronotum extending basad nearly to postocular eminence, which is elevated ridgelike. Tegmen apical margin almost straight, postclaval sutural margin raised, obtusely convex; node of basal stem emitting R + S and M longitudinal veins, R + S stem distinct,

vein S forked apicad of R + C junction, precostal marginal cell closed by vein R, discal cell crossvein weak, vein Cu forked, Cu1 branch oblique, joining M_2; clavus with smooth area medially, anal veins with well-developed Y-stem, anal vein 2 distinctly elevated basally. Metatibial spines 1:6. The genus appears related to *Anidora* Melichar, 1902, in certain characters of head and tegmina but differs in its smaller size, claval vein A_1 not strongly elevated basally, and the sutural angle convexly rounded to apical margin, not pointed and concave at apical margin as found in *Anidora*.

Distribution. Papua New Guinea, Irian Jaya.

Talopsus albastum Medler, new species

Figs. 3, 13, 42

Diagnosis: Holotype overall appearance fuscous; sides and posterior ½ of mesonotum dark brown; tegmen with paler oblique band extending to disc from costal angle; small brown or red-brown spots scattered in cells or on crossveinlets; vein terminations at apical margin red; clavus medially with smooth shiny brown area. Hind leg spine formula 1:6:11. Male genitalia as illustrated in Fig. 42.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 5.50, 6.00; v 0.08, 0.13; f 0.79, 0.83; p 0.33, 0.33; m 1.00, 1.00; t 4.48, 4.65; pcl 1.25, 1.33. Width: v 0.71, 0.75; f 0.95, 1.00; t 2.57, 2.49.

Determinations. Specimens have labels "det. N.C.E. Miller 1956, ? gen. not in B.M.," Bubia Agric. Exp Sta., 23.III.1955, young cacao, J.J.H. Szent-Ivany, C.I.E. No. 14737, and "det. M. R. Wilson 1982, *Seliza* sp.," Situm, IV.1981, *Abelmoschus manihot,* J. A. Sutherland, C.I.E. No. 13108, PNGDPI.

Type data

Holotype ♂ (BPBM 14,026), PNG: CENTRAL PROV: Boroko, nr Port Moresby, 6–7.XI.1960, *Cycas,* J. L. Gressitt, BPBM. Allotype ♀, same labels as holotype, BPBM. Paratypes, as follows:

BPBM. CENTRAL PROV: Aroa Estate, W of Redscar Bay, 1 m, 29.IX.1958, J. L. Gressitt, 2 ♀; Boroko, nr. Port Moresby, 6–7.XI.1960, malaise trap, J. L. Gressitt, 1 ♀; Boroko, 6–7.XI.1960, *Cycas,* J. L. Gressitt, 6 ♂, 5 ♀; Boroko, V.1968, N.H.L. Krauss, 1 ♀; Port Moresby, 25 mi [16 km] radius, VI.1928, Pemberton, 1 ♂, 1 ♀; Port Moresby, IX.1949, N.H.L. Krauss, 1 ♀; Port Moresby, 5–6.VI.1956, *Eucalyptus,* J. L. Gressitt, 1 ♂; Rouna, 300–500 m, XI.1968, N.H.L. Krauss, 2 ♂, 1 ♀.
MOROBE PROV: Bubia, 14.XI.1959, T. C. Maa, 1 ♀; Bulolo, 730 m, 18.VIII.1956, E. J. Ford, Jr., 1 ♀; Bulolo, 2,200–2,350 m, VII.1968, N.H.L. Krauss, 1 ♂; Lae, VII.1944, F. E. Skinner, 2 ♂, 3 ♀; Lae, IX.1949, N.H.L. Krauss, 2 ♀;

Wau, 1,200 m, 18.V.1967, BMF–110 along water race, J.J.H. Szent-Ivany, 1 ♂; Wau, 1,100–1,200 m, V.1968, *Lantana camara,* N.H.L. Krauss, 1 ♀; Wau, 1,200 m, 20.II.1983, at light, W. C. Gagné, 1 ♂.

EAST NEW BRITAIN PROV: Nordup, 0–50 m, 15.X.1968, N.H.L. Krauss, Acc. #19, 3 ♂, 9 ♀; Rabaul, 0–100 m, X.1968, N.H.L. Krauss, Acc. #19, 2 ♂, 5 ♀; Taliligap, Gazelle Peninsula, 300 m, 17–18.XI.1962, J. Sedlacek, 1 ♂, 1 ♀.

PNGDPI. CENTRAL PROV: Port Moresby, Newton, 22.II.1955, light, G. Kelsey, 1 ♂.

MOROBE PROV: Bubia Plant. Ind. Centre, 29.III.1955, one-year-old cacao, J.J.H. Szent-Ivany, 3 ♂, 1 ♀; Bubia, Morobe Agric. Sta., 23.III.1955, young cacao, J.J.H. Szent-Ivany, C.I.E. No. 14737, ? gen not in BM, det. N.C.E. Miller 1956, 1 ♀; Wau Vall, Vallara Pltn, 3,400 ft [1,036 m], 22.VII.1963, *Coffea arabica,* J.J.H. Szent-Ivany, 1 ♂.

EAST NEW BRITAIN PROV: Karakakaul, nr Rabaul, 25.V.1958, in pasture, A. Catley, 2 ♂.

AMNH. MOROBE PROV: Markham Valley, Umi River, 480 m, 23–24.XI.1959, 6th Archbold Exped. No. 14, L. G. Brass, 6 ♂, 4 ♀.

BMNH. MOROBE PROV: Situm, 80 m, 27.III.1981, *Abelmosdus manihot,* J. A. Sutherland, C.I.E. No. A13108, *Seliza* sp., det. M. R. Wilson 1982, 1 ♂.

IRSN. MOROBE PROV: Bulolo, 1,103 m, 24.V.1982, P. Grootaert, 1 ♂, 4 ♀.

USNM. MOROBE PROV: Lae, VII.1944, F. E. Skinner, 1 ♂, 1 ♀.

Plant records

Abelmoschus manihot: Situm, 27.III.1981 (Sutherland).
Cacao: Bubia, 23–29.III.1955 (Szent-Ivany).
Coffee: Vallara Pltn, 22.VII.1963 (Szent-Ivany).
Cycas: Port Moresby, 5–6.VI.1956 (Gressitt).
Eucalyptus: Port Moresby, 5–6.VI.1956 (Gressitt).
Lantana: Wau, V.1968 (Krauss).

