

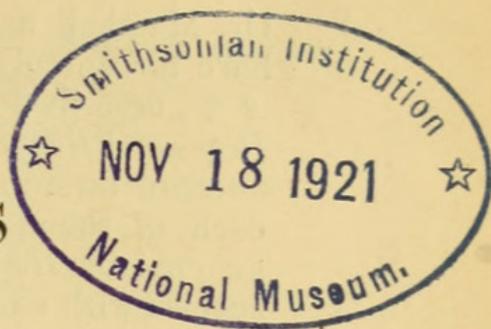
# THE ANNALS

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XLVIII.—*Revision of the African Species of Hedybius, Er., and its Allies, with an Account of their accessory ♂-characters [Coleoptera].* By G. C. CHAMPION, F.Z.S.

[Plates XIII. & XIV.]

THIS paper is based upon a study of the species of the Malachiid genera *Hedybius*, Er., *Illops*, Er., and *Philhedonus*, Gorb., represented in the Cape Town Museum, the Durban Museum, the British Museum in London, and the Hope Collection at Oxford. The Cape Town material, which includes the types of the various forms described or named by Abeille de Perrin in 1900 and examples of most of the species here enumerated, has been communicated by Dr. L. Péringuey, who has allowed me to retain co-types or duplicates for our National Collection. These genera, like many others of the group, are based almost entirely upon ♂-characters, and it is therefore impossible in some cases to locate with any certainty a ♀ example when that sex only is available for examination. Again, the head, antennæ, prothorax, or pygidium is sometimes differently coloured, or otherwise maculate, in the two sexes, at least in the genus *Hedybius*. The result is that several species have been described two or three times under different names. Paired examples of various S. African forms sent by Dr. Péringuey, and the abundant material obtained by

Dr. Marshall and the late H. C. Dollman in Rhodesia, &c., have fortunately enabled me to allocate one ♂ and several ♀ ♀, described as new species, to their respective partners. *Illops* and *Hedybius* have 5-jointed, and *Philhedonus* 4-jointed, anterior tarsi in ♂; the antennæ are distinctly 11-jointed in each of them, in both sexes, a character separating these genera from *Hapalochrus*. Under *Hedybius*, Erichson included species with simple anterior tarsi in ♂ and others with the second joint prolonged or raised at the apex above the base of the third in the same sex; *H. hirtus*, F. (= *oculatus*, Thunb.), is here taken as the type, although only one-fourth of the species now known agree with it in the tarsal structure, the others, which would be almost equally well placed under *Illops*, having the tarsi formed as in *Attalus*. Two important ♂-characters in *Hedybius* have hitherto been overlooked: (1) The strongly binodose and sulcate superior apices of the anterior femora (*H. marshalli*, Gorh.); (2) the presence of a shining black area above or beneath one or two of the basal joints (usually on 3 and 4) of the antennæ (*H. amœnus*, Gorh., &c.), in addition, in some cases, to a sharply-defined line or apical marking on the upper surface of five or more joints in the same sex. Another ♂-peculiarity in certain *Hedybii* is the tooth (*H. dentatithorax*, Pic, &c.) or notch (*H. marshalli*) at the sides of the prothorax, which is wanting in ♀. The extraordinary erosion, plication, or armature of the head in the males of these insects is difficult to describe; but it may be stated that, in the species with a central tuft of hairs on the anterior margin of the prothorax, the head is plicate or raised immediately in front of it. The structure of the head in this sex separates the numerous species belonging to the second section of *Hedybius* from *Attalus* s. str., the latter, as defined by Abeille de Perrin in 1891, having the "frons in mare simplex," e. g. formed as in the ♀. The elytra of the ♂ are without apical plication or excavation in all the species enumerated in the present paper; one of them, however (*H. flavocinctus*), has a sharp humeral plica in this sex.

#### ILLOPS.

*Illops*, Erichson, Entomographien, p. 87 (1840); Abeille de Perrin, Rev. d'Ent. xix. p. 170 (1900) [type *I. corniculatus*, Er.].  
*Hedonistes*, Gorham, P. Z. S. 1905, ii. p. 278.

A genus scarcely separable from the second section of *Hedybius*, and only differing from it in the greatly thickened or dentate fifth and sixth antennal joints in the ♂.

The elytra are coarsely punctured (as in *Hedybius diversipennis*, Pic), and the second joint of the anterior tarsi in ♂ is raised above the base of the third, as in *Attalus*.

### 1. *Illops corniculatus*.

*Illops corniculatus*, Er. loc. cit. p. 88 (♂)<sup>1</sup>; Ab. de Perrin, loc. cit. pp. 163, 170 (♂ ♀)<sup>2</sup>.

*Malachius trabeatus*, Fairm. Ann. Soc. Ent. Belg. xxxviii. p. 654 (♀) (1894)<sup>3</sup>.

*Hedonistes lætus*, Gorth. P. Z. S. 1905, ii. p. 278 (♂ ♀)<sup>4</sup>.

♂. Antennæ (Pl. XIII. fig. 1a) long, joints 1-4 testaceous, the others black, 1 elongate, much thickened, 2-4 short, rapidly widening, 3 and 4 subconnate, 5 and 6 greatly dilated, 5 transverse, obliquely articulated to 4, 6 broader than 5, oblong-subquadrate, shining, somewhat concave above, 7-11 narrow, 11 very elongate; head (Pl. XIII. fig. 1) with a very deep, smooth, inter-ocular excavation, the latter with two small dentiform tubercles in front and another in the centre, and a stout, erect prominence on each side anteriorly, the vertex sharply, triangularly raised and deeply sulcate down the middle, the raised space preceded by two small porrect fascicles of yellowish hairs; anterior tarsal joints 1 and 2 slightly thickened, 2 at the apex raised above the base of 3.

