

List of Fascicles issued to 22nd November, 1930 (*continued*):—

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| Fasc. 2. Heteromera, Bostrychoidea, Malacodermata and Buprestidæ. By K. G. Blair, B.Sc. 14 text-figures. Elateridæ. By R. H. van Zwaluwenberg. 10 text-figures. Melasidæ (Eucnemidæ). By E. Fleutiaux. Cerambycidæ. By Chr. Aurivillius. 1 plate. Brentidæ. By R. Kleine. 4 text-figures. Anthribidæ. By Karl Jordan, Ph.D. 11 text-figures. Proterhinidæ. By R. C. L. Perkins, D.Sc., F.R.S. Pp. 67-174. 1928, 4to. 5s. | 25th February, 1928. |
| Fasc. 3. Throscidæ. By K. G. Blair, B.Sc. 1 text-figure. Chrysomelidæ. By S. Maulik, M.A. 18 text-figures. Pp. 175-215. 1929, 4to. 2s. 6d. | 23rd February, 1929. |
| Fasc. 4. Platypodidæ and Scolytidæ. By C. F. C. Beeson, D.Sc. 13 text-figures. Pp. 217-248. 1929, 4to. 2s. 6d. | 22nd June, 1929. |

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BRITISH MUSEUM (NATURAL HISTORY)

INSECTS OF SAMOA
AND OTHER SAMOAN TERRESTRIAL
ARTHROPODA

PART VI. DIPTERA

FASC. 7. Pp. 253-266

TRYPETIDAE

By **J. R. MALLOCH,**

BUREAU OF BIOLOGICAL SURVEY, WASHINGTON, D.C., U.S.A.

WITH ONE TEXT-FIGURE



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INSECTS OF SAMOA AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

Although a monograph, or series of papers, dealing comprehensively with the land arthropod fauna of any group of islands in the South Pacific may be expected to yield valuable results, in connection with distribution, modification due to isolation, and other problems, no such work is at present in existence. In order in some measure to remedy this deficiency, and in view of benefits directly accruing to the National Collections, the Trustees of the British Museum have undertaken the publication of this account of the Insects and other Terrestrial Arthropoda collected in the Samoan Islands, in 1924-1925, by Messrs. P. A. Buxton and G. H. E. Hopkins, during the Expedition of the London School of Hygiene and Tropical Medicine to the South Pacific. Advantage has been taken of the opportunity thus afforded, to make the studies as complete as possible by including in them all Samoan material of the groups concerned in both the British Museum (Natural History) and (by courtesy of the authorities of that institution) the Bishop Museum, Honolulu.

It is not intended that contributors to the text shall be confined to the Museum Staff or to any one nation, but, so far as possible, the assistance of the leading authorities on all groups to be dealt with has been obtained.

The work is divided into nine "Parts" (see p. 3 of wrapper), which are subdivided into "Fascicles." Each of the latter, which appear as ready in any order, consists of one or more contributions. On the completion of the systematic portion of the work it is intended to issue (in Part IX) a general survey, summarising the whole and drawing from it such conclusions as may be warranted.

A list of Fascicles already issued will be found on pp. 3 and 4 of this wrapper.

E. E. AUSTEN,
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CROMWELL ROAD, S.W.7.

INSECTS OF SAMOA

PART VI. FASC. 7

DIPTERA

TRYPETIDAE

By J. R. MALLOCH, Bureau of Biological Survey, Washington, D.C.,
U.S.A.

(With 1 Text-figure.)

THERE is a very strong resemblance between many members of this family and others belonging to the Ortalidae, but they may be separated from the latter by the bristling of the frons and pleura, and less decisively by the wing venation. The frons in Trypetidae has usually one or two backwardly sloped bristles on the upper third of each orbit, and in front of these two or more incurved bristles, which are placed closer to the eyes than the upper bristles; the pteropleura always bears a quite well-developed bristle or numerous strong setulae; and the subcostal vein of the wing is abruptly bent forward near its apex, and almost invariably rather poorly developed from the bend to its junction with the costal vein. In Ortalidae the orbits are frequently entirely devoid of bristles, and there are but few cases where an anterior incurved bristle is present; hairs are generally absent, and I know no member of the family which possesses a strong bristle on the pteropleura; where there is any doubt as to either or both of these characters, the course of the subcostal vein may be taken as the criterion; this is in practically all cases almost straight, converging gradually towards the costa at its distal extremity, with the tip well developed and distinct.