Talopsus variabilis Medler, new species

Fig. 43

Diagnosis. Noticeably larger in size and with darker brown color than *T. albastum.* Head and thorax dark brown; tegmen lighter brown, much lighter basally in diagonal area from bulla to tip of clavus, smooth brown area medially in clavus, base of clavus densely pustulate, scattered pustules on disc of tegmen, most pustules white, rimmed with red; cell apicad of discal cell with central round brown spot, this spot aligned with 5 preapical brown spots, similar spots in clavus along suture. Bulla not strongly elevated, not displacing distinct R + S stem. Hind leg spine formula 1:6:6. Male genitalia as illustrated in Fig. 43. Although without host plant record, the species is

described at this time to make known all available information on the 2 species in the genus.

Measurements (♂, ♀). From holotype ♂ and allotype ♀. Length: overall 7.00, 8.00; v 0.17, 0.17; f 1.08, 1.16; p 0.50, 0.50; m 1.41, 1.49; t 5.96, 6.14; pcl 1.83, 1.83. Width: v 0.91, 0.95; f 1.16, 1.33; t 4.15, 4.15.

Type data

Holotype ♂ (BPBM 14,027), IRIAN JAYA: Ifar, 300–600 m, 2.VI.1959, T. C. Maa, BMNH. Allotype ♀, MALUKU: Ambon Island, Waai, I.1967, A.M.R. Wegner, BPBM. Paratype ♀, IRIAN JAYA: Hollandia, 250 ft [76 m], 24.XI.1944, rain forest shrub vegetation, H. Hoogstraal, NCSU.

Literature Cited

Bishop Museum. 1966. List of New Guinea localities. (Unpublished, mimeographed).

Boisduval, J. A. 1835. Hemipteres, Voyage de decouvertes de l'Astrolabe . . . 2: 609–622, pl. 10.

Distant, W. L. 1910a. Rhynchotal notes 1. Ann. Mag. Nat. Hist. Ser. 8, 5: 297–322.

——. 1910b. Rhynchota Malayana. Part III. Rec. Indian Mus. 5: 313–33, pls 21–22.

——. 1911. Rhynchota from the Solomon Islands. Ann. Mag. Nat. Hist. Ser. 8, 8: 384–88.

——. 1914. Report on the Rhynchota collected by the Wollaston Expedition in Dutch New Guinea. Trans. Zool. Soc. Lond. 20: 346–62, pl. 34.

Fletcher, M. J. 1985. Revision of the genus *Siphanta* Stål (Homoptera: Fulgoroidea: Flatidae). Aust. J. Zool. Suppl. Ser. No. 110: 1–95.

Gazeteer No. 4, Australia. United States Board on Geographic Names. Department of the Interior, Washington, D.C., 1957.

Gazeteer No. 13, Indonesia and Portuguese Timor. United States Board on Geographic Names. Department of the Interior, Washington, D.C., 2nd Edition, 1968.

Guérin-Meneville, F. E. 1831. Hemiptera. Plates from Voyage autour du Monde sur la *Coquille*. 1831: pl. 10 [Text, see 1838].

——. 1838. Voyage autour du Monde, sur la corvette la *Coquille* par M.L.I. Duperry, 2(2): 180–93.

Jacobi, A. 1916. Kritische Bemerkungen uber die Ricaniinae (Rhynchota Homoptera). Deutsche Entomol. Zeit. [1916] 1915: 299–314.

——. 1928. Rhynchota Homoptera. 1. Fulgoridae und Cercopidae. In: Results of Dr. E. Mjoberg's Swedish Scientific Expeditions to Australia 1910–13. Arkiv. Zool. 19: 1–50.

Kirkaldy, G. W. 1900. Bibliographical and nomenclatorial notes on the Rhynchota. No. 1. Entomologist 33: 238–43.

——. 1905. Memoir on the Rhynchota collected by Dr. Arthur Willey, F.R.S., chiefly in Birara (New Britain) and Lifu. Trans. Entomol. Soc. Lond. 1905: 327–63, pl. 17.

——. 1906. Leafhoppers and their natural enemies. Part IX. Leafhoppers, Hemiptera. Bull. Hawaii. Sugar Plant. Assoc. Div. Entomol. (9)1: 271–479.

——. 1907. Leafhoppers supplement (Hemiptera). Bull. Hawaii. Sugar Plant. Assoc. Div. Entomol. 3: 1–186.

——. 1913. On some new species of leafhoppers. Part 1. Bull. Hawaii. Sugar Plant. Assoc. Div. Entomol. 12: 7–27.

Lallemand, V. 1935. Homoptères des Iles de la Sonde et de l'Australie du Nord. Rev. Suisse Zool. 42: 661–81.

Medler, J. T. 1986a. Types of Flatidae. I. Lectotype designations and taxonomic notes on species in Staatliches Museum für Tierkunde Dresden. (Homoptera, Auchenorrhyncha). Reichenbachia 23: 107–13.

——. 1986b. Types of Flatidae (Homoptera). II. Lectotype designations and taxonomic notes on species in the Genova Museum. Annali Mus. Civ. Storia Nat. Genova 85: 299–306.

——. 1986c. Types of Flatidae (Homoptera). III. Lectotype designations and taxonomic notes on species in the Budapest Museum. Folia Entomol. Hung. 46: 111–16.

——. 1986d. Types of Flatidae (Homoptera). VI. Lectotype designations and taxonomic notes on species in the M.N.H.N., Paris. Revue. Français Entomol. (N.S.) 7: 163–68.

——. 1986e. Types of Flatidae (Homoptera). VIII. Lectotype designations and taxonomic notes on species in the Museum of Victoria. Mem. Mus. Victoria 47: 207–11.

——. 1987. Types of Flatidae (Homoptera). XI. Taxonomic notes on Kirkaldy Types in the Bishop Museum, with illustrations of the genitalia of male lectotypes. Bishop Mus. Occas. Papers 27: 115–25.

Melichar, L. 1901. Monographie der Acanaloniiden und Flatiden (Homoptera). Ann. Naturhist. Mus. Wien 16: 178–258.

——. 1902. Monographie der Acanaloniiden und Flatiden (Homoptera) (Fortsetzung). Ann. Naturhist. Mus. Wien 17: 1–253.

Metcalf, Z. P. 1957. Flatidae. General catalogue of the Homoptera, Fasc. IV, Part 13. 565 p. North Carolina State College, Raleigh, N.C.