*Hab.* S. AFRICA, Cape of Good Hope<sup>1</sup> (*type of Erichson*), Willowmore<sup>4</sup> (*Dr. Brauns*), Matjesfontein<sup>2 3</sup> (*E. Simon*), Maritzburg, Natal (*Mus. Cape Town*).

The above description of the ♂-characters is taken from specimens from Willowmore, whence Gorham's type of *H. lætus* was obtained, the latter agreeing well with Erichson's diagnosis of the same sex. Various ♀ ♀ doing duty for *I. corniculatus* in the British Museum and in the Hope Collection at Oxford are, however, referred to a different species, *I. duplocinctus*. This is a hairy, nigro-violaceous insect, with a granulate prothorax and very coarsely punctured elytra, the latter with a suturally-interrupted ante-median fascia and the apex orange-red. Two ♂ ♂ and four ♀ ♀ of *I. corniculatus* have been communicated by Dr. Péringuey, and these are all I have seen. M. Simon found it in numbers on an *Atriplex*, in the dried-up bed of a river, on a stony arid plateau, 30 leagues N.E. of the Cape. In the accompanying fig. 1 (Pl. XIII.) the head is drawn forward from its normal position.

2. *Illops dentiger*, sp. n.

♂. Extremely like *I. corniculatus*, Er., and very similarly coloured—nigro-cyaneous, the elytra with a suturally-interrupted ante-median fascia and the apex orange-red, the antennal joints 1–5 and clypeus testaceous; head (Pl. XIII. fig. 2) opaque, densely, rugulose punctate, broadly depressed and strongly, transversely, sinuato-lamellate anteriorly, the ridge hollowed in the middle and near the sides above (appearing quadridentate when viewed from behind), and preceded by a deep transverse sulcus; eyes convex, prominent; antennæ (Pl. XIII. fig. 2 a) long, joint 1 very elongate, stout, 2 short, narrow, constricted at the base, 3 and 4 stouter than 2, subtriangular, 5 much broader, triangular, dentate at the outer apical angle, 6 produced into a long, curved, pointed tooth at the apex externally, 7–11 narrow, 11 elongate; prothorax transversely subcordate, convex, closely, rugulose punctate (smoother than in *I. corniculatus*); elytra very coarsely, closely punctate; anterior tarsi as in *I. corniculatus*.

Length  $4\frac{1}{2}$  mm.

*Hab.* S. AFRICA, Seymour, Cape Colony (*Mus. Cape Town*).

Two males. Separable at once from *I. corniculatus*, ♂, by the very differently formed head and antennæ, the latter with the basal half testaceous, the less rugose prothorax, the more prominent eyes, and wholly opaque head.

3. *Illops duplocinctus*, sp. n.

♀. Broad, robust, shining, clothed with long, semierect, soft, pallid hairs; nigro-violaceous or nigro-cyaneous, the clypeus and the antennal joints 1–4 or 5 testaceous, the other joints and the legs black, the elytra orange-red, with a basal and subapical fascia (which are narrowly connected along the suture) violaceous. Head much narrower than the prothorax, closely, rather coarsely punctate, deeply excavate in the middle anteriorly; antennæ short, rather stout, joint 2 very short, 4 and 5 somewhat twisted and broader than the following joints. Prothorax transversely cordate, rugosely punctured at the sides, sparsely so on the disc. Elytra much broader than the prothorax, very coarsely, closely punctate, smoother at the base and apex, the punctures here and there transversely confluent.

Length  $4\frac{1}{2}$ –5 mm.

*Hab.* S. AFRICA, Cape of Good Hope (*Mus. Brit.*, *Mus. Oxon.*).

Five ♀ ♀ : three, labelled "C. G. H.," in the Oxford Museum ; two in the British Museum—one obtained from the Entomological Club in 1844, without locality, the other, purchased with the Bowring collection in 1863, labelled "Java," obviously in error. These insects are named in each collection *I. corniculatus*, Er., ♀, from which they differ in their much larger size, the non-granulate disc of the prothorax, and the greater extension of the reddish coloration on the elytra. The metallic, less rugose head, the much smoother disc of the prothorax, and the more coarsely punctured elytra separate them from *I. dentiger*, with which I was at first inclined to associate them.

### HEDYBIUS.

*Hedybius*, Erichson, Entomographien, p. 92 (1840) [type *Cistela hirta*, F. = *Cantharis oculata*, Thunb.].

Forty-two species are enumerated under this genus, nearly all the described forms, including males of thirty-two of them, being represented in the material examined. *H. æthiopicus*, Pic (1907), type ♂, from Uomba, Ethiopia, and *H. limbati-pennis*, Pic (1915), types ♂ ♀, from Abyssinia, are unknown to me. *H. (Flabellohedybius) maculatipennis*, Pic (1917), type ♂, from Chindar, an insect with transversely plicate apices of the elytra, must belong elsewhere. *H. cavifrons*, Boh. (= *ferox*, Ab., and *natalensis*, Gorh.), is a *Dino-metopus*.