So far as our information goes, the larvae of Trypetidae are phytophagous, many feeding in fruits; consequently some of the worst insect pests belong to the present family. The latter is rather poorly represented in the collection before me, there being representatives of but three genera and eight species,

most of which are referable to the genus *Dacus* sens. lat. Bezzi has recorded a total of nine genera and fourteen species as occurring in the Fiji Islands ; five of these species belong to the genus *Dacus* sens. lat., but some of the records are based upon the testimony of other workers.

I have included in this paper some records taken from material in the collection of the United States National Museum.

DACINAE.

Dacus Fabricius.

This genus, which is very widely distributed in the Old World and lacking in the Americas, is of considerable economic importance, most of the known species being more or less directly associated with cultivated fruits, in which their larvae feed. The genus has been divided into several rather unsatisfactory segregates, which at best can be classed as subgenera. In the present collection, the greater portion of the species are referable to the subgenus *Chaetodacus* Bezzi. As occurring in the Fiji Islands Bezzi has recorded five species, only two of which were represented among the material from these islands seen by him. He has given in his "Diptera Brachycera and Athericera of the Fiji Islands" a synoptic key to all the species known to occur in the Pacific Islands or Australia, of which I have made use in identifying the present collection. I have also examined the type specimens of certain species described by Coquillett, which are in the collection of the United States National Museum. Since some species dealt with in the present paper are not included in Bezzi's memoir, I present below a key to the species known or likely to occur in Samoa.

KEY TO THE SPECIES.

1. Wing with oblique fuscous submedian fascia extending from fuscous costal stripe over both cross veins to hind margin, and with a similar anal fascia ; scutellum, except a narrow transverse black basal line, entirely yellow ; a minute black dot in each antennal fovea close to anterior lower angle ; abdomen black at base, with ground colour orange-yellow, and with a narrow central, and on each side of dorsum a broader vitta, all shining deep black ; prescutellar, supra-alar, and pteropleural bristles distinct ; frons with two pairs of anterior incurved orbital bristles ; second visible abdominal tergite with usual apical lateral fringe in male . *distinctus*, sp. n.
- Wing without any oblique dark fascia near middle, the anal one inconspicuous. 2

2. Apical free section of anal vein about 1.5 so long as lobe of cell, *i.e.* that section of cell from angle to tip; supra-alar bristle lacking, prescutellar and pteropleural bristles present; sheath of ovipositor cylindrical, glossy black except at base; ground colour of abdomen orange-yellow, with a narrow central vitta and a much broader vitta on each side of visible tergites 2 to 4 deep black and glossy; thorax brownish yellow, glossy, with following ivory yellow marks: humeri, a narrow vitta on each side of mesonotum behind suture, a large mark on mesopleura, and a double spot on metapleura, and in addition two narrow, submedian, densely greyish pollinose vittae on mesonotum, beginning before suture and extending a little beyond it; between these vittae a rather indistinct black line, while centre of metanotum is broadly black; costal streak dark brown, distinct to about midway between tips of third and fourth veins, not extending over second vein on to field of wing, and but slightly widened beyond tip of that vein *aenigmaticus*, sp. n.
- Apical free section of anal vein not so long as lobe of anal cell; supra-alar bristle generally well developed; sheath of ovipositor usually flattened 3
3. Face entirely yellow, without a black spot in each antennal fovea 4
- Face with a black spot in lower portion of each antennal fovea 7
4. Anterior cross vein broadly margined with fuscous *curvipennis* Froggatt.
- Anterior cross vein not margined with fuscous 5
5. Mesonotum and humeri deep black, a small triangle on posterior notopleural calli, scutellum except a narrow transverse basal line, a large mark on mesopleura, and a double spot on metapleura, ivory yellow; abdomen entirely shining black; wing much as in *Dacus aenigmaticus*, but free section of anal vein hardly so long as lobe of cell, costal stripe similar to that in the other species; mesonotum with two submedian greyish pollinose vittae, extending from anterior margin to about midway between suture and posterior margin *passiflorae* Froggatt.
- Mesonotum, humeri, and scutellum entirely black; costal streak in wing very faint beyond tip of first vein, darker apically; inner cross vein slightly clouded, outer one hardly so in case of type; legs black, front coxae and bases of front femora yellowish *melanotus* Coquillett.
- Mesonotum and humeri not entirely black; abdomen largely yellow 6
6. Head, thorax, and abdomen, entirely honey-yellow; costal stripe in wing very faint, distinct only along apical margin of wing between tips of second and fourth veins; both cross veins slightly clouded; the two anterior pairs of incurved fronto-orbital bristles yellow, upper reclinate pair and vertical bristles black *luteola*, sp. n.