Montrouzier, X. 1855. Essai sur la faune de l'ile de Woodlark ou Moiou. Ann. Soc. Agric. Lyon 7: 111–13.

Motteler, L. S. 1986. Pacific Island Names. Bishop Mus. Misc. Publ. 34, 91 pp.

Papua New Guinea Gazeteer. Papua New Guinea Place Name Committee, Port Moresby, 1974.

Schmidt, E. 1904. Neue und bemerkenswerte Flatiden des Stettiner Museums. Stett. Entomol. Ztg. 65: 370.

——. 1928. Die Zikaden des Buitenzorger Museums (Hemipt.-Homopt.). I. Treubia 10: 107–44.

Stål, C. 1859. Hemiptera. Species novas descripsit. Kongliga svenska *Fregatten Eugenies* resa . . . K. Svenska Vetenskapsakad. Zool. 4: 269–98.

——. 1862. Bidrag till Rio Janeiro-traktens Hemipterfauna. II. K. Svenska Vetenskapsakad. Handl. 3(6): 1–75.

——. 1863. Hemipterorum exoticorum generum et specierum nonnullarum novarum descriptiones. Trans. Entomol. Soc. Lond. (3)1: 571–603.

Szent-Ivany, J.J.H. 1961. Insect pests of *Theobroma cacao* in the territory of Papua and New Guinea. Papua New Guinea Agric. J. 13: 127–47.

——. 1963. Further records of insect pests of *Theobroma cacao* in the territory of Papua and New Guinea. Papua New Guinea Agric. J. 16: 37–43.

Szent-Ivany, J.J.H. & J. H. Ardley. 1963. Insects of *Theobroma cacao* in the Territory of Papua and New Guinea. In: Proc. Ninth Pacific Sci. Congr. 4 (1957) p. 127–31.

Szent-Ivany, J.J.H. & A. Catley. 1960. Host plant and distribution records of some insects in New Guinea and adjacent islands. Pac. Insects 2: 255–61.

Szent-Ivany, J.J.H. & G. S. Dun. 1964. Insect pests of *Theobroma cacao* L. in the territory of Papua and New Guinea. In: Proc. conf. on mirids and other pests of cacao, Ibadan, Nigeria, p. 85–89.

Szent-Ivany, J.J.H. & R. M. Stevens. 1966. Insects associated with *Coffea arabica* and some other crops in the Wau-Bulolo area of New Guinea. Papua New Guinea Agric. J. 18:101–119.

Szent-Ivany, J.J.H. & J. S. Womersley. 1958. Some insects of forest trees in New Guinea. In: Proc. 10th Int. Congr. Entomol. 4 (1956) p. 331–34.

Terrell, E. A. 1977. A checklist of names for 3,000 vascular plants of economic importance. U.S. Dep. Agric. Handb. 505, 201 p.

Walker, F. 1851. List of the specimens of homopterous insects in the collection of the British Museum 2: 448–636.

——. 1857. Catalogue of the homopterous insects collected at Singapore and Malacca by Mr. A. R. Wallace, with descriptions of new species. J. Proc. Linn. Soc. 1: 82–100.

——. 1858. List of the specimens of homopterous insects in the collection of the British Museum, Supplement 1858: 1–307.

——. 1870. Catalogue of the homopterous insects collected in the Indian Archipelago by Mr. A. R. Wallace, with descriptions of new species. Zool. J. Linn. Soc. 10: 82–193, 276, 330.

Young, G. R. 1984. A checklist of mite and insect pests of vegetable, grain and forage legumes in Papua New Guinea. Papua New Guinea J. Agric., For., Fish. 33: 13–38.

APPENDIX I

Checklist of New Guinea Flatidae with Type Localities

The "New Guinea" records given by Walker for species collected by A. R. Wallace apply to IRIAN JAYA. Both Wallace and his assistant Charles Allen collected in New Guinea. Wallace's specimens were labelled "Dorey" and those of Allen "New Guinea." They were collected in Sorong, one of the most western localities in Irian Jaya, and on a trip inland.

Complete bibliographic data may be found in Metcalf's (1957) Catalog. Nearly all type localities given below are taken from labels on holotype or lectotype specimens I have examined. Several new records are added when applicable.

Acrophaea fasciata Melichar. PNG: Stephensort, Astrolabe Bay.
Anidora fusca Melichar. PNG: Kinigunan.
Atracis bipunctata (Schmidt). IRIAN JAYA: Key Island.
Atracis fasciatus (Walker). IRIAN JAYA: Waigeo Island.
Atracis illota (Melichar). IRIAN JAYA: Roon Island.
Atracis nexa (Melichar). NEW GUINEA [no other data].
Atracis patula (Melichar). IRIAN JAYA: Roon Island.
Atracis plagiata (Walker). NEW GUINEA [IRIAN JAYA].
Atracis pyralis (Guérin-Meneville). IRIAN JAYA: Waigeo Island.
Atracis scissa (Melichar). NEW GUINEA: [no other data].
Atracis semialba (Walker). MALUKU: Aru Islands.
Atracis subrufescens (Walker). IRIAN JAYA: Mysol.

Colgar asperum (Melichar). IRIAN JAYA: Key Island.
Colgar bespectum Medler. IRIAN JAYA: Hollandia.
Colgar chlorospilum (Walker). NEW GUINEA [IRIAN JAYA].
Colgar elatum Medler. PNG: Wau.
Colgar granulatum Kirkaldy. MALUKU: Larat.
Colgar laraticum Kirkaldy. MALUKU: Larat.
Colgar ligorum Medler. PNG: Popondetta.
Colgar missior Medler. PNG: Wanuma.
Colgar notatum (Melichar). PNG: Gazelle Peninsula.

Colgar orisum Medler. IRIAN JAYA: Hollandia-Binnen.
Colgar surrectum (Melichar). PNG: Erima.
Colgar tricolor Distant. QUEENSLAND: Kuranda.
New record: PNG & IRIAN JAYA.
Colgaroides acuminata (Walker). AUSTRALIA [no other data].
New record: IRIAN JAYA (Eramboe).

Euphanta munda (Walker). AUSTRALIA [no other data].
New record: PNG (June Valley).
Euryphantia tristis (Kirkaldy). QUEENSLAND: Cairns.
New record: PNG: (Port Moresby, Brown River).

