On the Ethiopian fruit-flies of the genus Dacus

M. Bezzi

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ON THE ETHIOPIAN FRUIT-FLIES OF THE GENUS DACUS.

By Prof. M. Bezzi,

Turin, Italy.

The rather numerous Ethiopian species of *Dacus* (*s.l.*) are very homogeneous owing to their reduced chaetotaxy and the very simple pattern of the wings; they have no praescutellar bristles, only a scutellar pair, and very often only two supra-alar bristles, the anterior one being wanting. There are no species with a stalked abdomen, or with spinose femora, or with elongated antennae, or with banded wings.

In the more numerous and differentiated Oriental species the praescutellar bristles are, on the other hand, usually present, and very often there are two pairs of scutellar bristles; the anterior supra-alar bristle is almost always present. I have therefore separated the Oriental (and Australian) species into the two genera *Bactrocera* (with banded wings) and *Chaetodacus* (with the wings not banded); and recently I have added the new genus *Monacrostichus* for the species with elongate antennae, spinose femora and stalked abdomen, and which also lack the praescutellar bristles.

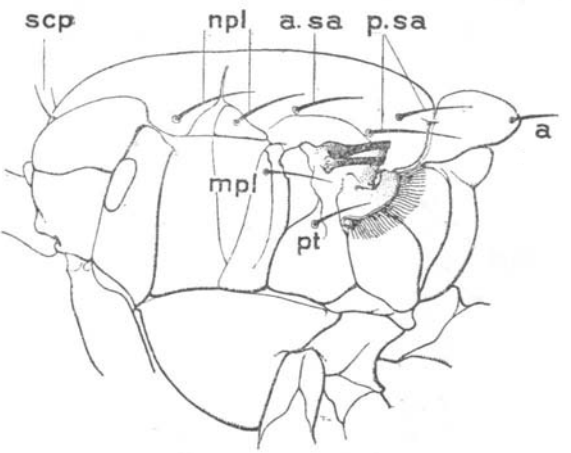

Fig. 1. Side view of the thorax of a *Dacus*, to show the chaetotaxy:—*scp*, scapular bristles; *npl*, notopleural bristles; *mpl*, mesopleural; *pt*, pteropleural; *asa*, anterior supra-alar; *p.sa*, posterior supra-alar; *a*, apical bristles.

It is interesting to note that there is also a small but remarkable difference in the sexual wing-dimorphism. In the males of the Oriental species the wing shows on the hind border at the end of the anal vein a deep sinuosity, the third posterior cell being therefore produced like a second axillary lobe;* the males of the Ethiopian

* This sexual dimorphism was first described by Prof. de Meijere (*Tijdschr. Entom.*, xli, 1908, p. 127) and subsequently by Hendel (*Supplem. entom.*, i, 1912, p. 13), both working on Oriental species. But there are some true *Chaetodacus* without this lobe, such as *C. garciniae*, Bezzi, and *C. bipustulatus*, Bezzi; *C. cucumis*, French, has no lobe, but also no praescutellar or anterior supra-alar bristles, and is therefore a true *Dacus* (*s. str.*).

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species have this character wanting or very little developed. The Oriental species with no praescutellar bristles (*Monacrostichus* and related forms) have also the hind border of the wings not indented at the end of the anal vein. It seems therefore that there is some correlation between the presence of the praescutellar bristles and the presence of the supernumerary lobe in the male.

The attempt to divide the Ethiopian species into the two genera *Dacus* (*s. str.*) and *Leptoxyda*, seems to be at present not satisfactory, although accepted by Hendel in his recent synopsis of the genera of the Trypaneïds (*Wien entom. Zeitung*, xxxiii, 1914, p. 74). It is indeed very difficult to find a dividing line between the species with free and those with fixed abdominal segments, and between the species with a flattened ovipositor and those in which it is cylindrical. Therefore I have not adopted this division in the present paper. On the other hand, I have found a better character for dividing the Ethiopian species in the thoracic chaetotaxy. Some species, which are usually of larger size, have three supra-alar bristles, the anterior one being developed like the others; I propose to call this group *Tridacus*, subgen. n. The remaining species, which are smaller, have no anterior supra-alar bristle; and as they contain *D. oleae*, I will reserve for these the name *Dacus* (*s. str.*). With this later group the genus *Leptoxyda* must be considered synonymous, unless it be regarded as distinct, with the single typical species *longistylus*.

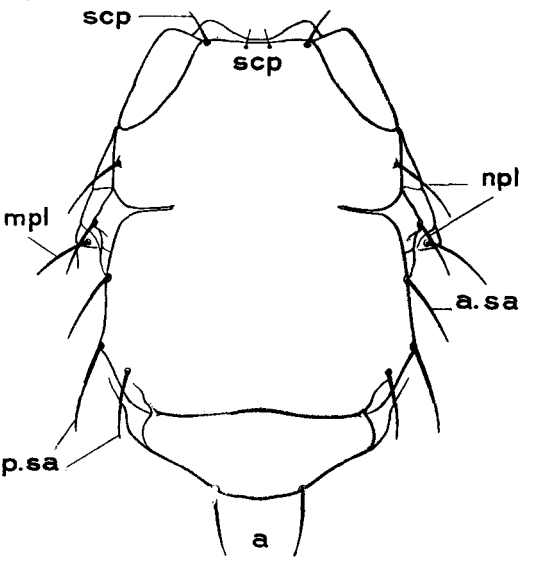

Fig. 2. Dorsal view of the thorax of a *Dacus*, to show the chaetotaxy:—*scp*, scapular bristles; *npl*, notopleural bristles; *mpl*, mesopleural; *a.sa*, anterior supra-alar; *p.sa*, posterior supra-alar; *a*, apical bristles.

The Ethiopian species of *Dacus* (*s. l.*) are not yet well known, but rather numerous forms have been described; there are also three tables of determination (without including the very incomplete one by Dr. Sack, 1908), two given by me in 1908 and 1909, and one by Dr. Speiser in 1910.

The known species are as follows :—

I. Wings with a rounded brown spot at the end, which reaches the fourth vein (fig. 4).

1. *lounsburyi*, Coquill.
2. *sphaeristicus*, Speis.
3. *fuscovittatus*, Grah.