- Head yellow, thorax with large black markings much as in *tryoni*, pleura and abdomen also with distinct black markings; scutellum sometimes with fuscous central stripe; costal stripe in wing narrow but distinct on entire length as in *ferrugineus*, anal stripe pale brown, cross veins not at all clouded; all fronto-orbital and vertical bristles black *facialis* Coquillett.
- 7. Humeral bristle well developed; scutellum flattened on disc, its apex very distinctly concave in outline, apical bristles situate on slightly protuberant lateral angles; costal streak very narrow, dark brown, continued from tip of first vein to beyond that of third, anal streak almost indistinguishable, and no cloud over either cross vein *xanthodes* Broun.
- Humeral bristle undeveloped; scutellum sometimes slightly transverse but never distinctly concave at apex, apical bristles not situate on produced angles 8
- 8. Scutellum with four bristles 9
- Scutellum with but two bristles, basal pair lacking 15
- 9. Prescutellar and supra-alar bristles undeveloped; costal streak in wing very narrow and rather pale, continued to apex where it is not at all widened; anal streak faint; outer cross vein not clouded on any part *cucumis* Froggatt.
- Prescutellar and supra-alar bristles well developed; costal streak in wing broader, in part extending over disc to third vein; anal streak very distinct 10
- 10. Costal streak much widened from above level of outer cross vein to apex of wing, carried over disc of wing to slightly beyond fourth vein and connected with a broad dark cloud which encloses outer cross vein; legs including coxae yellow; lower fronto-orbitals in three pairs *chrysotoxus* Hendel.
- Costal streak not or much less widened apically, never extending over fourth vein nor connected with a dark cloud enclosing outer cross vein 11
- 11. Costal streak in wing widened spot-like at apex; usually three pairs of anterior incurved fronto-orbital bristles present, two anterior pairs very close together; mesonotum with central yellow postsutural vitta; femora entirely yellow testaceous; a faint dark cloud over tip of fifth vein beyond outer cross vein, not extending upward over latter *caudatus* Fabricius.
- Costal streak not at all or very slightly widened apically; mesonotum with or without yellow central postsutural vitta; femora more or less conspicuously browned or blackened 12
- 12. Scutellum black, with margin narrowly yellow and underside similarly coloured *kirki* Froggatt.
- Scutellum yellow, narrowly black across base or with black apical spot 13
- 13. Only tips of femora blackened; apex of scutellum with black mark; outer cross vein with all or almost all of its extent clouded with pale brown *bezzii* Miyake.

- Femora with more than distal halves black ; outer cross vein with at most its lower extremity slightly clouded 14
- 14. Femora blackish brown, with yellowish bases, broader in case of hind pair ; front and middle tibiae yellowish, hind tibiae black on inside, dark reddish on outer surface ; all tarsi whitish at base, blackish at tip, front pair with only basal segment whitish *quadrisetosus* Bezzi.
- Front femora almost entirely black, yellow only at base and extreme tip, middle femora also black, but a little more broadly yellow at base, hind pair with more than basal halves whitish, remainder black ; tibiae blackish, but middle pair broadly pale in middle ; middle tarsi yellow, the other pairs dark, with basal segment whitish *scutellaris* Bezzi.
- 15. Wings entirely infuscated except some hyaline streaks in basal, first posterior, and anal cells ; frons clothed with short black bristles on a blackish blotch just above antennae *pepissalae* Froggatt.
- Wings much less extensively infuscated ; frons without a group of short bristles on anterior margin 16
- 16. Outer cross vein of wing very distinctly clouded ; cell R_1 wide apically 17
- Outer cross vein of wing not at all or faintly clouded ; cell R_1 narrow apically 18
- 17. Apical portion of dark costal stripe much enlarged, extending below fourth vein and connecting with dark cloud over outer cross vein *chrysotoxus* Hendel.
- Apical portion of dark costal stripe not so much enlarged, not extending below fourth vein and clearly separated from dark cloud over outer cross vein *cucurbitae* Coquillett.
- 18. Dark costal stripe extending to third vein and not dilated apically, inner cross vein broadly margined with fuscous ; face usually without black spots *curvipennis* Froggatt.
- Dark costal stripe not extending to third vein, inner cross vein not at all or very inconspicuously margined with fuscous ; face always with a pair of black spots in antennal foveae 19
- 19. Anterior portion of mesonotum yellow, with black median stripe and black transverse band ; sublateral yellow postsutural stripes curved inwards along transverse suture *ornatissimus* Froggatt.
- Mesonotum not coloured as above, postsutural sublateral stripes when present not curved inward along transverse suture 20
- 20. Mesonotum shining deep black in front of suture, only humeri and posterior notopleural callosity yellow 21
- Mesonotum partly reddish or yellowish laterally, or laterally and centrally in front of suture 23
- 21. Dark costal stripe on wing very distinct beyond tip of first vein ; sublateral postsutural yellow vitta on thorax distinct, stopping at suture *froggatti* Bezzi.
- Dark costal stripe on wing very faint or lacking beyond tip of first vein ; yellow sublateral postsutural vitta on thorax lacking 22