Mimophantia maritima Matsumura. JAPAN: Honshu.
New record: PNG (Finschhafen); IRIAN JAYA (Ifar).

Neocromna astromaculata (Distant). IRIAN JAYA: Dorey.
Neocromna bistriguttata (Stål). MALUKU: Aru Islands.
Neocromna hastifera (Walker). IRIAN JAYA: Mysol.
Neodaksha composita (Melichar). PNG: Moroka.
Neodaksha furtiva (Melichar). IRIAN JAYA: Bujakori.
Neodaksha marginata Medler. PNG: Mendi.
Neodaksha quadriguttata (Walker). NEW GUINEA [IRIAN JAYA].

Papuanella affinis Medler. PNG: Popondetta.
Papuanella bistigma Medler. PNG: Brown River.
Papuanella cyanea (Melichar). PNG: Kinigunan.
Papuanella despecta (Melichar). IRIAN JAYA: Roon Island.
Papuanella destituta Medler. PNG: Komiatum.
Papuanella dilexa Medler. PNG: Idler's Bay.
Papuanella flexior Medler. PNG: Dimifa.
Papuanella jacata Medler. PNG: Gazelle Peninsula.
Papuanella mirabilis Distant. IRIAN JAYA: Utakwa river.
Papuanella rufilinea (Walker). IRIAN JAYA: Mysol.
Papuanella rufilis Medler. PNG: Bubia Lae.
Papuanella rufomarginata (Melichar). NEW GUINEA [no other data].
Papuanella similata Medler. PNG: Dreikikir.
Paratella iodipennis (Guérin-Méneville). IRIAN JAYA: Dorey Island.

Sephena albescens (Walker). IRIAN JAYA: Mysol.
Sephena conforma Medler. PNG: Popondetta.
Sephena consentanea (Walker). IRIAN JAYA: Mysol.
Sephena conspersa Melichar. SOLOMON ISLANDS; Shortland Island.

Sephena guttifera Melichar. IRIAN JAYA: Roon Island.
Sephena infumata Medler. PNG: Laloki.
Sephena interstincta Melichar. PNG: Seleo.
Sephena nivosa (Walker). IRIAN JAYA: Mysol.
Sephena obtusa (Walker). NEW GUINEA [IRIAN JAYA].
Sephena pulchra Melichar. PNG: Stephensort.
Sephena rubrovenosa Melichar. PNG: Gazelle Peninsula.
Sephena rufilinea (Walker). IRIAN JAYA: Mysol.
Sephena scutellata Melichar. PBG: Tamara.
Sephena spargula (Walker). NEW GUINEA [IRIAN JAYA].
Sephena stigmatica Medler. PNG: Wau.
Sephena walkeri Metcalf. NEW GUINEA [IRIAN JAYA].
Siphanta expatria Fletcher. IRIAN JAYA: Eramboe.
Siphanta lucindae Kirkaldy. QUEENSLAND: Lucinda Point.
New record: PNG (Port Moresby).
Siphanta patruelis (Stål). PHILIPPINE ISLANDS: Manila. PNG: IRIAN JAYA.

Talopsus albastum Medler. PNG: Boroko.
Talopsus variabilis Medler. IRIAN JAYA: Ifar.
Taparella amata (Walker). IRIAN JAYA: Waigeo Island.
Taparella doryca (Boisduval). IRIAN JAYA: Dorey Island.
Taparella invasa (Walker). IRIAN JAYA: Waigeo Island.
Taparella minima Medler. PNG: Aroe Pltn, E of Redscar Bay.
Taparella subcincta (Distant). NEW GUINEA [no other data].

Utakwana rubromaculata Distant. IRIAN JAYA: Utakwa River.

APPENDIX 2

Common and Scientific Names of Plants, and Their Family Classification, Which Provided Specimens of Flatidae

Plants listed in the checklist of Terrell (1977) are cited alphabetically under their common names. Those plants which are not in Terrell are cited by their scientific generic names. These data were taken from collector's labels, which may or may not give the complete generic and specific names of plants.

Abelmoschus esculentus (L.) Moench. (Malvaceae).
Abelmoschus manihot (L.) Medik (= *Hibiscus manihot*) (Malvaceae).
Acalypha sp. (Euphorbiaceae).
Acanthocephalus sp. (Compositae).
Aibika. See *Abelmoschus.*
Althoffia sp. (Tiliaceae).
Amaranth. See *Amaranthus.*
Amaranthus sp.(Amaranthaceae).
Anacardium occidentale L. (Anacardiaceae).
Annona muricata L. (Annonaceae).
Asparagus. See *Asparagus.*
Asparagus officinalis L. (Liliaceae).
Averrhoa carambola L. (Oxalidaceae).
Avocado. See *Persea.*

Banana. See *Musa.*
Breynia sp. (Euphorbiaceae).

Cacao. See *Theobroma.*
Camellia sinensis (L.) Ktze. (Theaceae).
Canagra odorata (Lam.) (Annonaceae).
Capsicum frutescens L. (Solanaceae).
Carica papaya L. (Caricaceae).
Cashew. See *Anacardium.*
Castanopsis acuminatissima (Bl.) A. DC. (Fagaceae).
Castorbean. See *Ricinus.*
Casuarina equisetifolia J. R. & G. Forst. (Casuarinaceae).
Chili pepper. See *Capsicum.*

Citrus. See *Citrus.*
Citrus aurantiifolia (Christm.) Swingle. (Rutaceae).
Citrus lemon (L.) Burm. f. (Rutaceae).
Citrus maxima (Burm.) Merrill. (Rutaceae).
Citrus reticulata Blanco (Rutaceae).
Citrus sinensis (L.) Osb. (Rutaceae).
Coconut. See *Cocos.*
Cocos nucifera L. (Arecaceae).
Coffea arabica L., *Coffea canephora* Piere ex Froehner (=*robusta* Linden ex De Wild.) (Rubiaceae).
Coffee. See *Coffea.*
Copperleaf. See *Acalypha.*
Crotalaria anagyroides HBK. (Fabaceae).
Cycas circinalis L. (Cycadaceae).

Eggplant. See *Solanum.*
Eucalyptus sp., *E. deglupta* Blume (kamerere), *E. torrelliana* (Myrtaceae).
Euodia (= *Evodia*) sp. (Rutaceae).

Ficus sp., *F. insulana, F. septica* Burm. f. (Moraceae).
Frangipani. See *Plumeria.*
Freycinetia sp. (Pandanaceae).