II. Wings with a very broad brown costal border, which reaches at least the middle of the first posterior cell (fig. 5).

4. *fuscatus*, Wied.
5. *nebulosus*, Walk.
6. *armatus*, F.
7. *bivittatus*, Big.
   pectoralis, Walk.
   bipartitus, Grah.
   cucumarius, Sack.

III. Wings with a narrow costal border, not extended over the third vein.

1. Two yellow hypopleural spots.*

(A) Hypopleural spots broad and contiguous, forming a single spot (fig. 6).

(*a*) Face without black spots.

8. *immaculatus*, Coq.

(*b*) Face with two black spots ; wings without brown anal stripe.

9. *longistylus*, Wied.
   testaceus, Macq.
   kingi, Frogg.
10. *sexmaculatus*, Walk.

(*c*) Face with two black spots ; wings with a brown anal stripe.

11. *punctatifrons*, Karsch.
12. *vertebratus*, Bezzi.

(B) Hypopleural spots small and separated (fig. 11).

13. *flavicrus*, Grah.

2. Hypopleura with a single yellow spot (fig. 7).

(A) Face not black spotted, entirely yellow.

14. *annulatus*, Beck.
15. *semisphaereus*, Beck.
16. *brevistriga*, Walk.
17. *scaber*, Loew.
18. *binotatus*, Loew.

(B) Face entirely black.

19. *inornatus*, Bezzi.
   modestus, Bezzi.

(C) Face with two black spots.

(*a*) Wings with only a dark apical spot, without costal border.

20. *oleae*, Gmel.
21. *mesomelas*, Bezzi.
22. *bistrigulatus*, Bezzi.

* Of these spots, one is on the hypopleura and the other is on the sides of the mesophragma ; this latter only may be absent.

(*b*) Wings with a more or less distinct complete costal border.

23. *bistrigatus*, Loew.
24. *ciliatus*, Loew.
25. *sigmoides*, Coq.
26. *brevis*, Coq.
27. *brevistylus*, Bezzi.
28. *africanus*, Adams.

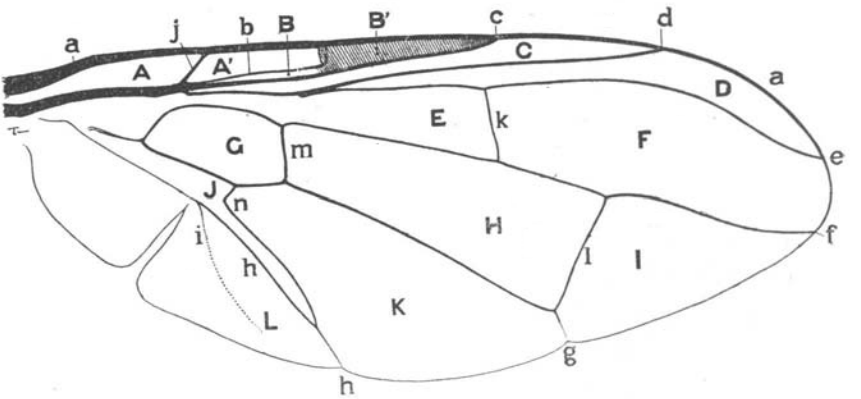

Fig. 3. Wings of *Dacus*:—Veins: *a*, costa; *b*, auxiliary vein; *c*, first longitudinal; *d*, second longitudinal; *e*, third longitudinal; *f*, fourth longitudinal; *g*, fifth longitudinal; *h*, sixth longitudinal; *i*, axillary; *j*, humeral cross-vein; *k*, anterior cross-vein; *l*, posterior cross-vein; *m*, basal cross-vein; *n*, anal cross-vein. Cells: A, A^1, costal cell; B, subcostal cell; B^1, stigma; C, marginal cell; D, submarginal; E, first basal; F, first posterior; G, second basal; H, discoidal; I, second posterior; J, anal; K, third posterior; L, axillary cell.

In a collection of Ethiopian *Dacus* which I have received for study from the Imperial Bureau of Entomology, I have found a number of species; and by adding to them those in my collection, I can give the following table for the species known to me:—

1 (20). Thorax with three supra-alar macrochaetae, the anterior one being well developed; species more robust and of larger size (8–12 mm., but usually 9–12 mm.), with the wing pattern well developed and often very broad (*Tridacus*, subgen. n.).

2 (13). Wings with the brown costal border extended to the middle of the first posterior cell, or even to the fourth vein, or sometimes with a broad brown spot surpassing the fourth vein.

3 (6). Wings with a broad rounded brown spot, filling almost the whole of the first posterior cell and extending to the upper part of the second posterior cell; species of greater size (10–12 mm.), with no yellow humeral spot and with the yellow metapleural stripe very narrow.

4 (5). Yellow spot on the hypopleura well developed and rather broad; thorax with three yellow stripes behind the suture; scutellum darkened above.
1. *lounsburyi*, Coq.

5 (4). No distinct hypopleural spot; thorax without yellow stripes; scutellum entirely yellow. . . . . 2. *sphaeristicus*, Speis.

6 (3). Wings without such a spot, but with the brown fore border extended to the fourth vein or to the middle of the first posterior cell; species of smaller size (8–9 mm.), with a distinct humeral spot and a very broad mesopleural stripe.

7 (10). Two yellow hypopleural spots; facial black spots always separated.

8 (9). Humeral calli entirely yellow; the three yellow thoracic stripes rather broad; facial black spots reaching the epistome in a point; ovipositor as long as the abdomen . . . . . 3. *armatus*, F.

9 (8). Humeral calli brown, with only a small yellow spot on the fore corner; thoracic post-sutural stripes narrow, the middle one often indistinct; facial spots rounded and removed from the epistome; ovipositor short . . 4. *bivittatus*, Big.

10 (7). A single hypopleural spot; humeral calli entirely of a yellowish white colour; facial spots often united, chiefly in the male; hind femora entirely yellow; fourth longitudinal vein straight.

11 (12). Brown fore border of the wing not reaching the fourth vein, but there is a brown stripe along this vein; three post-sutural stripes on thorax; frons entirely yellow in the middle. . . . . 5. *momordicae*, nom. nov.