22. Scutellum broadly black in centre, only sides yellow; humeri blackened above *psidii* Froggatt.*
 — Scutellum yellow, blackened on sides; humeri yellow *virgatus* Coquillett.*
23. No dark costal stripe on wing beyond tip of first vein *tongensis* Froggatt.
 — A quite conspicuous dark brown stripe along costa beyond tip of first vein, extending to or almost to tip of wing 24
24. Mesonotum with a pair of presutural submedian black vittae, separated by a pale line about as wide as one vitta in front, fused just in front of suture, and a black fascia extending from each to lateral margin, but not reaching suture; wing with costal stripe extending to third vein from level of end of second vein to its tip, and ceasing at, or very slightly beyond, end of vein; inner cross vein close to middle of discal cell *ornatissimus* Froggatt.
 — Mesonotum not marked as above in front of suture; wing with costal stripe not extending to third vein until well beyond level of end of second; inner cross vein beyond middle of discal cell 25
25. Mesonotum broadly black on disc, rusty yellow on sides, and with a similarly coloured indentation invading each side of dark portion at suture, dark discal portion clothed with yellowish dust; inner cross vein at not over one-third from apex of discal cell, and about as long as penultimate section of fourth vein, usually faintly clouded; outer cross vein generally slightly clouded at lower extremity in male *obscurus*, sp. n.
 — Mesonotum broadly brown or red on disc, with usual two greyish pollinose vittae, which are more or less distinctly divided and margined on sides by darker lines, and with a creamy yellow postsutural sublateral vitta; inner cross vein at distinctly more than one-third from apex of discal cell, and more than its own length from outer cross vein, not noticeably clouded; outer cross vein not clouded at lower extremity *tryoni* Froggatt.

Bezzi has used the subgeneric name *Bactrocera* Guérin for the species in which there is at least one dark fascia across the disc of the wing, *Dacus umbrosus* Fabricius being the type species of the group. I have drawn up the following key for the separation of the three species included in "Diptera Brachycera and Athericera of the Fiji Islands," and have added the new one described below. It appears worth noting that I have examined specimens of *D. umbrosus* in which the fasciae on the wings are so faint that they are barely discernible, the specimens thus falling into the same group as *D. cucurbitae* Coquillett. This variation is an added incentive to disregard the claim of *Bactrocera* to generic or even subgeneric rank.

* *D. psidii* and *D. virgatus* are here divided by the generally accepted characters; the author's opinion is that they are inseparable (see page 264).

Group *Bactrocera*.

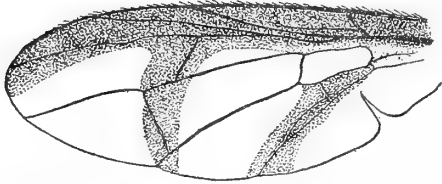
KEY TO THE SPECIES.

- | | | |
|---|---|------------------------------|
| 1. Wings with or without dark costal streak, and with but one dark fascia across disc | 2 | |
| — Wings with dark costal streak, and two dark fasciae across disc | 4 | |
| 2. Costa without dark streak; scutellum yellow, with dark central stripe which is widened behind | | <i>frauenfeldi</i> Schiner. |
| — Costa with conspicuous dark brown costal streak connected with a similarly coloured fascia over cross veins; scutellum yellow, without dark central stripe | 3 | |
| 3. Costal streak narrow, not extending to third vein except at extreme apex; middle and hind femora marked with brown at tips, hind tibiae largely blackish brown | | <i>albigatus</i> de Meijere. |
| — Costal streak broader, extending distinctly over third vein throughout its length; legs honey-yellow, tips of hind tibiae, and last four segments of all tarsi blackened | | <i>distinctus</i> , sp. n. |
| 4. The two discal fasciae on wing broad, especially that enclosing cross veins, and distinctly separated on posterior margin of wing; scutellum entirely yellow | | <i>umbrosus</i> Fabricius. |
| — The two discal fasciae on wing narrower, and confluent before reaching posterior margin of wing, outer cross vein not enclosed in dark fascia; scutellum with black discal spot | | <i>longicornis</i> Guérin. |

1. *Dacus distinctus*, sp. n. (Text-fig. 1).