Gardenia. See *Gardenia.*
Gardenia thunbergia L. (Rubiaceae).
Glochidion sp. (Euphorbiaceae).
Grevillea robusta A. Cunn. ex R. Br. (Protaceae).
Guava. See *Psidium.*
Guinea grass. See *Panicum.*

Helianthus annuus L. (Asteraceae).
Hevea brasiliensis (Willd. ex A. Juss.) Muell.-Arg. (Euphorbiaceae).
Hibiscus. See *Hibiscus.*
Hibiscus rosa-sinensis L. (Malvaceae).
Homalanthus sp. (Euphorbiaceae).

Imperata cylindrica (Poaceae).
Ipomea batatas L., *I. pescaprae* (Convolvulaceae).

Kudzu. See *Pueraria.*
Kunai (kundi) grass. See *Imperata.*

Lantana. See *Lantana.*

Lantana camara L. (Verbenaceae).
Lemon. See *Citrus lemon.*
Lime. See *Citrus aurantiifolia.*
Lithocarpus sp. (Fagaceae).
Litsea sp. (Lauraceae).

Macaranga 4-glandulosa (Euphorbiaceae).
Mallotus ricinoides (Pers.) M. A. (Euphorbiaceae).
Mandarin. See *Citrus reticulata.*
Mangifera indica L. (Anacardiaceae).
Mango. See *Mangifera.*
Mangrove. See *Rhizophora.*
Manihot esculenta Crantz (=*M. utilissima* Pohl) (Euphorbiaceae).
Manioc. See *Manihot.*
Musa sp. (Musaceae).

Okra. See *Abelmoschus.*
Orange. See *Citrus sinensis.*
Oryza sativa L. (Poaceae).

Palm, gen. et sp. indet. (Aracaceae).
Panicum maximum Jacq. (Poaceae).
Papaya. See *Carica.*
Passiflora edulis Sims. (Passifloraceae).
Persea americana Mill. (Lauraceae).
Piper sp. (Piperaceae).
Pipturus sp. (prob. *argenteus*) (Urticaceae).
Plumeria acuminata Ait. (= *acutifolia* Poir.), *P. rubra* L. (Apocynaceae).
Pomelo. See *Citrus maxima.*
Psidium guajava L. (Myrtaceae).
Pueraria phaseoloides (Roxb.) Benth. (Fabaceae).
Purple granadilla. See *Passiflora.*

Queen sago. See *Cycas.*

Rattlebox. See *Crotalaria.*
Rhizophora mangle L. (Rhizophoraceae).
Rice. See *Oryza.*
Ricinus communis L. (Euphorbiaceae).
Rubber tree. See *Hevea.*

Saccharum officinarum L. (Poaceae).
Silk-oak. See *Grevillea.*

Solanum melongena L. (Solanaceae).
Sorghum. See *Sorghum.*
Sorghum bicolor (L.) Moench. (Poaceae).
Soursop. See *Annona.*
Starfruit. See *Averrhoa.*
Sugarcane. See *Saccharum.*
Sunflower. See *Helianthus.*
Sweet potato. See *Ipomea.*

Tea. See *Camellia.*
Teak. See *Tectona.*
Tectona grandis L. (Verbenaceae).
Tephrosia. See *Tephrosia.*
Tephrosia candida (Roxb.) DC. (Fabaceae).
Theobroma cacao L. (Sterculiaceae).
Torenia sp. (Scrophulariaceae).

Wedelia trilobata (L.) Hitchc. (Asteraceae).

Ylang-ylang. See *Canagra.*

APPENDIX 3

Alphabetical List of Locality Records of Specimens Examined

The latitudes and longitudes are degrees and minutes of South Latitude and East Longitude rounded to the nearest minute. These data should enable location of names on a large-scale map to within distances of a few kilometers. In a few cases a locality name cited from a label was not found in available gazetteers. Such names are omitted from the following list.

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Agatz (Agats)	IJA	05	33	138	08
Aieme River	CEN	09	41	147	40
Aitape, nr Torricelli Mts	WSP	03	09	142	21
Aitinjo (Atinju), Vogelkop	IJA	01	25	132	03
Aiyura (Aiyuro), Agric. Exp. Sta. nr Kainantu	EHD	06	19	145	55
Ajamaroe (Ajamaru), Vogelkop	IJA	01	14	132	12
Ambon	MAL	03	43	128	12
Amele Pltn, nr Madang	MAD	05	18	145	40
Angoram	ESP	04	04	144	04
Arau, 40 km E of Kainantu	EHD	06	23	146	03
Araucaria Camp	IJA	03	30	139	11
Arehe Pltn	NTH	08	47	148	14
Aroa Pltn	CEN	09	03	146	48
Aru, Aru Islands	MAL	06	00	134	30
Asaro River	EHD	06	05	145	20
Asaro-Chimbu Divide	EHD	06	01	144	56
Astrolabe Bay	MAD	05	29	145	50
Atkamba	WES	06	04	141	06
Awala Pltn	NTH	08	50	148	03
Awalunga Pltn, nr Lae	MBE	06	40	146	30
Awar Pltn	MAD	04	09	144	52
Awelkom, Umboi Island	MBE	05	38	147	55

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Azerita Pltn, nr Popondetta	NTH	08	49	148	07
Baindoang, Salawaket Range	MBE	06	29	147	01
Bainings, St Paul's	ENB	04	31	151	42
Bainyik Agric. Sta., S of Maprik	ESP	03	40	143	03
Baiyer River	WHD	05	35	144	10
Bak Vill	MAD	04	06	144	45
Bemberi Vill	MNB	09	47	149	32
Bembol	WSP	03	22	141	01
Bena Bena	EHD	06	07	145	30
Benap Pltn, nr Madang	MAD	05	13	145	49
Bereina Agric. Sta.	CEN	08	38	140	31
Bernhard Camp	IJA	03	29	139	13
Betege Vill	SHD	05	44	142	40
Biak Island (Schouten Island)	IJA	02	10	132	56
Binnen, S of Hollandia	IJA	02	32	140	42
Bisi Pltn	NTH	08	49	148	07
Bisianumu Agric. Sta.	CEN	09	24	147	25
Bisiatabu Mission	CEN	09	25	147	25
Boana Mission, 50 km NW of Lae	MBE	07	00	147	25
Bodem, S of Sarmi	IJA	01	58	138	44
Bomana Vill, nr Port Moresby	CEN	09	24	147	15
Bonga	IJA	06	26	147	51
Boram, nr Wewak	ESP	03	35	143	40
Boroi Vill	MAD	04	05	144	47
Boroko	CEN	09	31	147	11
Bougainville Island	BGL	06	10	155	15
Bougainville Mt	IJA	02	39	141	02
Brown River (cacao blocks)	CEN	09	23	147	14
Brown River, 40 km inland	CEN	09	11	147	20
Buambi Pltn	MBE	06	04	147	30
Bubia Agric. Sta.	MBE	06	40	146	55
Bubia, Markham Valley	MBE	06	35	146	25
Bubia Pltn	MBE	06	41	146	54
Buin	BGL	06	46	155	41
Bujakori	IJA	01	56	125	35
Bulldog Road, 25 km S of Wau	MBE	07	47	146	27