12 (11). Brown fore border extended without interruption to the fourth vein; middle thoracic stripe wanting; frons dark brown with yellow spots. 6. *eburneus*, sp. n.

13 (2). Wings with the brown fore border not extending over the third longitudinal vein, or doing so only at apex, sometimes without any dark border and only with a brown apical spot.

14 (15). Scapular bristles thin and rudimentary; hypopleural and humeral spots wanting; mesopleural stripe very narrow; scutellum entirely brown; no facial black spots; wings broadly yellow towards the middle, with a blackish spot at end of third vein and a brown stripe along the anal vein. . . 7. *xanthopterus*, sp. n.

15 (14). Scapular bristles strong and long; species without the preceding characters; face always with black spots; wings not yellow, but with the small cross-vein more or less infuscated.

16 (17). A single hypopleural spot; humeral calli brown, with a narrow, less distinct yellowish spot on the fore corner. . . . . 8. *humeralis*, sp. n.

17 (16). Two hypopleural spots; humeral calli entirely yellow or almost so.

18 (19). The two hypopleural spots are very small and broadly separated; humeral calli margined with black; facial black spots very small; wings with a pale fore border and without apical spot. . . . . 9. *disjunctus*, sp. n.

19 (18). Hypopleural spots broad and contiguous; humeral calli entirely yellow; facial spots broad and rounded; wings with a blackish fore border and with a dark apical spot extending over the third vein. . . . . 10. *punctatifrons*, Karsch.

20 (1). Thorax with only two supra-alar macrochaetae, the anterior one being entirely wanting; smaller species (5–10 mm., but usually 5–8 mm.), with the wing pattern reduced to a narrow fore border or to an apical spot, sometimes entirely wanting (*Dacus*, s. str.).

21 (22). Face without black spots; two contiguous hypopleural spots; wings with a black stigma and a small black spot at the end of the third vein. 11. *immaculatus*, Coq.

22 (21). Face always with black spots, or even entirely black.

23 (30). Wings without anal brown stripe.

24 (29). A single hypopleural spot.

25 (26). Wings without apical spot at the end of the third vein, with a black stigma only; face wholly black; abdomen and ovipositor entirely black, the former with fused segments. . . . . 12. *inornatus*, Bezzi.

26 (25). Wings with a distinct apical spot; face with the two usual black spots; abdomen reddish, with or without black spots.

27 (28). Apical spot of the wings isolated; thorax dark brown, with the middle scapular bristles distinct; abdominal segments separated. . 13. *oleae*, Gmel.

28 (27). Apical spot united with a narrow but distinct black fore border; thorax rufous, like the whole body, with indistinct middle scapulars; abdominal segments fused. . . . . 14. *rufus*, sp. n.

29 (24). Two contiguous hypopleural spots; body elongate; abdomen with fused segments and very long cylindrical ovipositor; middle scapular bristles not distinct; wings with a yellowish fore border and a grey apical spot. 15. *longistylus*, Wied.

30 (23). Wings with a distinct anal brown stripe.

31 (34). A single hypopleural spot.

32 (33). Fourth longitudinal vein straight; only a brown cloud at the end of the anal vein. . . . . 16. *brevis*, Coq.

33 (32). Fourth vein strongly bisinuous; a brown stripe on the anal vein. . . . 17. *brevistylus*, Bezzi.

34 (31). Two contiguous hypopleural spots.

35 (38). Last portion of the fourth longitudinal vein S-shaped, distinctly bent forwards before reaching the costa; apical spot surpassing the third vein; anal cell infuscated on the disc; species of greater size.

36 (37). The brown apical spot of the wings united with a brown fore border; middle scapular bristles rudimentary. . . . . 18. *vertebratus*, Bezzi.

37 (36). A grey apical spot separated from the yellowish fore border; middle scapulars strongly developed. . . . . 19. *marginalis*, var. n.

38 (35). Fourth longitudinal vein perfectly straight towards the end, only slightly bent at base; wings with a blackish stigma and with an isolated apical black spot, almost surpassing the third vein; anal cell wholly hyaline; no middle scapular bristles; species of smaller size, hardly surpassing 5 mm. . . . . 20. *ficicola*, sp. n.

Subgenus TRIDACUS, nov.

1. **Tridacus lounsburyi,** Coquillett, 1901; Froggatt, 1909; Silvestri, Boll. Lab. Zool., Portici, viii, 1913, p. 91, fig. xxv, and Div. Ent. Hawaii, Bull. 3, 1914, p. 91, pl. viii, fig. xxv.

A large and very distinct species, originally described from Cape Town and Wynberg, Cape Colony. I have seen the specimens collected by Prof. Silvestri at Kirstenbosch, Cape Colony. Enderlein (1911) records the species from Tanga, German East Africa, and even from Madagascar; but I think that the present species has probably been confused with others of the same group.

2. **Tridacus sphaeristicus,** Speiser, 1910, (fig. 4).

A male specimen of this fine species from British East Africa, Nairobi, 30.i.1914 (Capt. A. O. LUCKMAN) ; this specimen was named *lounsburyi*, but is easily distinguished from that species by the characters given in the table. The species seems to be confined to East Africa, having been originally described from Kilimanjoro.

The previously unknown male is very like the female ; the third abdominal segment is ciliated. The wing pattern is very like that of the preceding species, but is different in having the large rounded dark spot of a more intensive tinge, filling up the upper corner of the discal cell ; in *lounsburyi* there is also a hyaline streak along the middle of the first posterior cell (see fig. 10 in Froggatt, 1909), which in *sphaeristicus* is fairly distinct.

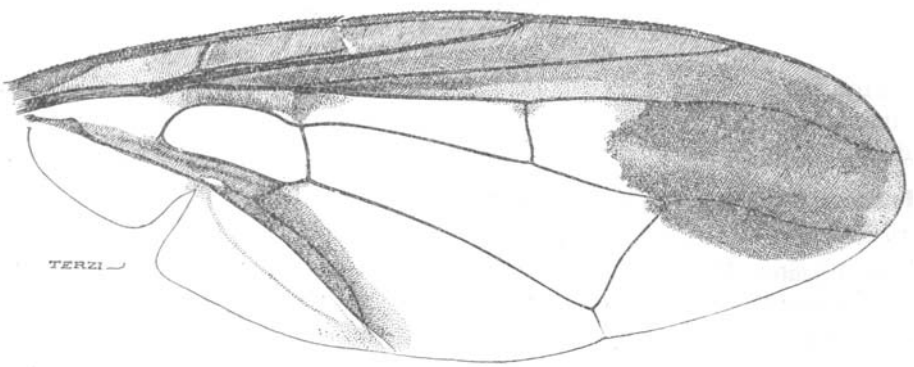

Fig. 4. *Dacus sphaeristicus*, Speiser.