The following Table will assist in the identification of the species of *Hedybius*, of which the ♂ ♂ are available for examination ; five others are known from the ♀ only, and three from imperfectly described ♂ ♂, and their correct position is therefore uncertain :—

♂ ♂*.	
1	(14). Anterior tarsi simple. [HEDYBIUS s. str.]
2	(3). Prothorax cristate in the middle in front, testaceous, maculate on disc ; elytra and abdomen metallic ; legs testaceous. . . . . Species 1.
3	(2). Prothorax not cristate in front.
4	(9). Elytra uniformly metallic.
5	(6). Elytra tuberculate ; prothorax testaceous, sharply nigro-bivittate ; legs testaceous ; abdomen metallic . . . . . Species 2.

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\* The structure of the ♂ anterior tarsi in Nos. 6, 7, 37 has not been described ; ♀ ♀ only known of Nos. 28, 30, 35, 36, 38.

- 6 (5). Elytra not tuberculate.
- 7 (8). Prothorax metallic, except in front; legs partly or wholly black or metallic: species Malachiiform. . . . . Species 3, 4.
- 8 (7). Prothorax testaceous; antennæ partly testaceous, joints 1 and 2 or 1 only with a shining black mark above; head cristate . . . . . Species 5.
- 9 (4). Elytra not uniformly metallic.
- 10 (11). Elytra immaculate, whitish or testaceous, like the rest of the body . . . . . Species 6, 7.
- 11 (10). Elytra maculate.
- 12 (13). Prothorax, legs, and antennæ testaceous; elytra whitish, with longitudinal or interrupted black markings on disc . . . . . Species 8.
- 13 (12). Prothorax and legs black; elytra metallic, with a common median space or transverse lateral patch testaceous or orange-red . . . . . Species 9-11.
- 14 (1). Anterior tarsal joints 1 and 2 a little stouter and longer than those following, 2 raised at the apex above the level of 3 or prolonged over the base of the latter, nigro-pectinate at tip. [Subgen. HEDYBINUS, n.]
- 15 (16). Anterior tarsal joints 1 and 2 imbricate; prothorax and elytra green, the former testaceous at the base; posterior tibiae partly black; abdomen metallic . . . . . Species 12.
- 16 (15). Anterior tarsal joints 1 and 2 not imbricate.
- 17 (36). Elytra uniformly metallic (except in No. 22, vars.); prothorax testaceous, in most of the species nigro-maculate on the disc.
- 18 (35). Legs (except in No. 29) testaceous, wholly or in part.
- 19 (34). Terminal dorsal and ventral abdominal segments without projecting hooks or spines.
- 20 (21). Antennæ pectinate or acutely serrate, stout; prothorax very little broader than long in No. 13, cristate or horned in front, testaceous (maculate in No. 14) . . . . . Species 13, 14.
- 21 (20). Antennæ serrate, dentate, or subfiliform; prothorax transverse, not cristate.
- 22 (23). Anterior femora binodose and sulcate at the apex above; prothorax notched at sides . . . . . Species 15.
- 23 (22). Anterior femora simple.
- 24 (25). Prothorax dentatè laterally; antennal joints 7-11, and the others in part beneath, black, in No. 16; antennæ testaceous, joints 3 and 4 each with a shining black area beneath, in No. 17 . . . . . Species 16, 17.
- 25 (24). Prothorax rounded or subangulate laterally, slightly notched in No. 27.
- 26 (29). Antennæ maculate or lineate above.
- 27 (28). Antennal joints 1-11 or 5-11 nigro-maculate at the apex above, 3 and 4 each with a black shining area beneath in No. 18 . . . . . Species 18-20.
- 28 (27). Antennal joints 1-11, 1-5, or 3-7 nigro-lineate above, 3 and 4 each with a shining black area beneath in No. 21 . . . . . Species 21-23.

- 29 (26). Antennæ in great part or entirely testaceous above; the joints 3 and 4 in No. 25, and 4 only in No. 26, with a shining black area beneath.
- 30 (31). Fifth antennal joint dilated, triangular . . . . . Species 24.
- 31 (30). Fifth antennal joint not dilated.
- 32 (33). Pygidium not sulcate . . . . . Species 25, 26.
- 33 (32). Pygidium sulcate (emarginate in No. 29) . . . . . Species 27-30.
- 34 (19). Terminal dorsal and ventral segments of abdomen furnished with projecting black hooks or spines; prothorax cristate in No. 31, or angularly raised in No. 32, in the middle in front; legs wholly or in part black in Nos. 31, 32, testaceous in No. 33. . . . . Species 31-33.
- 35 (18). Legs black; prothorax red, sometimes nigromaculate on the disc anteriorly; elytra subtuberculate in No. 34, finely punctured in Nos. 35, 36; abdomen black in Nos. 34, 35, red in No. 36 . . . . . Species 34-36.
- 36 (17). Elytra maculate or fasciate.
- 37 (40). Legs wholly or in part, prothorax, and elytra rufous or testaceous, the elytra violaceo- or cæruleo-maculate at base and at or towards apex.
- 38 (39). Elytral puncturing coarse; head with a central spine . . . . . Species 37.
- 39 (38). Elytral puncturing fine; head without spine . . . . . Species 38, 39.
- 40 (37). Legs black or metallic.
- 41 (42). Prothorax and elytra violaceous, the latter each with a broad orange lateral patch. . . . . Species 40.
- 42 (41). Prothorax at sides or base testaceous or rufous.
- 43 (44). Elytra maculate, without humeral plica . . . . . Species 41.
- 44 (43). Elytra narrowly unifasciate, with humeral plica . . . . . Species 42.

1. *Hedybius hirtus.*

♀. *Cistela hirta*, Fabr. Spec. Ins. i. p. 149 (1781) <sup>1</sup>.