♂. *Head* brownish yellow, face paler, frons dull, the two black spots in antennal foveae very small; frons with usual two anterior pairs of incurved bristles; a dark spot below each eye. *Thorax* black, with following parts yellow: humeri; a spot on posterior notopleural angle; a sublateral vitta behind suture; scutellum except its extreme base; posterior portion of mesopleura; a spot on upper margin of sternopleura, and a double spot on hypopleura; mesonotum with two broad yellowish-grey pollinose median vittae, narrowly separated by a dark line, and a similar sublateral vitta enclosing postsutural yellow vitta. Prescutellar and supra-alar bristles present, pteropleural bristle outstanding. *Abdomen* testaceous yellow, with black fascia over basal and anterior portion of second tergite whence emanate three black vittae, one in centre and one on each side, extending to or close to apex; sternites fuscous; third tergite fringed on lateral portions of distal margin. *Legs* normal, testaceous yellow, hind tibiae slightly darkened at tip, distal portion of all tarsi from a little before end of first segment fuscous. Sensory area on hind tibia present

but inconspicuous. *Wings* as in Text-fig. 1; inner cross vein more oblique and closer to outer one than usual.



TEXT-FIG. 1.—*Dacus distinctus*, sp. n.
Wing.

Length, 6.5 mm.

Upolu: holotype, 20.vii.1925 (Buxton & Hopkins).

The wing markings, closely approximated cross veins, narrow frons, and very small black facial spots should readily distinguish this species from any of its allies.

2. *Dacus xanthodes* Broun.

This and all the following species of the genus included in the present paper were placed by Bezzi, in his work on the Diptera of Fiji, in *Chaetodacus* Bezzi, which was given generic rank. The separation from *Dacus* in the strict sense was based upon the fact that in *Chaetodacus* the mesonotum bears a supra-alar bristle and a pair of prescutellar bristles, while in *Dacus* sens. str. these bristles are lacking. If we accept the presence or absence of these bristles as criteria for the recognition of genera, then we must perforce acknowledge as equivalent groups certain others in which either of these bristles, or others of equal importance, e.g. the pteropleural, humeral, or basal scutellar bristles, are either present or lacking. In species such as those now under consideration, which have the surface of the thorax quite coarsely pitted or punctate, the bristles are rather prone to vary in degree of development and are consequently of less significance as indices to relationships, so that I feel not even subgeneric rank should be accorded the various segregates, because of the existence of many intergrading forms.

In making this generalization I do not include a consideration of the African and Asiatic forms, because, from what I have seen of at least the species of the first-mentioned region, it appears to me entirely probable that there may be reasons for the separation of certain segregates from *Dacus* (sens. Bezzi), even as genera. In the fused abdominal tergites of some African species one finds an apparent specialization, and, although Bezzi noted this character in some of his descriptions, he evidently did not attach to it the importance that it actually possesses, since he allowed the species to remain in *Dacus* sens. str. because of their similarity in thoracic chaetotaxy to the species that he wrongly cited as the genotype, namely, *D. oleae* Rossi.

The subgenus *Tetradacus* Miyake, erected for the reception of a Japanese species on the basis of the duplicated supra-alar bristles, is a good group, distinguishable by the lack of the peculiar, more densely hairy, oval area on the postero-dorsal surface of the hind tibia of the male (which is invariably marked off on its upper edge by a slight carina or elevated line), as well as by a few other features.

It appears to me rather noteworthy that, when Bezzi (*op. cit.*, p. 105) redescribed *Dacus xanthodes* Broun, he failed to notice the presence of a well-developed humeral bristle, although he mentioned all the other thoracic bristles. This character, which I have seen in no other species of the genus, coupled with the peculiar scutellum, might, had he observed it, have impressed Bezzi as having subgeneric significance, but I accept both as merely specific characters of more than usual dependability.

Savaii : Safune, 5, 12.v.1924 (Bryan). Tutuila : Amauli, 9.vi.1923 (Swezey & Wilder). Upolu : Apia, i.1925, "jumping maggot from pawpaw"; No. 731, "reared from human faeces"; No. 696, xii.1924, "ex. pawpaw (*Carica*)" (Buxton & Hopkins). Nineteen specimens.

The record of the rearing of No. 731 is particularly remarkable.

3. *Dacus aenigmaticus*, sp. n.