A peculiar character of the species of the present group is to be found in the golden pubescence, which is very dense on the abdomen ; the antennae are very long ; the facial black spots are of triangular (not rounded) shape, with the vertex pointing inwards towards the mouth-edge. It seems from description that *D. fuscovittatus*, Graham, from Lagos, also belongs to this same group.

3. **Tridacus armatus,** Fabricius, 1805, (fig. 5).

A single female specimen from S. Nigeria, 3.iv.1914 (*Dr. W. A. Lamborn*) of what is undoubtedly the present species, recognisably described by Fabricius and Wiedemann. In Prof. Silvestri's paper I have misinterpreted it, as stated below.

The black facial spots are prolonged below into a point towards the mouth-edge ; the frontal orbits are yellowish, with three dark spots on each side ; the postsutural yellow stripes on the thorax are rather broad ; humeral calli entirely yellow ; mesopleural stripe broad, but not extended above along the suture ; there is a yellow streak before the suture, in contact with the lateral curved stripes ; hypopleural spots as in *vertebratus*. Ovipositor very long and pointed, and from this character is very probably derived the specific name. Hind femora entirely yellow ; hind praetarsi ciliated below. Wings with very dark fore-band, filling two-thirds of the breadth of the first posterior cell ; anal band very broad ; last portion of fourth vein gently bisinuous.

Apart from *fuscatus*, Wied., there are four described species closely related to the present one, viz., *bivittatus*, Big., *pectoralis* Walk., *bipartitus*, Grah., and *cucumarius*, Sack; of these I think that the three last are only slight variations of a single species, which must be called *bivittatus*.

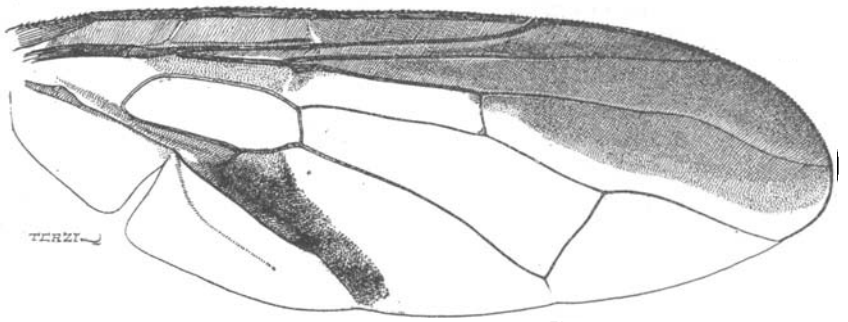

Fig. 5. *Dacus armatus*, F.

In Prof. Silvestri's paper (Portici 1913 and Honolulu 1914) I am responsible for the determination of the Trypaneids; what I have identified as *armatus* is *bivittatus*, and what is called *bipartitus* must be renamed *momordicae*, nom. nov.

4. **Tridacus bivittatus,** Bigot, 1858, (fig. 6).

Dacus bipartitus, Graham, 1909.

Dacus armatus, Bezzi in Silvestri, Boll. Lab. Zool., Portici, viii, 1913, p. 89, fig. xxiii, and Div. Ent. Hawaii, Bull. 3, 1914, p. 89, pl. viii, fig. xxiii.

This widely distributed species is easily distinguished owing to the humeral calli bearing only a small yellow dot on the fore corner and by the two contiguous hypopleural spots (fig. 6). The brown band on the fore border of the wing seems to be

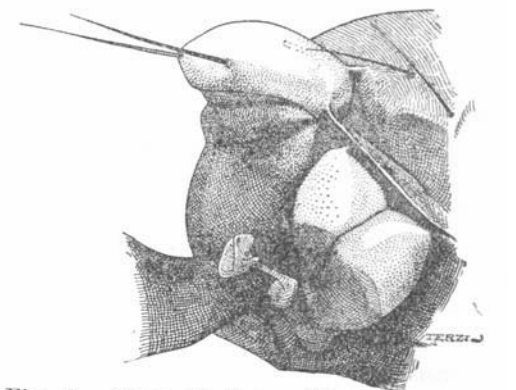

Fig. 6. *Dacus bivittatus*, Big.; an oblique posterior view of the thorax, to show the contiguous yellow hypopleural spots.

variable, usually filling only one-third of the breadth of the first posterior cell, but sometimes filling the whole cell, being extended to the fourth vein (var. *pectoralis*, Walker), only leaving hyaline the outer-angle. *D. cucumarius*, Sack, seems to be the same as *pectoralis*, for the figure of the wing given by its author is not correct, according to Dr. Speiser. The species is very destructive to cultivated Cucurbitaceae.

In the collection before me *bivittatus* is represented from the following localities :— Nigeria, Thadan (*Capt. Leslie*) ; Uganda Protectorate, Entebbe and Tero Forest, 9–16.viii.1911 (*C. C. Gowdey*), Mt. Kokanjero, S.W. of Elgon, 6,400 ft., 7–9.viii.1911 and Northern Buddu, 3,800 ft., 16–18.ix.1911 (*S. A. Neave*) ; Nyasaland, Muona, Ruo Distr., 12.x.1912 (*Dr. J. E. S. Old*) and Mt. Mlanje and Ruo, ix.–x.1913 (*S. A. Neave*).

A specimen from Kerinya, i.1911 (*Dr. G. D. H. Carpenter*), was sent to me determined as *bipartitus*, Graham ; and one of the specimens of Mt. Mlanje is determined as *pectoralis*, Walker, having probably been compared with the type.

5. **Tridacus momordicae,** nom. nov.