*Hedybius hirtus*, Blair, Ann. & Mag. Nat. Hist. (9) v. p. 162 (1920) <sup>2</sup>.

♀. *Cantharis oculata*, Thunb. Dissert. iii. p. 202 (1801) <sup>3</sup>.

♂. *Hedybius oculatus*, Er. Entomographien, p. 93 (1840) <sup>4</sup>.

♂. Antennæ moderately long, stout, tapering towards the tip, testaceous in their basal half, the other joints black or more or less infuscate, 4-10 triangular; head (as in ♀) testaceous, nigro-maculate at the base in some specimens, narrower than the prothorax, depressed between the eyes, transversely angulato- or sinuato-plicate above, and sometimes raised in the centre beneath the prothoracic tuft (Pl. XIII. fig. 3); prothorax testaceous, with two small black spots on the disc and often two other smaller spots near the base, and furnished with a spiniform, porrect or upwardly-curved, matted fascicle of long black hairs in the centre in front;

elytra blue or bluish-green, rugulose, and rather closely punctured; anterior tarsi simple, 5-jointed.

♀. Antennæ short, rather slender, coloured as in ♂; head flattened, in some specimens slightly tumid between the eyes above, this tumid space depressed in the centre.

*Var. 1.* Prothorax usually with four small black spots; head and antennæ as in ♂ of *H. hirtus*; head in ♀ with a stout, transverse, mesially-interrupted ridge between the eyes above.

*Hedybius quadrimaculatus*, Pic, L'Echange, xix. p. 178 (♂ ♀) (1903) <sup>5</sup>.

*Var. 2.* Smaller, the head nigro-maculate or black at the base, the two black spots on the disc of the prothorax sometimes coalescent and forming a transverse patch, which is produced into a dentiform projection in the centre behind, the two basal spots constantly present; the elytra less uneven and more closely punctured; head and antennæ of ♂ as in *H. hirtus*; coxæ testaceous. (♂ ♀.)

? *Hedybius simplicifrons*, Pic, Mélanges exot.-entom. xxv. p. 2 (♀) (1917) <sup>6</sup>.

*Hab.* S. AFRICA (*Dr. Smith*, in *Mus. Brit.*), Cape of Good Hope <sup>1 3 4 5 6</sup> (*coll. Fry*; *Mus. Oxon.*; *C. Darwin*), Pirie Bush (*Mus. Brit.*), Saldanha Bay, Houwhoek, Caledon, Giftsberg, Cape Town, Willowmore, Algoa Bay (*Mus. Cape Town*), Rapenburg, Cape Flats, Ceres (*R. E. Turner*: x. 1920), Reenen, Bedford (*Mus. Durban*).

The males of this variable insect, a long series of which is before me, agree perfectly *inter se* in the structure of the head; but some of the larger females (from Pirie Bush, &c.) exhibit an unusual development of the vertex, which is wanting in the type. The two additional spots on the prothorax are evanescent, and those on the disc are sometimes coalescent. The dorsal and ventral surfaces of the abdomen are metallic. The type (♀) of *H. hirtus* is contained in the Banksian collection in the British Museum, and it is still in a fair state of preservation.

*H. simplicifrons*, Pic, seems to be based upon a similar ♀, with the coxæ testaceous.

The *Var. 2* is represented by 5 ♂♂ and 6 ♀♀; it has been found at Ceres, Cape Province, and at Houwhoek in the Caledon district.

2. *Hedybius verrucosus*, sp. n.

♀. Elongate, broad, widened posteriorly, shining, somewhat thickly clothed with long, erect, blackish hairs intermixed on the elytra with closely-set whitish pubescence; blue or bluish-green, the head (except at the extreme base), antennæ, prothorax (two rather broad, laterally-angulate, black vittæ on the disc excepted), coxæ (the anterior pair excepted), and legs testaceous; the head and prothorax very sparsely, minutely punctate, the elytra closely, finely punctured and rather strongly verrucose. Head comparatively short, much narrower than the prothorax, transversely depressed between the eyes anteriorly; antennæ short, serrate. Prothorax much broader than long, convex, rounded at the sides. Legs hairy.

♂. Antennæ longer and stouter, joints 4-10 more or less infusate above, 4-10 rounded at their inner apical angle; head (Pl. XIII. fig. 4) not, or scarcely, wider than in ♀, with a broad, deep, transverse excavation between the eyes above, which is limited on each side by an oblique sinuous ridge, the excavation (two testaceous spots excepted) black and opaque within, bifoveate in front, and interrupted at the middle by a short longitudinal plica; prothorax somewhat produced in the middle in front; anterior tarsi simple, 5-jointed.

Length 5-5½ mm. (♂ ♀.)

*Hab.* S. AFRICA, Grootfontein, Middelburg, Cape Province (*Mus. Brit.*: ♂ ♀), Willowmore and Hex River (*Mus. Cape Town*: ♂ ♀), Transvaal (*ex coll. Fry*).

Twelve examples seen, five of which are males: six from Willowmore were captured by Dr. Brauns on Aug. 15th, 1902; four from Grootfontein, received at the British Museum during the present year, are labelled as having been found with *H. clypeolus*, Er. The simple anterior tarsi and the relatively small head bring this species near *H. hirtus*, F. (= *oculatus*, Thunb.), from which it is separable by the sharply angulato-bivittate prothorax and the verrucose elytra, the ♂ with a black cephalic cavity and a non-cristate prothorax.

3. *Hedybius billbergi*.