♀. *Head?* (missing in case of type). *Thorax* shining brownish yellow, with following yellow marks: humeri; a narrow sublateral vitta on each side on mesonotum, behind suture, and a large mark on posterior portion of mesopleura; hypopleural spot duplicated; scutellum not paler than mesonotum, and slightly darker on sides than in centre; centre of mesonotum with two narrow pale vittae, from a little in front of suture to about midway between latter and hind margin (these stripes either yellow or yellowish pollinose, but impossible to determine definitely since mesonotum is translucent, and the stripes are visible only when surface is seen from almost the level of its upper disc); bristles fuscous. Scutellum a little longer than usual, with sides slightly emarginate, and apex narrower than base and transverse between the two bristles; surface finely piliferous punctate. *Abdomen* coloured like thorax; complex basal segment without distinct black markings; next three segments with a narrow black central vitta, widening slightly to hind margin of fourth; same three segments with lateral margins broadly black, fourth (visible) segment with mark tapering posteriorly; sheath of ovipositor conical, yellow at base, merging into black

towards tip. *Legs* honey-yellow, hind tibiae dark brown, tips of tarsi slightly infuscated. *Wings* yellowish hyaline, with narrow brown costal streak, very pale at its commencement at tip of subcostal vein, becoming darker at tip of R_1 , continuing round costa to well beyond middle of first posterior cell and sometimes as a faint line to fourth vein; anal streak very faint, not extending into lobe; inner cross vein slightly oblique, at about two-fifths from apex of discal cell. *Halteres* yellow.

Length (approximate), 5 mm.

Upolu: Malololelei, 2,000 feet, holotype, 25.vi.1924 (Buxton & Hopkins).

As in the two preceding species, the mesonotum bears a prescutellar and two postalar and notopleural bristles, but there is no trace of the supra-alar bristle, and the humeral is lacking as usual. It must be noted that when Bezzi refers to three supra-alars, placing the emphasis upon the presence or absence of the anterior supra-alar, he includes as supra-alars the two postalars, though the anterior supra-alar is the only one of the three entitled to the designation.

3A. *Dacus luteola*, sp. n.

♂. *Head* honey-yellow, frons dull except upper orbits and narrowly along each eye; two anterior pairs of incurved bristles yellow, and very difficult to distinguish; third antennal segment and arista dark brown; face without black spots. *Thorax* and *abdomen* honey-yellow, of the peculiar translucency sometimes seen in specimens of this genus, which when present renders it difficult definitely to distinguish yellow markings; humeri apparently paler than mesonotum. Bristles fuscous. *Legs* normal, coloured like abdomen, tips of tarsi slightly darker. *Wings* with costal streak a little wider than in *D. aenigmaticus*, but much paler and extending to fourth vein round wing tip, where it is darker and of uniform width as far as the vein; anal streak reaching margin of wing, but merely yellowish brown; both cross veins narrowly and distinctly suffused with brown, inner one oblique and situate about two-fifths from apex of discal cell.

Length, 6 mm.

Society Islands: Bora Bora, holotype, 21.vi.1925 (L. E. Cheesman).

I believe I am justified in including this species in the present paper, although it has not as yet been found in Samoa. Provided that the food of the larva occurs in Samoa, it is quite probable that the discovery of the insect there is merely a matter of time.

3B. *Dacus facialis*, Coquillett.

A small species much resembling *D. aenigmaticus* and *D. luteola* in general appearance. The *face*, however, is yellow and unspotted; the *pleura* are largely yellow, the *humeri* entirely so, and the *scutellum* is yellow except at the extreme base; the *abdomen* has irregular central and lateral black markings on the *tergites*. *Wings* much as in *D. aenigmaticus*, but the *costal streak* ends closer to the third vein.

Tonga Islands: Nukualofa, 15.ii.1925 (Hopkins).

The specimen referred to above was compared with the type material in the United States National Museum, and, though it differs from the type in certain features, as do some of the specimens recorded by Bezzi (*op. cit.*, p. 104) from the same islands, the determination is undoubtedly correct.

4. *Dacus tongensis* Froggatt.

A teneral specimen, which I assign to this species, is included in the present collection. In most characters it resembles *D. aenigmaticus*, but the *mesonotum* bears a distinct supra-alar bristle, and there is no noticeable brown *costal stripe* beyond the tip of the first vein.

Upolu: Vailima, 8.vi.1924 (Buxton & Hopkins).

4A. *Dacus tryoni* Froggatt.

Despite the opinion of Bezzi that *D. tryoni* Froggatt is merely a variety of *D. ferrugineus* Fabricius, I incline to consider it a good species. I have before me Australian examples of *D. tryoni* and Oriental specimens of several named varieties of *D. ferrugineus*, and find differences which are apparently of specific value. No specimens of either species are amongst the Samoan material.

5. *Dacus psidii* Froggatt.

A readily distinguishable species owing to the deep shining black *mesonotum*, with its broad, central, greyish *pollinose vitta*, and similar though less distinct and narrower *postsutural vitta* on each side, the blackened upper margin of the *humeri*, and the broad black central stripe on the *scutellum*.