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Bulldog Road, 60 km S of Wau	GLF	07	48	146	26
Bulolo	MBE	07	12	146	39
Buna	NTH	08	40	148	24
Buso Vill	MBE	07	25	147	10
Busu River, E of Lae	MBE	06	37	147	00
Carberry Pltn	NTH	08	47	148	14
Chimbu River	EHD	06	02	144	49
Chuave Vill	EHD	06	07	145	08
Cornwallis Island	QLD	09	25	142	32
Cyclops (Cycloops) Mts	IJA	02	32	140	36
Dagua	ESP	03	25	143	21
Dailena Pltn	ENB	04	35	152	00
Danowaria, nr Fak Fak	IJA	02	55	132	18
Daradae (= Daradai), Musgrave River	CEN	09	32	147	26
Daru Island	WES	09	05	143	12
DASF (Konedobu)	CEN	09	28	147	09
Daulo Pass	EHD	05	55	145	18
Digoel Mts	IJA	05	05	140	30
Dimark Pltn	NTH	08	49	148	07
Dimifa, SE of Mt Giluwe	SHD	06	05	143	42
Dobo (Dobbo), Aru Islands	MAL	05	46	134	13
Dogura	MNB	10	05	150	04
Dojo, nr Sentani	IJA	02	45	134	23
Doom Island	IJA	00	53	131	14
Dreikikir, W of Maprik	ESP	03	35	142	45
Duroto, E of Enarotadi	IJA	03	55	136	15
Dylup Pltn, nr Madang	MAD	04	48	145	43
Edie Creek, 15 km S of Wau	MBE	07	19	146	41
Eilogo	CEN	09	27	147	29
Eliptamin Valley	WSP	05	03	141	40
Elyner, Aru Islands	IJA	06	02	134	30
Enarotadi (Enaratoli), Wissel Lake	IJA	03	55	136	21
EPA Plantation, nr Popondetta	NTH	08	49	148	07
Eramboe, 80 km from Merauke	IJA	07	56	140	56

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Erima, nr Madang	MAD	05	24	145	44
Etna Bay	IJA	03	58	134	40
Fak Fak Agric. Sta.	IJA	02	55	132	18
Feramin, nr Telefomin	WSP	05	13	141	41
Fergusson Island (Moratau)	MNB	09	32	150	41
Finisterre Range	MAD	05	48	146	05
Finschhafen	MBE	06	34	147	51
Florida Islands	SOL	09	00	160	10
Funyende, Finisterre Range	MAD	05	47	146	13
Gabumi Vill, Finisterre Range	MBE	05	39	146	19
Garaina Tea Sta.	MBE	07	50	147	10
Garaina Vill	MBE	07	53	147	09
Gariau, Lake Jamoor (Jamur)	IJA	03	42	134	56
Gazelle Peninsula	ENB	04	35	152	00
Genjam, 40 km W of Hollandia	IJA	02	46	140	12
Gewak (Gevak), Salawaket Range	MBE	06	23	146	54
Goberi Pltn	MBE	06	38	147	02
Goilala Vill, nr Port Moresby	CEN	09	27	147	11
Goroka	EHD	06	04	145	24
Guadalcanal	SOL	09	32	160	12
Guari	CEN	08	07	146	51
Guega, W of Swart Valley	IJA	03	36	138	25
Gurakor, Wampit Valley nr Wau	MBE	07	20	146	43
Gyifrie Mt	IJA	02	37	139	59
Hahota Pltn	NTH	08	49	148	07
Hohola	CEN	09	27	147	11
Hohota Village	NTH	08	51	148	15
Hollandia (Jaya Pura)	IJA	02	32	140	42
Iabru (Iabaru)	WSP	03	58	141	12
Iamalele	MNB	09	31	150	31
Idlers Bay	CEN	09	29	147	06
Ifar, Cyclops Mts	IJA	02	34	140	31
Iriri Vill, nr Kerema	GLF	07	58	145	40
Ishurava (Isurava)	NTH	08	60	147	44
Itikinumu Pltn, nr Sogeri	CEN	09	25	147	31

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Itouda, Kamo Valley, Wissel Lake	IJA	03	55	136	15
Japen Island, Sergei	IJA	01	45	136	15
Javarere Pltn, Musgrave River Valley	CEN	09	32	147	26
Javunie Pltn, nr Popondetta	NTH	08	48	148	15
Jef Lio Island, SW of Sorong	IJA	01	08	131	14
Jimi River	WHD	05	21	144	20
Jumbora Pltn (Jumburu), nr Popondetta	NTH	08	43	148	17
June Valley	CEN	09	27	147	10
Kabebe, below Mt Otto	EHD	06	01	145	03
Kagona Pltn	NTH	08	48	148	16
Kainantu	EHD	06	17	145	22
Kaindi Mt, 16 km SW of Wau	MBE	07	21	146	43
Kalolo	MBE	06	04	147	11
Kamberatoro	WSP	03	37	141	04
Kolombangara	SOL	08	05	156	47
Kapagere Agric. Sta., nr Rigo	CEN	09	47	147	43
Kapagere Training Ctr, nr Rigo	CEN	09	48	147	30
Kapakapa, Karkar Island	MBE	04	37	145	58
Karakakaul, nr Rabaul	ENB	04	10	152	15
Karimui, SW of Goroka	EHD	06	32	144	47
Karkar Island	MAD	04	37	145	58
Karubaka, Swart Valley	ESP	03	35	134	05
Karum, Karkar Island	MAD	04	37	145	58
Kassam, 48 km E of Kainantu	EHD	06	14	146	02
Kassem Pass	EHD	06	18	145	52
Katem, Star Range	WSP	05	11	141	11
Kaviak Plantation, Karkar Island	MAD	04	35	145	56
Kebar Valley, W of Manokwari	IJA	01	02	134	47
Kei Island	IJA	05	35	132	45
Keravat	ENB	04	21	152	04
Kerema Agric. Sta.	GLF	07	58	145	46
Kiambari, Karkar Island	MAD	04	37	145	58
Kiambavi (Kiambaui), nr Saidor, Finisterre Range	MBE	05	43	146	16
Kikori	GLF	07	25	144	15
Killerton Cape	NTH	08	36	148	23
Kimbangwa Pltn	ESP	03	38	143	06