♂. *Malachius billbergi*, Thunb. in Schönherr's Syn. Ins. i. 2, p. 79 (1806)<sup>1</sup>.

*Hedybius elongatus*, Er. Entomographien, p. 96 (♀) (1840)<sup>2</sup>.

Var. *Hedybius elongatas*, var. *luteonotatus*, Pic, L'Echange, xxvii. p. 157 (♂) (1911)<sup>3</sup>.

*Hedybius* sp.?, Dixey & Longstaff, Trans. Ent. Soc. Lond. 1907, p. 380<sup>4</sup>.

♂. Head (Pl. XIII. fig. 5) broad, testaceous between and before the eyes, black at the base, the epistoma metallic; with a very deep oblique excavation on each side between the eyes and a transverse one in the centre, the former bordered externally by a very prominent oblique ridge and the central one by two small tubercles in front. Antennæ (Pl. XIII. fig. 5a) long, joints 1-6 (except 1 above and the basal half of 5) testaceous, 7-11 black, 2 short, 3 much longer and stouter, 4 shorter than 3, dentate within, 5 elongate, abnormal, constricted at the middle, and with the basal portion dentate within, 6 not longer than 4, subdentate, 7-11 elongate, 7-10 widened, subtriangular, 7 slightly dentate at the tip within. Anterior tarsi simple.

♀. Head smaller, metallic; antennæ short, rather slender, joints 1-6 (except 1 above) more or less testaceous.

*Hab.* S. AFRICA, Blauwberg, Saldanha River, and Kalk Bay (*Mus. Cape Town*), Cape of Good Hope<sup>1 2</sup> (*Mus. Brit.*), Rapenburg, Cape Flats (*R. E. Turner: x. 1920*), Simons Bay<sup>4</sup> (*G. B. Longstaff, in Mus. Oxon.*); E. AFRICA<sup>3</sup>.

A long series of both sexes of this common Cape insect has been lent me by Dr. Péringuey. The ♂ is readily distinguished from the same sex of *H. smaragdulus* by the abnormally formed, basally maculate antennæ, and the metallic epistoma; the ♀ by the paler basal joints of the antennæ. Thunberg's type (♂?) has paler tibiæ and tarsi, but no reliance need be placed on this character, the tarsi, at least, being testaceous in some of the examples before me.

#### 4. *Hedybius smaragdulus*.

*Hedybius smaragdulus*, Er. Entomographien, p. 96 (♂) (1840).

♂. Head (Pl. XIII. fig. 6) broad, bluish-black at the base, for the rest (the labrum excepted) flavo-testaceous, deeply excavate and transversely trifoveate in the middle, obliquely raised on each side between the eyes, the flavous portion smooth. Antennæ (Pl. XIII. fig. 6a) long, black, joints 2-5 sometimes obscurely reddish, 2 very short, 3 and 4 moderately elongate, subequal, 5 much longer than 4, 6 shorter, not longer than 3, 7-11 elongate, 7-10 wider than the preceding joints, subtriangular. Anterior tarsi simple.

♀. Head smaller, metallic; antennæ short, rather slender, joints 6 and 7 subequal.

*Hab.* S. AFRICA, Cape of Good Hope (*Mus. Brit., coll. Fry*), Cape Town, Blauwberg, Saldanha Bay (*Mus. Cape Town*), Rapenburg (*R. E. Turner*: x. 1920).

I have seen numerous examples of this species, including ten males. It occurs with the much commoner *H. billbergi*, and is distinguishable therefrom by the smooth, flavous epistoma, and the normally-formed antennæ (joint 5 being simply elongated) of the ♂. The red space on the anterior part of the prothorax is perhaps more strongly bilobed posteriorly than in *H. billbergi*. Three smaller females from Cape Town (*Péringuey*), nigro-æneous in colour, thickly clothed with whitish pubescence and long, erect, darker hairs, with more densely rugulose elytra, and the anterior and posterior margins of the prothorax very narrowly testaceous, may represent another allied species?

#### 5. *Hedybius variicornis*.

*Hedybius variicornis*, Boh. Ins. Caffraria, i. p. 467 (♂ ♀) (1851)<sup>1</sup>; Gorb. Ann. & Mag. Nat. Hist. (7) vii. p. 369 (♂ ♀) (1901)<sup>2</sup>; P. Z. S. 1905, p. 277<sup>3</sup>.

*Hedybius fasciculatus*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 173 (♂ ♀) (1900)<sup>4</sup>; Pic, L'Echange, xxiii. p. 131 (1907)<sup>5</sup>.

♂. Antennæ long, moderately stout, variable in colour, usually with the basal four or five joints testaceous—a shining black spot or streak on the upper surface of 1 and 2, or on 2 only (wanting in one Natal ♂), excepted,—the other joints infuscate or black, 3 and 4 immaculate beneath, equal, 5–11 elongate; head (Pl. XIII. fig. 7) about as broad as the prothorax, flavous in front, the base and inter-ocular excavation black, the latter deep, bifoveate and obliquely plicate within, bordered on each side by a small angular elevation, and bearing a matted or scattered tuft of long, erect, black hairs in the middle; prothorax, apical half of abdomen, and legs (except the tarsi and posterior femora in some specimens) testaceous or rufo-testaceous; elytra blue or green, densely punctured; anterior tarsi simple.

♀. Antennæ short, rather slender, varying in colour as in ♂; head with the basal half black; pygidium black.

*Hab.* S. AFRICA, River Gariep<sup>1</sup>; Salisbury<sup>2,3</sup>, Lonely, and Mwendwa, Rhodesia; Makapan<sup>4</sup>, Bulawayo<sup>5</sup>, Transvaal; Malvern, Frere, and Estcourt, Natal; Nyasaland.