Dacus bipartitus, Bezzi (*nec* Graham) in Silvestri, Boll. Lab. Zool., Portici, viii, 1913, p. 90, fig. xxiv, and Div. Ent. Hawaii, Bull. 3, 1914, p. 90, pl. viii, fig. xxiv.

At present I have only seen the specimens bred from *Momordica* in Camerun by Prof. Silvestri, which I had erroneously referred to *bipartitus*. The species is very distinct owing to its single hypopleural spot ; the wing pattern is also characteristic, as shown in Prof. Silvestri's figure ; the mesopleural band is very broad ; the last portion of the fourth vein is strongly bisinuose. The unspotted frons is also characteristic. The facial black spots are large, and sometimes fused together, forming a single broad black band ; the latter condition seems to be the rule in the male sex.

6. **Tridacus eburneus,** sp. nov. (figs. 7, 8).

Closely allied to the preceding species, but readily distinguished by the coloration of the frons and thorax.

♂. Length of body, 7–8 mm. ; length of wing, 6–6·5 mm.

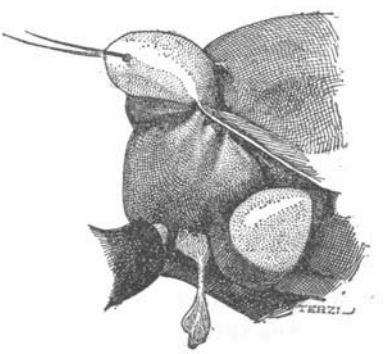

Fig. 7. *Dacus eburneus*, Bezzi, sp. n.; oblique posterior view of thorax, to show the single yellow hypopleural spot.

Prevailing colour of the body black, the ivory-coloured markings of the thorax very striking. Frons of a dark reddish brown colour, with less defined blackish markings, forming a transverse band, and some spots on the orbits, which are yellow ; occiput black, with a narrow yellow border ; face shining black, the jowls only being yellow ; the peristomial dark spots below the eye are broad ; palpi and proboscis dark yellow ; antennae long, dark yellow, the third joint infuscated towards

the end; the bristles are all black; three pairs of frontals, the basal one directed backwards, the two others forwards. Thorax black, punctate, with the following ivory-coloured markings:—The complete humeral callus; two narrow arcuate stripes, one on each side of the dorsum, running from the suture to mid-way between the suture and scutellum; a rather broad mesopleural band; and a single rounded hypopleural spot (fig. 7). The thoracic bristles are black and there are four strong scapulars; the anterior supra-alar is as strong as the others. Scutellum entirely ivory-coloured, only the extreme base black, with two long and strong black bristles. Halteres white. Abdomen black and punctate like the thorax; hind border of the second segment

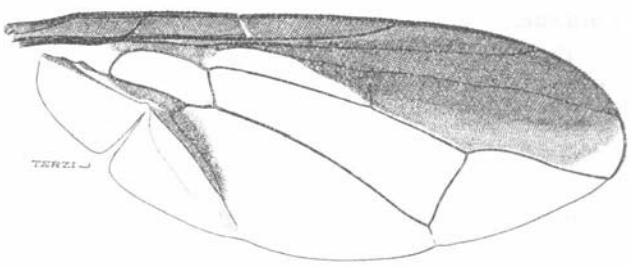

Fig. 8. *Dacus eburneus*, Bezzi, sp. n.

with a transverse entire yellow band, sometimes less distinct; hind border of the third segment ciliated; posterior middle part of fifth segment yellow. Venter dark brown. Legs yellow, the four anterior femora with a dark apical band; front and hind tibiae black, the middle ones yellow, with dark base; base of all the tarsi whitish. Wings with the fore band very dark and broad, extending without interruption to the fourth vein, but leaving clear the inferior angle of the first posterior cell; terminal portion of fourth vein straight; hind cross-vein short and straight; anal band broad.

Type ♂ and an additional specimen from Uganda, Entebbe, 9.viii.1912 (*C. C Gowdey*).

7. **Tridacus xanthopterus,** sp. nov. (fig. 9).

A strikingly distinct species, which seems to have some affinities with the description of *scaber*, Loew, which, however, shows no anal brown stripe, but has an infuscated small cross-vein. The more striking peculiarities of the present species are the colour of the thorax, which is almost destitute of any yellow marking, except a very narrow mesopleural line, even the scutellum being of a brown colour, and the colour of the wings, which are suffused with a yellowish tinge on the disk. There is some affinity with the species of the first group (*lounsburyi*, etc.), as is shown also by the thin scapular bristles.

♀. Length of body, 9 mm.; length of wing, 8·5 mm.; breadth of wing, 3 mm.

Body of a uniform dark reddish brown colour, densely punctulate, and clothed on the disk of the abdomen and thorax with short yellowish pubescence. Face and frons of a more yellowish colour, occiput reddish, with a narrow yellowish border; frons with three pairs of small black dots on the sides, a blackish central spot and a black ocellar transverse stripe; lunula brown; face unspotted, with only a narrow blackish line on the inner border of the antennal grooves; peristomial black spot well

developed; palpi pale yellow, antennae with the two basal joints dark yellow, the third joint wanting. All the bristles of the head are black, and three pairs of orbital bristles are present. Thorax unicolorous, the humeral calli and the scutellum being only of a slightly lighter reddish colour; the very narrow yellow mesopleural stripe is placed along its distal border, extending only slightly on to sternopleura below and on to the sutural callus above; hypopleura unspotted; the bristles black, the anterior supra-alar well developed, the scapulars rudimentary, very thin, hardly discernible. Halteres whitish yellow. Abdomen almost spherical, of same colour and punctuation as thorax, without yellow markings; venter black; of the ovipositor

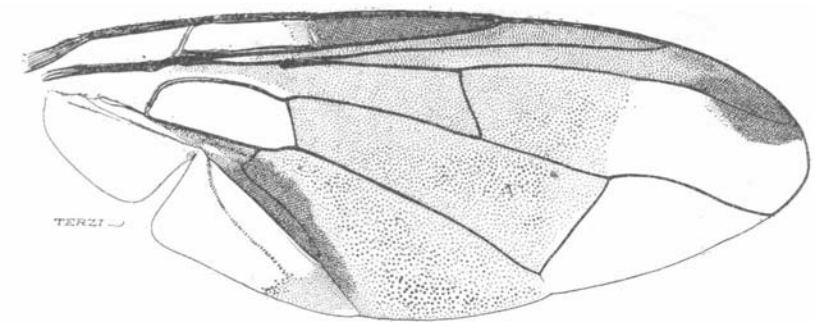

Fig. 9. *Dacus xanthopterus*, Bezzi, sp. n.

there is only the basal segment, which is black and very swollen. Legs of a uniform reddish colour, with white hairs and soft pubescence, only the basal joints of all the tarsi being white. Wings long and broad, with the last portion of fourth vein gently bisinuous; they are hyaline, but the middle part from basal to hind cross-vein and from costa to hind border, is suffused with a uniformly distributed yellowish tinge; the stigma honey-yellow; there are two brown markings, a small spot at the end of third vein and a broad streak on anal cell; the marginal and submarginal cells are not infuscated, only yellow, like the surrounding parts.