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Kinigunan	ENB	04	22	152	19
Kirakira, San Cristobal	SOL	10	27	161	55
Kiriwina, Trobriand Islands	MNB	08	29	151	04
Kiunga Vill	WES	06	07	141	18
Koitaki Pltn	CEN	09	24	147	27
Kokebagu Pltn, nr Rigo	CEN	09	50	147	49
Kokoda	NTH	08	53	147	45
Kokopo	ENB	04	21	152	16
Komiatum Vill	MBE	07	08	147	01
Komokpin	WES	05	48	141	03
Konedobu, Natl. Capital District	CEN	09	28	147	09
Korofeigu (? = Korifeigu), 24 km SE of Goroka	EHD	06	04	145	23
Korop, Jimi Valley	WHD	05	25	144	23
Kotanica, nr Lake Sentani	IJA	02	36	140	39
Krisa	WSP	02	51	141	17
Kui Vill	MBE	07	29	147	15
Kuiu	WES	06	27	141	01
Kulili Pltn, Karkar Island	MAD	04	32	146	00
Kulima, E Baliem Valley	IJA	04	25	138	59
Kumun, Jimi Valley	ESP	03	39	143	17
Kungim	WES	05	41	141	02
Kup	CBU	05	59	144	48
Kurum, Karkar Island	MAD	04	51	145	43
Kutsime, W of Swart Valley	IJA	03	37	158	25
Kwek	WSP	03	14	141	02
Lab Lab, Umboi Island	MBE	05	44	148	03
Lae	MBE	06	44	147	00
Laing Island	MAD	04	10	144	54
Laloki Plant Quarantine Sta.	CEN	09	23	147	15
Laloki Vill	CEN	09	22	147	13
Lambaeb, Salawaket Range	MBE	07	05	147	30
Lamington Mt	NTH	08	57	148	10
Larat Island	MAL	07	10	131	50
Lawes Mt	CEN	09	20	147	14
Leiwomba Pltn, Markham Val.	MBE	06	40	146	55
Liki Island, nr Sarmi	IJA	01	36	138	43

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Lina Mt, Cyclops Mts	IJA	01	28	133	48
Loloata Island	CEN	09	33	147	18
Loloipa, Owen Stanley Range	CEN	08	17	146	55
Lolorua Pltn	CEN	08	57	146	56
Losuia, Trobriand Islands	MNB	08	33	151	04
Lowes, Markham Valley	EHD	06	19	146	18
Mabaduan Vill	WES	09	17	142	44
Madang Agric. Sta.	MAD	05	13	145	49
Maffin Bay Island	IJA	01	57	138	51
Mafulu	CEN	08	31	147	02
Magafin Pltn, N of Dagua	ESP	03	25	143	21
Mailu	CEN	10	24	142	22
Malaita	SOL	09	00	161	00
Mamai Pltn	CEN	10	18	149	32
Mamba Pltn	NTH	08	50	147	43
Mamoo Pltn, nr Popondetta	NTH	08	47	148	16
Manaru Pltn	CEN	08	10	147	03
Manoewa, Argoeni Bay	IJA	03	06	133	42
Manokwari (Dorey)	IJA	00	52	134	05
Maprik Vill	ESP	03	38	143	03
Marjan, nr Digoel	IJA	05	05	140	30
Matoko, nr Saidor	MAD	05	47	146	14
May River Vill	ESP	04	17	141	53
Mendi	SHD	06	10	143	40
Merauke	IJA	08	28	140	20
Middelburg Island	IJA	00	22	132	11
Middle Fly River	WES	07	30	141	15
Milne Bay	MNB	10	22	150	30
Mirilunga Vill, nr Lae	MBE	06	44	147	00
Misima Island	MNB	10	40	152	45
Missim Mt	MBE	07	13	146	49
Mobitei Vill, Torricelli Mts	WSP	03	25	142	05
Moian #1	WES	06	12	141	12
Mokai Vill, Torricelli Mts	WSP	03	23	141	59
Mondo	CEN	08	34	147	07
Mondo	EHD	06	03	145	10

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Mono, Treasury Island	SOL	07	21	155	34
Mororo Pltn, nr Sogeri	CEN	09	26	147	28
Munda Island	SOL	08	19	157	15
Murray Island	QLD	09	55	144	05
Murua River, nr Kerema	GLF	07	50	145	52
Mysol Island (Misool)	IJA	01	52	130	10
Nabire, S Geelvink Bay	IJA	03	22	135	29
Nadzab, Markham Valley	MBE	06	33	146	42
Namar, Karkar Island	MAD	04	32	146	00
Namie Creek, 6 km W of Wau	MBE	07	20	146	43
Negoo Pltn, nr Boram	ESP	03	33	143	38
Nengian Vill, Torricelli Mts	WSP	03	11	142	08
New Georgia	SOL	08	15	157	30
Newton, nr Port Moresby	CEN	09	29	147	10
Nondugl	WHD	05	52	144	46
Nordup, nr Rabaul	ENB	04	20	152	05
Normanby Island (Duau)	MNB	10	00	151	13
Nubia Mission	MAD	04	12	144	53
Numa Numa Pltn	BGL	06	10	155	15
Oboerfareh, S of Sarmi	IJA	02	16	138	50
Okapa, SW of Kainantu	EHD	06	32	145	41
Oriomo Agric. Sta.	WES	08	48	143	05
Oro Bay	NTH	08	53	148	30
Orokolo	GLF	07	52	145	20
Otomata Pltn, Cape Rodney	CEN	10	12	148	24
Owers Corners	CEN	09	22	147	29
Paniai	IJA	03	55	136	21
Pari	CBU	05	60	144	59
P.A.T.I. (Popondetta Agric. Training Institute)	NTH	08	47	148	14
Petoi, Kerema Bay	GLF	07	57	145	46
Pindiu	MBE	06	25	147	32
Pitoki, nr Kokoda	NTH	08	55	147	40
Poligolo Pltn	CEN	09	49	147	43
Popondetta	NTH	08	47	148	14
Port Moresby	CEN	09	29	147	09