I have seen about eighty examples of this species, including the types of Boheman and Abeille de Perrin, twenty

males in all. It is recognizable amongst the allied forms by its small size, reddish prothorax, and the nigro-maculate one or two basal joints of the antennæ; the ♂ with the inter-ocular excavation bifoveate and bearing a tuft of erect black hairs, and the anterior tarsi quite simple.

Paired examples from Mwendwa are contained in Dollman's collection.

In one ♀ from Bulawayo the prothorax has an oblong blackish patch on the disc.

### 6. *Hedybius lividus*.

*Hedybius lividus*, Gorh. Ann. Mus. Genova, xviii. p. 598 (♂ ♀) (1883).

♂. "Capite fronte lamelli duplici dentiformi approximata; epistomate retrorsum in cornu duo producto, antennis articulis tertio ad sextum serratis intus nigro acuminatis."

*Hab.* ABYSSINIA (*Mus. Genoa*; *Mus. Brit.*).

A ♀ captured by Raffray is contained in the British Museum. It is narrower than *H. albipennis*, Gorh. (♀); the prothorax is more angulate laterally and the erect intermixed hairs on the elytra are soft, fine, and wholly pale. Dr. Gestro lent me a ♂ of it some time ago, but this specimen is not available now for study. The anterior tarsi in this and the following species are probably simple in the two sexes, as in *H. formosus*; their structure was not noted by Gorham.

### 7. *Hedybius albipennis*.

*Hedybius albipennis*, Gorh. Ann. & Mag. Nat. Hist. (7) vii. p. 360 (♂ ♀) (1901).

♂. "Antennis sesquilongioribus, ad apicem magis infuscatis; capitis vertice lamina transversa irregulari utrinque subinvoluta, occipite ab oculis fortiter excavato, in medio quasi bicarinato, postice elevato plano."

*Hab.* S. AFRICA, Salisbury [type] and Bulawayo, Rhodesia (*Dr. G. A. K. Marshall*), Kashitu, north of Broken Hill, N.W. Rhodesia (*H. C. Dollman*: 26. iv. 1915).

A robust, broad, testaceous insect, with whitish elytra, the abundant pubescence on the latter intermixed with long, scattered, erect, black setæ, a character separating *H. albipennis* from the very closely allied Abyssinian *H. lividus*. Eighteen specimens are before me, all ♀♀; the ♂-type was retained by the author, and it has presumably passed into the collection of M. Pic.

8. *Hedybius formosus*.

*Malachius formosus*, Reiche, in Galinier's Voyage Abyss., Ins. p. 290, t. 17. fig. 8.

*Hedybius formosus*, Gorh. Ann. Mus. Genova, xviii. pp. 597, 598 (♂ ♀) (1883).

*Hedybius formosus*, var. *bi-interrupta*, Pic, L'Echange, xxvi. p. 5 (1910).

♂. Head (Pl. XIII. fig. 8) flavous, very broad, wider than the prothorax, the inter-ocular excavation deep, sharply defined, divided by a strong, sinuous, transverse ridge, and bordered laterally by an angular, externally-convex, vertical, supra-ocular elevation, the excavation with a small, smooth, triangular cavity in the middle, in front of which is a short convex plica; antennæ rather slender, long, serrate; prothorax angularly dilated laterally, the margins strongly reflexed; anterior tarsi simple, 5-jointed; pygidium testaceous.

♀. Head not so wide, flattened, black in its basal half; antennæ more slender, short; pygidium black; prothorax less angulate at the sides.

*Hab.* ABYSSINIA (*Mus. Genoa*; *Mus. Brit.*).

One ♂ and two ♀ ♀ seen. There appears to be a long series of it in the Genoa Museum. *H. limbatipennis*, Pic (1914), from the same country, is said to be near the present species.

9. *Hedybius maculifer*.

♀. *Malachius bimaculatus*, Boh. Ins. Caffraria, i. p. 465 (1851) (nec Erichson, 1840)<sup>1</sup>.

*Hedybius* (?) *maculifer*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 174 (♀) (1900)<sup>2</sup>.

♂. Head (Pl. XIII. fig. 9) as wide as the prothorax, testaceous in its anterior half, very deeply, transversely arcuate-excavate between the eyes, the excavation obliquely plicate on each side in front, extended in the middle anteriorly, and with a small raised point in the centre; antennæ short, rather stout, moderately serrate, joints 1-4 testaceous beneath; anterior tarsi 5-jointed, simple.

♀. Head black, flattened.

*Hab.* S. AFRICA (*Mus. Cape Town*), River Limpopo<sup>1</sup>, Hamman's Kraal, near Pretoria<sup>2</sup>.

Dr. Péringuey has lent me the type (♀) of *H. maculifer*, Ab., and also two males of the same species. The former agrees well with the description of *H. bimaculatus*, Boh., the type of which must be ♀. A small (length 3-3¼ mm.),

hairy, nigro-violaceous insect, with a large orange-yellow, outwardly-dilated patch at the sides of the elytra before the middle, as in *H. (Malachius) erichsoni*, Boh. The cephalic cavity is deep and broad, and the vertex is without tubercles. The antennæ are short in both sexes.

10. *Hedybius flavinasus*, sp. n.