Type ♀, a single specimen from Nyasaland, Mt. Mlanje, 24.vi.1913 (*S. A. Neave*).

8. **Tridacus humeralis,** sp. nov. (fig. 10).

Apparently allied to the preceding species, but very distinct on account of the spotted face, the yellow spots on shoulders and hypopleura, and the different colour of the legs and wings.

♂. Length of body, 8·5–9 mm.; length of wing, 7–7·5 mm.; breadth of wing, 2·2–2·5 mm.

Body punctulate, of a blackish brown colour, with yellow markings, less pubescent than the preceding species. Head yellow; occiput reddish brown, bordered with yellow; frontal band with a rounded central dark spot and four black dots on each side, the last of which are placed on the vertex, where there is also a black dot; facial black spots of triangular shape, with the lower angle directed inwards to the mouth-edge; a blackish spot below the eye. Antennae long and geniculate, of a brownish red colour, but the third joint blackish; palpi reddish yellow; bristles black and strong, three pairs of orbitals. Thorax black on the disk, with three

more or less distinct longitudinal stripes and the sides reddish brown ; humeri reddish, with a less distinct yellow spot on the front corner ; behind the suture there are three yellow stripes, the middle one much abbreviated ; mesopleural stripe rather broad, not produced along the suture, but margined anteriorly with a broad black band, which shows whitish reflexions, the rest of the pleurae being of a reddish colour ; hypopleural spot rather small and margined with black ; mesophragma black, with a reddish longitudinal stripe. Scutellum yellow with black base ; halteres whitish. All the bristles are strong and black ; anterior supra-alar well developed ; the four scapular bristles very long and strong. Abdomen like the thorax, but the second

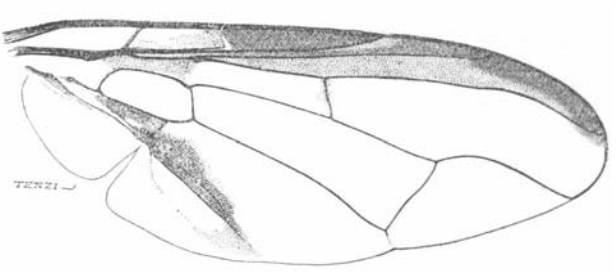

Fig. 10. *Dacus humeralis*, Bezzi, sp. n.

segment almost entirely reddish and the middle part of fourth and fifth more or less broadly reddish yellow ; venter greyish ; third segment with a row of black bristles extending from the venter half-way to the middle of the dorsum. Legs reddish brown, the bases of hind femora broadly and the bases of all the tarsi whitish. Wings hyaline ; the stigma and a narrow band filling the marginal and submarginal cells are yellow, becoming darker brown at the end of the submarginal, but not forming a definite spot ; small cross-vein lightly margined with yellowish ; anal brown band rather broad ; last portion of fourth vein distinctly bisinuous.

Type ♂ and an additional specimen of the same sex from Southern Nigeria, Oshogbo, xi.1910 (*Dr. T. F. G. Mayer*).

9. **Tridacus disjunctus,** sp. nov. (figs. 11, 12).

A very distinct species characterised by the two small and broadly separated hypopleural spots, in which perhaps it shows affinity with *flavicrus*, Graham, from Ashanti, but from which it differs in the leg coloration.

♀. Length of body, 8–8·5 mm. ; length of wing, 7–7·2 mm. ; breadth of wing, 2·5 mm.

Body blackish brown, punctulate, with sparse and short light yellow pubescence ; the yellow markings are well developed and very striking. Head yellow, but the occiput black, with a broad yellow border ; frontal band with a broad black spot in the middle, three pairs of orbital dots and a transverse stripe on the vertex ; facial black spots very small, not rounded, almost linear, placed obliquely and extended inwards to the mouth-edge ; palpi yellow ; antennae rather short, with the third joint entirely yellowish ; all the bristles black, three pairs of orbitals present. Thorax black, even on the pleurae, only slightly reddish on the sides behind the suture ; humeri yellow, but margined with black above and below ; three postsutural narrow

yellow stripes, the middle one very short; mesopleural stripe of medium size, not extended along the suture; two small hypopleural spots, the lower one being larger and separated from the other by a broad black area (fig. 11.); mesophragma black. Scutellum yellow, with black base. All the bristles are black, the scapulars very strong and the anterior supra-alar well developed. Halteres yellowish. Abdomen like the thorax, but the hind borders of the second and last segments are reddish yellow;

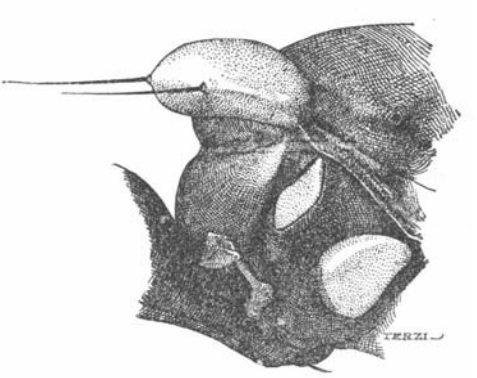

Fig. 11. *Dacus disjunctus*, Bezzi, sp. n.; oblique posterior view of thorax, to show the two hypopleural spots.