Savaii: 1,000 feet, one specimen, 21.xi.1925 (Buxton & Hopkins). Also one ♀ from Samoa, possibly Apia, in the United States National Museum (Doane), and one ♀, Society Islands: Papeete, vi.1928 (Tonnoir).

5A. *Dacus virgatus* Coquillett.

After carefully examining the type of this supposed species in the United States National Museum, I am convinced of its specific identity with *D. psidii* Froggatt. I have included *D. virgatus* in my key, separating it on the only character that is distinguishable, but the type is teneral and the pin has drawn the contents of the thorax away from the surface so that it is partially translucent; thus it is difficult to determine the actual colour of certain parts, especially the scutellum and humeral calli. I believe that the former would under normal conditions be entirely black in the centre, and that the humeral calli show a trace of the black upper margin, which is characteristic of *D. psidii* and of no other species known to me.

I put forward this synonymy as practically certain on the basis of my examination of the type, and my identification of the material referred to above under *D. psidii*.

6. *Dacus obscurus*, sp. n.

♂♀. Broader and duller in colour than *D. ferrugineus*. General colour rusty yellow, with disc of mesonotum broadly black, as described in the key given above. *Face* with the black spots rather large. *Pleura* sometimes rusty yellow, with only lower part of sternopleura black; black colour sometimes more extensive; scutellum rusty yellow; thoracic and cephalic bristles fuscous. *Abdomen* with ground colour rusty yellow, dorsum with a linear black median stripe, and broader lateral vittae of same colour. *Legs* yellow, hind tibiae and all tarsi, except basal two-thirds of basal segment, infuscated. *Wings* with distinct anal and costal brown streaks, latter but slightly widened at distal extremity as in *D. ferrugineus*, and extending to about midway between tips of third and fourth veins; inner cross vein usually faintly infuscated, outer one slightly clouded at lower extremity in ♂.

Length, 7-8 mm.

Upolu: Apia, holotype ♂, 17.ii.1923; Malololelei, allotype, and three paratypes, 9.vii.1922 (Armstrong); Samoa, no other data, but probably Apia, two paratypes (Doane, U.S. National Museum).

6A. *Dacus bezzii* Miyake.

Bull. Imp. Cent. Agr. Exper. Sta., Japan, vol. 2, No. 2, p. 146, 1919.
Dacus scutellatus Hendel, *Suppl. Ent.*, Berlin, No. 1, p. 20, 1912.

I have examined some of Miyake's material in the United States National Museum, and consider it highly probable that his species is the same as *D. scutellatus* Hendel, the type of which was obtained in Formosa. Bezzi (*op. cit.*, p. 103) mentions the latter in his notes under *D. quadrisetosus* Bezzi, but does not include it in his key (*op. cit.*, pp. 100-102). I have seen a male of *D. scutellatus* Hendel from Hong Kong, which justifies me in making the above suggestion as to synonymy.

The species, although not yet taken south of Formosa, may still be found in some of the Pacific Islands. The food-plant is not recorded.

CERATITINAE.

Hemilea Loew.

This is the genus recorded by Bezzi (*op. cit.*, pp. 4, 107) as *Ocneros*, Costa, but Costa's genus is synonymous with *Palloptera* Fallén, having the same genotype, *Musca pulchella* Rossi, and consequently the name cannot be used in this family; Loew's generic designation subsequently proposed has therefore a valid claim to recognition.

There are two palaeartic species of the genus, both of which have the black colour of the wing extending but little over the fourth vein in its distal half, whereas in the Samoan species the black colour extends to, or almost to, the fifth vein throughout its entire extent.

7. *Hemilea punctilabris* (Bezzi).

The original description of this species (Bezzi, *op. cit.*, p. 107) is accompanied by an excellent figure of the wing by Terzi.

Upolu: Malololelei, 2,000 feet, one (headless) ♀, 19.viii.1925. This is the first recorded female of the species.

TRYPETINAE.

Spathulina Rondani.

8. *Spathulina acroleuca* Schiner.

This species occurs in Egypt, South Africa, and throughout the Indo-Australian region, but the specimens show a certain amount of variation. A good description, with a figure of the wing, is given in Hendel's recent monograph of the palaeartic species.*

Hendel deals with the variations of this species, but in none of the Samoan examples does the outer hyaline mark in the first posterior cell of the wing appear as shown in his figure, extending as it does there into the first posterior cell. In one Samoan example the outer of the three hyaline spots in the subcostal cell is lacking, and in two other specimens the first, or inner, of the two hyaline marks in the second posterior cell is in two sections. It would appear hardly worth while to attach names to these forms, as has been done by Bezzi.