♂. Moderately elongate, rather convex, shining, closely pubescent without longer erect hairs intermixed; black, the basal joints of the antennæ testaceous, the head in great part flavous (the base only black), the elytra violaceous, with a common, broad, angulate, outwardly-dilated orange fascia before the middle; the head at the base and the prothorax closely, very minutely, the elytra finely, distinctly, punctured. Head (Pl. XIII. fig. 10) as broad as the prothorax, the flavous anterior portion glabrous, almost smooth, and with a deep, transverse, arcuate excavation between the eyes anteriorly, the epistoma also excavate down the middle and bearing an erect compressed spine in the centre behind; antennæ rather short and stout, serrate. Prothorax transverse, convex, rounded at the sides. Elytra comparatively short, slightly widened posteriorly, broader than the prothorax. Anterior tarsi 5-jointed, simple.

Length  $2\frac{4}{5}$  mm.

*Hab.* S. AFRICA, Bulawayo, Matabeleland (*Dr. G. A. K. Marshall*: xii. 1903).

One male. Closely related to *H. maculifer*, Ab. (= *bimaculatus*, Boh., nec Er.), and with similar ♂-characters; the elytra much more finely punctured, and with a complete orange ante-median fascia, the hairs much shorter and less erect.

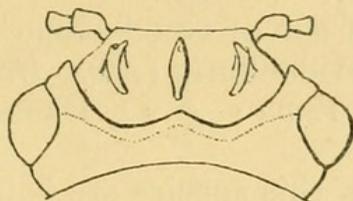
11. *Hedybius trilobatus*, sp. n.

♂. Moderately elongate, slightly widened posteriorly, shining, sparsely cinereo-pubescent, the elytra with long, soft, pallid, semierect hairs; black with a slight bluish lustre, the antennal joints 2-4 in part, the head (the basal portion behind the median cavity excepted), the elytra (except at the base and apex), and the dorsal surface of the abdomen to about the middle, testaceous or orange-red, the rest of the elytra nigro-violaceous—the basal fascia narrow, widened towards the suture, the apical patch broader, bi-excised anteriorly; the basal portion of the head and the prothorax sparsely, minutely, the elytra closely, rather

coarsely punctate. Head (text-fig. 1) a little broader than the prothorax, the frontal excavation broad, very deep, almost smooth and opaque within, trilobate anteriorly—the median lobe erect, the others oblique, angulate, compressed, dentate at the tip,—limited on each side by an angular supra-ocular prominence, and basally by a bisinuate ridge; antennæ very long, rather slender, the outer joints elongate, subfiliform. Prothorax transverse, obliquely narrowed posteriorly. Elytra moderately long, much wider than the prothorax, parallel at the base, rounded at the tip. Legs rather slender; anterior tarsi 5-jointed, simple.

Length  $3\frac{1}{2}$  mm.

Text-fig. 1.



Head of *Hedybius trilobatus*, ♂.

*Hab.* SOUTH AFRICA, Cape of Good Hope (*Mus. Brit.*, ex coll. Fry).

One male. Separable from the males of *H. maculifer*, Ab. (= *bimaculatus*, Boh., nec Er.), and *H. flavinasus*, the only allied S. African forms known to me, by its larger size, the very long antennæ, the more extended, anteriorly trilobate frontal excavation, the greater development of the rufo-testaceous portion of the elytral surface, the coarser puncturing of the latter, &c. These insects bear some resemblance to various species of *Dinometopus*, which have a basally-constricted longer prothorax, &c.

## 12. *Hedybius clypeolus*.

*Hedybius clypeolus*, Er. Entomographien, p. 95 (♀) (1840)<sup>1</sup>.

*Hedybius coronatus*, Fairm. Ann. Soc. Ent. Fr. 1888, p. 181 (♂ ♀)<sup>2</sup>.

♂. Antennæ moderately long, strongly serrate, black, joints 1–5 partly testaceous (1 nigro-lineate above, 2–5 black along their inner edge); head broad (Pl. XIII. figs. 11, 11 a), flavous in front, the inter-ocular space and vertex testaceous, nigro-maculate before and behind the lateral prominences, the latter also with a black spot within, the inter-ocular cavity very deep, limited on each side by a stout, vertical, horn-like elevation, which is produced into

a curved hook at the tip, the face large, tumid, truncatobidentate above, each tooth bifid at the apex; prothorax strongly transverse, metallic green, the anterior and lateral margins narrowly, the basal margin rather broadly, testaceous; elytra green or bluish-green, densely rugulose punctured, subparallel; abdomen metallic; legs set with very long hairs, testaceous, the posterior tibiæ to near the tip, and the intermediate tibiæ at the base, black, the posterior tarsi sometimes infuscate; anterior tarsal joints 1 and 2 imbricate, 2 nigro-pectinate at the tip.

♀. Antennæ short, rather slender, feebly serrate, testaceous to near the tip; head angularly viridi-bimaculate at the base.

Length  $5\frac{1}{2}$ – $6\frac{1}{2}$  mm. (♂ ♀.)

*Hab.* S. AFRICA, Cape of Good Hope<sup>1</sup> (*type of Erichson*: ♀), Grootfontein, Middelburg (*Mus. Brit.*: ♂), Kimberley, Prieska (*Mus. Cape Town*: ♂ ♀), Damara<sup>2</sup> (*types of Fairmaire*: ♂ ♀).

Nine specimens of this species are before me: 5 ♂♂ and 4 ♀♀. The latter agree with Erichson's description of *H. clypeolus* (his type wanting the posterior legs), except in their rather larger size, and the two sexes with Fairmaire's *H. coronatus*. The ♂ anterior tarsi appear at first sight to be 4-jointed, owing to the second joint being articulated to the first near the base. The posterior tibiæ are in great part black in both sexes. The Grootfontein examples were found with *H. verrucosus* upon a species of *Melanthus*. Figs. 11, 11 a (Pl. XIII.) show the head from in front and behind.