venter black; ovipositor very short, the basal joint tolerably swollen and reddish brown or blackish. Front and middle femora yellow with the apical half brown; hind femora entirely yellow; tibiae brownish black; tarsi yellow, a little darkened towards the end. Wings hyaline and with reduced pattern; there is a dark yellowish fore border not passing the third vein, and never reaching the apex, where there

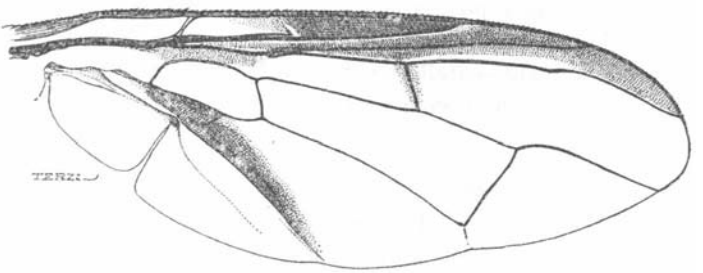

Fig. 12. *Dacus disjunctus*, Bezzi, sp. n.

is an indistinct dark spot; anal band rather broad at base, but not very dark; terminal portion of fourth vein bisinuous; stigma a little more intensively yellow; small cross-vein sometimes faintly margined with luteous.

Type ♀, and an additional specimen from Uganda, Entebbe, 17.viii.1911 (*C. C. Gowdey*).

10. **Tridacus punctatifrons,** Karsch, 1887.

This species, described originally from Loanda and recorded from Kilimanjaro by Dr. Speiser, is the smallest of its group, not surpassing 8 mm. in length; it is easily distinguished by the two contiguous hypopleural spots, the shaded small cross-vein and the blackish fore border of the wings; anterior supra-alar and scapular bristles long and strong. It shows a great resemblance to *Dacus vertebratus*, Bezzi. Third abdominal segment in the male ciliated; facial spots large and rounded.

There are in the collection some specimens from the Gold Coast, Aburi, xii.1913 (*W. H. Patterson*); from Uganda, Kerinya, Jinja, i.1911, on herbage (*Dr. G. D. H. Carpenter*); from Nyasaland, Mt. Mlanje, 31.xi.1913 (*S. A. Neave*); from Zanzibar, 1913 (*Dr. W. M. Aders*).

Subgenus, DACUS, s. str. (+ LEPTOXYDA).

11. **Dacus immaculatus,** Coquillett, 1901.

A very distinct species, the wing pattern of which has been figured in Froggatt's Report, 1909, pl. iii, fig. 9; it was originally described from East London, Cape Colony. The humeral calli are entirely yellow; the mesopleural stripe is broad and continued along the suture; the two hypopleural spots are of medium size and contiguous. Ovipositor very short, with the basal joint flattened.

A single female specimen from Natal, Estcourt, 19.ii.1913 (*R. C. Wroughton*).

12. **Dacus inornatus,** Bezzi, 1909.

I described this characteristic species in 1908 as *modestus* (not of Fabricius !) from Congo, Semlia Falls, N'Gami River; and subsequently I received a female specimen of it from the Belgian Congo, Kitobolu (*Dr. G. Rovere*).

The undescribed female is very like the male, but has the abdomen entirely black, without the narrow yellow border; the ovipositor is short, with the first joint swollen and of conical shape, entirely black. Face wholly shining black; frons shining black, with a dark brown band in the middle; occiput shining black; humeral calli entirely whitish; mesopleural stripe broad, but not continued to the suture; a single rounded hypopleural spot. The entire body is black, except the whitish markings on thorax and the scutellum; the wings are immaculate; the small cross-vein is lightly shaded with fuscous; the terminal portion of fourth vein almost straight.

13. **Dacus oleae,** Gmelin, 1788.

Of this Mediterranean species I have seen South African specimens collected in the Cape Colony by Lounsbury, and communicated by Prof. Silvestri and Prof. Berlese. They are identical with the Italian ones, as already stated by Prof. Silvestri in his Report, 1913, p. 85.

14. **Dacus rufus,** sp. nov.

A pretty species, characterised by the rufus coloration of the entire body, the yellow humeral calli, the single hypopleural spot, and the absence of the anal stripe on the wings.

♀. Length of body, 7 mm.; length of wing, 6·5 mm.; breadth of wing, 2·1 mm.

Head entirely rufous, without any dark spot on frons, orbits or occiput, only the ocellar dot blackish; face yellow, with two very striking, shining black, rounded spots; a less distinct dark spot below the eye; the swollen lower portion of the occiput yellow; antennae, palpi and proboscis entirely yellow; all the bristles black, three pairs of orbitals present. Thorax and pleurae entirely rufous, whitish on the back, with three less distinct longitudinal stripes; humeral calli yellow; a broad mesopleural stripe, continued above only to the sutural callus and below with a small spot on the sternopleura; a single rounded hypopleural spot. Scutellum yellow, with the extreme base rufous; mesophragma rufous; halteres whitish. All the bristles are black; the external scapulars are strong, but the internal are wanting. Abdomen rather elongate, not at all sphaeroidal, entirely rufous, with a faint trace of a middle dark stripe and of two spots on the sides of the third segment; venter yellowish; ovipositor short, red, the basal joint conical, swollen; middle segments partly fused. Legs entirely yellow, only the four posterior tibiae at base and the last tarsal joints a little darkened. Wings hyaline, with only the stigma, the marginal cell and a small border along the costa in the submarginal cell, dark brown; this border is dilated into a brown spot at the end of third vein; terminal portion of fourth vein straight.

Type ♀, a single specimen from N.W. Rhodesia, Chilanga, 19.ix.1913, on wild fig tree (*R. C. Wood*).

15. **Dacus longistylus,** Wiedemann, 1830.

The present species is the type of the genus *Leptoxyda*, because *L. testacea*, Macquart, of which I have seen specimens taken at Thies, Senegal, by Prof. Silvestri, is the same as Wiedemann's species; Surcouf has also figured the species from Senegal in *Insecta*, 1911, p. 269.

This species has entirely yellow humeral calli and two contiguous hypopleural spots; the middle scapular bristles are wanting; the abdominal segments are fused; the first segment of the ovipositor is very long, almost longer than the abdomen.