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Punano Vill, nr Kainantu	EHD	06	18	145	56
Punda	WSP	03	27	141	10
Purosa, 15 km SW of Okapa	EHD	06	45	145	35
Rabaul	ENB	04	12	152	11
Redscar Bay	CEN	09	10	146	50
Rennel Island	QLD	09	45	143	16
Rigo Vill	CEN	09	48	147	33
Rodney Cape	CEN	10	10	148	23
Roku	CEN	09	27	147	05
Roon Island	IJA	02	23	134	33
Rouna	CEN	09	25	147	22
Russell Islands	SOL	09	04	159	12
Sabron, Cyclops Mts	IJA	02	30	140	25
Saidor, Finisterre Mts	MAD	05	37	146	28
Saiho	NTH	08	50	148	05
Salawaket Range	MBE	06	28	147	15
Samarai	MNB	10	37	150	40
Samazing, nr Lae	MBE	06	44	147	08
Sangara Pltn	NTH	08	49	148	07
Sangeman Vill, 10 km NE of Lae	MBE	06	43	147	00
Santa Isabel	SOL	08	00	159	00
Sarmi	IJA	01	51	138	44
Sattelberg Mission	MBE	06	30	147	47
Schotchiao	WSP	03	02	141	05
Seleo Island, Berlinhaf.	WSP	03	09	142	29
Sepalakembang, Salawaket Range	MBE	06	50	147	30
Sepen Vill	MAD	04	15	144	49
Seroei (Serui), Japen Island	IJA	01	53	136	14
Serua, Aru Islands	MAL	06	18	130	01
Shortland Islands (Alu)	SOL	07	02	155	47
Siboma, between Buso and Kui	MBE	07	27	147	13
Sinaeada Agric. Sta.	MNB	10	22	150	30
Singaua River	MBE	06	40	147	09
Sirinumu Dam	CEN	09	31	147	28
Sisimangum Vill	MAD	04	10	144	52
Situm Vill	MBE	06	40	147	04

Place Name	Province	Latitude		Longitude	
		°	'	°	'
Sogeri Forest, Crystal Rapids	CEN	09	26	147	26
Sogeri Pltn	CEN	09	25	147	26
Sorido, Biak Island	IJA	01	09	136	03
Sorong, Vogelkop	IJA	00	55	131	15
Star Mts, Katem	WES	05	11	141	11
Star Mts, Sibil Valley	IJA	05	00	141	00
Stephansort, Astrolabe Bay	MAD	05	25	145	53
Stony Mountain	WSP	04	27	141	44
Subitana	CEN	09	24	147	28
Sugoitei Vill, Torricelli Mts	WSP	03	25	142	03
Sumberbaba, Dawai River, Japen Island	IJA	01	45	136	15
Tabuil	WES	05	15	141	12
Tage Lake, Wissel Lakes	IJA	03	57	136	15
Talia Point	MAD	04	18	144	60
Taliligap Pltn	ENB	04	19	152	10
Tamara Island, Berlinhaf.	WSP	03	07	142	24
Tamaui Pltn, nr Maprik	ESP	03	40	143	10
Tanah Merah, nr Digoel	IJA	06	05	140	17
Tapibagar, upper Jimi Valley	WHD	05	21	144	20
Tapini, Owen Stanley Range	CEN	08	22	146	59
Tapolo, NW of Kainantu	EHD	06	15	145	50
Taurama Vall, Natl. Capital District	CEN	09	28	147	09
Tikeling Vill	MBE	06	41	147	06
Toem	IJA	03	38	130	23
Tokonoitu	BGL	06	38	155	20
Tor River	IJA	01	59	138	58
Torricelli Mts	ESP	03	30	142	55
Torricelli Mts	WSP	03	24	142	23
Triton Bay	IJA	03	50	134	05
Trobriand Islands	MNB	08	40	151	00
Tugiri, Lake Kutuba	SHD	06	24	143	20
Tuna Puna Pltn	ENB	04	35	152	00
Tuwep, Salawaket Range	MBE	06	32	146	43
Ukua Pltn	CEN	08	41	146	47
Ulap	MBE	06	03	147	12
Umboi Island (Rooke)	MBE	05	38	147	55

Place Name	Province	Latitude		Longitude	
		°	′	°	′
Umi River, Markham Valley	MBE	06	08	146	12
Ureiuning, Aru Islands	MAL	06	00	134	30
Utakwa River, Canoe Camp	IJA	04	05	137	08
Vailala River, nr Ihu	WES	07	55	145	25
Variarata (= Variata)	CEN	09	35	147	29
Vella Lavella	SOL	07	45	156	40
Vogelkop Peninsula	IJA	01	30	132	30
Vudal, SW of Keravat	ENB	04	21	152	00
Vunabakan, E of Keravat	ENB	04	21	152	04
Wagu Vill	ESP	04	20	142	45
Waigani Vill	MNB	10	19	150	15
Waigeo (= Waigeu) Island	IJA	00	14	130	45
Waikaiuna Pltn	MNB	10	03	150	58
Waitabuna	BGL	06	28	155	24
Waitape	CEN	08	33	147	15
Wakauina	MNB	10	05	150	57
Wantipi Vill, Torricelli Mts	WSP	03	20	141	59
Wanuma, Adelbert Mts	MAD	04	51	145	19
Warangoi Valley	ENB	04	28	152	15
Wararota Pltn, nr Popondetta	NTH	09	28	147	30
Waris, S of Hollandia	IJA	03	07	140	53
Wasu	MBE	05	58	147	12
Wau	MBE	07	20	146	43
Wawela Vill	MNB	08	37	151	08
Wewak	ESP	03	34	143	38
Wokan, Aru Islands	MAL	05	37	134	30
Woodlark Island (Muyua)	MNB	09	08	152	50
Wosa, nr Manokwari	IJA	00	52	134	05
Yaningya, 15 km S of Bulldog Road Divide	CEN	07	49	146	27
Yorke Island	QLD	09	45	143	26
Zenag-Lae	MBE	06	43	147	00