It may be worth noting that all my specimens of the species from New South Wales have the hyaline marks larger than in the Samoan examples, the two marks in the second posterior cell extending from margin to fourth vein.

Upolu: Malololelei, ii, iii, iv, vi (Buxton & Hopkins), vi. (Armstrong), vii. (Wilder); Afiamalu, 7.xi.1925 (Wilder). Savaii: Safune, 22.v.1924 (Bryan). Tutuila: Leone Road, 9.vii.1923 (Swezey & Wilder), and Pago Pago, 9.xi.1923.

I have also before me one specimen from the Tonga Islands: Vavau, Neiafu, 5.iii.1925 (Hopkins).

* Lindner, *Die Fliegen der palaearktischen Region*, 49, pp. 116, 117, Taf. VII, fig. 3, 1927.



INSECTS OF SAMOA

AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

LIST OF PARTS AND SYSTEM OF PUBLICATION :—

- Part I. Orthoptera and Dermaptera.
- „ II. Hemiptera.
- „ III. Lepidoptera.
- „ IV. Coleoptera.
- „ V. Hymenoptera.
- „ VI. Diptera.
- „ VII. Other Orders of Insects.
- „ VIII. Terrestrial Arthropoda other than Insects.
- „ IX. Summary and Index.

The work is published at intervals in the form of numbered fascicles. Although individual fascicles may contain contributions by more than one author, each fascicle is so arranged as to form an integral portion of one or other of the Parts specified above.

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| Fasc. 2. Orthoptera. By Dr. L. Chopard. 51 text-figures. Pp. 9-58. 1929, 4to. 5 <i>s</i> . | 26th January, 1929. |
| PART II. HEMIPTERA. | |
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| Fasc. 2. Cercopidæ. By V. Lallemand, M.D. 10 text-figures. Cicadidæ. By J. G. Myers, Sc.D. 22 text-figures. Aquatic and Semi-aquatic Heteroptera. By Prof. Teiso Esaki. 6 text-figures. Pp. 47-80. 1928, 4to. 2 <i>s</i> . 6 <i>d</i> . | 23rd June, 1928. |
| Fasc. 3. Heteroptera. By W. E. China, B.A. (Cantab.). 28 text-figures. Pp. 81-162. 1930, 4to. 5 <i>s</i> . | 26th July, 1930. |
| PART III. LEPIDOPTERA. | |
| Fasc. 1. Butterflies of Samoa and some neighbouring Island-groups. By G. H. E. Hopkins, M.A., F.E.S. 1 text-figure and 4 plates. Pp. 1-64. 1927, 4to. 5 <i>s</i> . | 9th April, 1927. |
| Fasc. 2. Micro-Lepidoptera. By Edward Meyrick B.A., F.R.S. Pp. 65-116. 1927, 4to. 2 <i>s</i> . 6 <i>d</i> . | 28th May, 1927. |
| Fasc. 3. Geometridæ. By Louis B. Prout, F.E.S. 2 text-figures and 1 plate. Pp. 117-168. 1928, 4to. 2 <i>s</i> . 6 <i>d</i> . | 24th March, 1928. |

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| Fasc. 2. Heteromera, Bostrychoidea, Malacodermata and Buprestidæ. By K. G. Blair, B.Sc. 14 text-figures. Elateridæ. By R. H. van Zwaluwenberg. 10 text-figures. Melasidæ (Eucnemidæ). By E. Fleutiaux. Cerambycidæ. By Chr. Aurivillius. 1 plate. Brenthidæ. By R. Kleine. 4 text-figures. Anthribidæ. By Karl Jordan, Ph.D. 11 text-figures. Proterhinidæ. By R. C. L. Perkins, D.Sc., F.R.S. Pp. 67-174. 1928, 4to. 5s. | 25th February, 1928. |
| Fasc. 3. Throscidæ. By K. G. Blair, B.Sc. 1 text-figure. Chrysomelidæ. By S. Maulik, M.A. 18 text-figures. Pp. 175-215. 1929, 4to. 2s. 6d. | 23rd February, 1929. |
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| Fasc. 5. Curculionidæ. By Sir Guy Marshall, C.M.G., D.Sc., F.R.S. 31 text-figures. Pp. 249-346. 1931, 4to. 5s. | 25th April, 1931. |

PART V. HYMENOPTERA.

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PART VI. DIPTERA.

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| Fasc. 7. Trypetidæ. By J. R. Malloch. 1 text-figure. Pp. 253-266. 1931, 4to. 1s. | 28th November, 1931. |

PART VII. OTHER ORDERS OF INSECTS.

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