The species is always to be found on the plant *Calotropis procera*, like *Dacus kingi*, Froggatt (*Proc. of the Linn. Soc. of N.S. Wales*, xxxv, 1910, p. 866), from Khartoum, which has been bred from the fruits of the same plant and is undoubtedly a synonym. I have seen the species also from Kassala and from Erythraea (Keren and Sabarguma); the specimens from Assuan, Egypt, which I have received from Becker are almost one-half smaller than the others, but I cannot perceive other differences. The species occurs also in South India, probably imported from Africa.

16. **Dacus brevis,** Coquillett, 1901, (fig. 13).

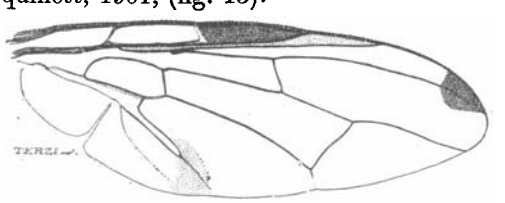

Fig. 13. *Dacus brevis*, Bezzi, Coq.

The present species has a wing pattern very like that of *immaculatus*, but there is a distinct rounded brown cloud from the end of the anal cell to the hind border; the facial black spots are well developed; humeral calli entirely yellow; a single but large and rounded hypopleural spot.

A single male specimen from Umbilo, Durban, 24.viii.1913 (*L. Bevis*); the species was originally described from Bathurst, Cape Colony.

17. **Dacus brevistylus,** Bezzi, 1908; Silvestri, Boll. Lab. Zool., Portici, viii, 1913, p. 94, fig. xxvii, and Div. Ent. Hawaii, Bull. 3, 1914, p. 94, pl. viii, fig. xxvii.

There is some doubt as to whether this species may not be the same as *D. sigmoides*, Coquillett (1901), from Mauritius. Humeral calli entirely yellow; a single rounded hypopleural spot.

The species is common in the Ethiopian region, and has been imported also into South India, living in melons and other cultivated Cucurbitaceae. It was originally described from Erythraea, and has since been recorded from Dahomey, Transvaal and Cape Colony; I have also specimens from German South West Africa, Windhoek, and from the Sudan.

In the collection before me it is represented from the following localities:—British East Africa, Nakuru, i.1913 (*Dr. B. L. van Someren*); Uganda (*C. C. Gowdey*); Nyasaland, Mt. Mlanje, 19.v.1913 (*S. A. Neave*); N. W. Rhodesia, Demere River near Chilanga, 2,000 ft., very plentiful on Citrus fruit tree, 27.v.1913 (*R. C. Wood*); Zanzibar, 1913 (*Dr. W. M. Aders*); Pretoria, 30.i.1914 (*David Gunn*); Durban, Umbilo, 24.v.1914 (*L. Bevis*).

18. **Dacus vertebratus,** Bezzi, 1908; Silvestri, Bull. Lab. Zool., Portici, viii, 1913, p. 93, fig. xxvi, and Div. Ent. Hawaii, Bull. 3, 1914, p. 93, pl. viii, fig. xxvi.

Described by me originally from Erythraea and subsequently recorded from Kilimanjaro, French Guinea and Southern Nigeria; I have also specimens from Senegal. The species is injurious to cultivated Cucurbitaceae. In the collection there are specimens from Nyasaland, Mt. Mlanje, 23.v.1913 (*S. A. Neave*); S. Nigeria, Ikotekpene, 17.v.1910 (*J. J. Simpson*); Pretoria, ii–iii.1914 (*David Gunn*).

19. **Dacus vertebratus** var. **marginalis,** nov.

Distinguishable from the type only by the brown apical spot being isolated from the fore border, on account of this border being yellowish, not brown. The character of the scapular bristles given in the table seems to be variable.

Several male specimens from Natal, Estcourt, 17.iii.1913 (*R. C. Wroughton*); N.W. Rhodesia, Mayabuku, 3,400 ft., in house, 7.xii.1913 (*R. C. Wood*).

20. **Dacus ficicola,** sp. nov. (fig. 14.)

This species has a wing pattern very like that of *brevis*, but may readily be distinguished by its two contiguous hypopleural spots.

♂. Length of body, 5–5·6 mm.; length of wing, 4·9–5·2 mm.

Frontal band of a dark red colour, with yellow orbits which bear three pairs of black spots; the lunula and an ocellar dot are also black; occiput dark brown, with a narrow yellow border, which is dilated below; face yellow, its two black spots shining and of

oval shape; antennae light yellow, with the third joint darkened at the end; palpi and proboscis reddish yellow; bristles black, three pairs of orbitals. Thorax dark brown, black behind the suture and on the pleurae, with the following yellow markings: humeral calli entirely; a rather broad mesopleural stripe, continued above along the suture to the dorso-central line, and below in a very small spot on the sternopleurae; two rounded and contiguous hypopleural spots of medium size; the whole scutellum except the base. Halteres whitish; mesophragma black. Abdomen red, with a middle longitudinal black stripe and black spots on the sides of the segments; the second segment also having a less distinct yellowish hind border; dark spots of fifth

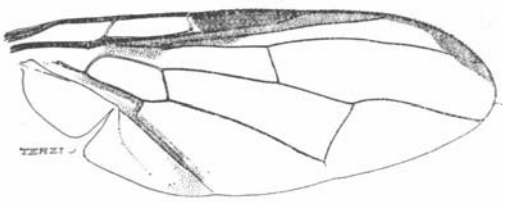

Fig. 14. *Dacus ficicola*, Bezzi, sp. n.

segment sometimes wanting; third segment ciliated; venter reddish. All the thoracic bristles are black; only the external pair of scapulars is distinct. Legs reddish, the base of posterior femora, the end of tibiae, and the base of tarsi broadly whitish yellow. Wings narrow and long, hyaline, with the stigma, a spot on the end of third vein and an anal streak, brown; marginal cell darkened, but there is no distinct dark border in the submarginal cell, or only a very narrow one, the apical spot being therefore almost isolated; terminal portion of fourth vein straight.

Type ♂ from Natal, Willow Grange, 17.iii.1913 (*R. C. Wroughton*), and an additional specimen of the same sex from N.W. Rhodesia, Chilanga, 19.ix.1913, on wild fig tree (*R. C. Wood*).