### 13. *Hedybius lamelliger*, sp. n.

♂. Elongate, subopaque, the elytra shining, clothed with long, erect, black bristly hairs intermixed on the elytra with an abundant whitish pubescence; head (the interocular cavities and base excepted, which are black), antennæ, palpi, prothorax (the black fovea in front excepted), and legs (except the intermediate tarsi in part, and the posterior tibiæ and tarsi entirely, which are infuscate) testaceous or flavous; scutellum, metasternum, and abdomen metallic, the elytra blue; the prothorax almost smooth, the head very finely, the elytra densely, rugulose punctured. Head (Pl. XIII. fig. 12) broad, a little narrower than the prothorax, long as seen from in front (owing to the broad clypeus, and the vertical trifold face), with two large, black, sharply-defined, plicate, subtriangular cavities between the

eyes above, the cavities separated by an elongate, parallel-sided, concave lamella, which is curved upwards into a short horn-like prominence behind; antennæ long, stout, joints 3-5 strongly serrate, 6-10 pectinate. Prothorax nearly as long as broad, rounded-subquadrate; deeply transversely foveate, binodose, and angularly raised in the middle in front, and with a tuft of short hairs arising from the central prominence. Elytra parallel, blunt at the tip. Legs hairy; anterior tarsal joints 1 and 2 thickened, 2 extending over the base of 3 above, black at the apex.

*Var.* ♂. Antennal joints 3-10 strongly, acutely serrate; prothorax shorter, transverse; elytra green.

♀. The basal half of the head, an elongate, scutiform patch on the disc of the prothorax, and the elytra green; the prothorax obsoletely bi-impressed in the centre in front.

Length 5-5½ mm. (♂ ♀.)

*Hab.* S. AFRICA, Ceres [type, ♂], O'Okiep [♂ ♀, var.] (*Mus. Cape Town*).

The specimen, ♂, selected as type was captured by Mr. L. M. Lightfoot in 1918, the others, 2 ♂♂ and 1 ♀, were found in November 1885. The variation in the ♂ antennal structure is unaccompanied by any difference in the form of the head in the same sex, and the Ceres and O'Okiep examples must therefore be treated as forms of the same species. *H. lamelliger* is not very closely allied to any of the *Hedybii* described by Gorham and others, but the following, *H. plicatilis*, is nearly related to it.

#### 14. *Hedybius plicatilis*, sp. n.

♂. Elongate, somewhat shining, thickly clothed with whitish pubescence intermixed with long, erect, blackish hairs; bluish-green, the head (except the frontal cavities and base, which are black) and prothorax (except a large triangular patch on the basal half of the disc, the transverse fovea in front, and a streak along the sides extending from the middle forwards, which are black or metallic) flavous, the antennæ (a streak on joints 1 and 2 excepted) and palpi (the tip excepted), and the intermediate tibiæ and tarsi, testaceous, the posterior tibiæ and tarsi slightly infuscate; the head and prothorax very finely, the elytra densely, rugulose punctured. Head (Pl. XIII. fig. 13) broad, narrower than the prothorax, with two extremely large, deep, oval excavations between the eyes above, the excavations separated by a long narrow lamella, which is raised and

spoon-shaped behind, and bordered on each side by a slender rectangular plica (the three together forming a cruciform flavous prominence), the space in front of the two excavations raised (the face appearing long and bifid above, as seen from the anterior aspect); antennæ long, stout, pectinate. Prothorax transverse, obliquely narrowed from the middle to the base; abruptly depressed, deeply transversely foveate, and produced into a flattened, raised, horn-like prominence in the centre in front, the fovea preceded by an angular elevation. Elytra wider than the prothorax, subparallel, bluntly rounded at the apex. Anterior tarsal joints 1 and 2 thickened, 2 raised above the base of 3, black at the tip.

Length 5 mm.

*Hab.* S. AFRICA, Beaufort West (*Purcell, in Mus. Cape Town*).

One male. A very remarkable insect, difficult to describe, and comparable only with *H. lamelliger*, from which it is at once distinguished by the shorter, posteriorly-narrowed, sharply trimaculate prothorax, the metallic femora, and the elongate cavities on the head (these appearing triangular when viewed in profile), which are separated by a narrower anteriorly-depressed lamella, this being bordered by J-L-shaped flavous folds, together forming a cruciform elevation.

### 15. *Hedybius marshalli*.

*Hedybius marshalli*, Gorb. Ann. & Mag. Nat. Hist. (7) v. p. 81 (♂ ♀) (1900)<sup>1</sup>.

? *Hedybius inarmatus*, Pic, Bull. Soc. Ent. Fr. 1917, p. 234 (♀)<sup>2</sup>.

♂. Antennæ very long, rather slender, wholly testaceous, joint 3 perceptibly longer than 4, 3 and 4 without smoother area beneath; head (Pl. XIII. fig. 14) very broad, in great part testaceous, the inter-ocular excavation extremely deep, transversely nigro-lineate within, the vertical juxta-ocular prominence compressed, dentiform, rather small, and separated from a larger, oblique, black elevation behind it by a deep oblique groove; prothorax transversely subquadrate, notched at the sides before the base, with an extremely large, broad, triangular, opaque space on the disc, extending from near the anterior margin to the base, for the rest testaceous; elytra blue or bluish-green, densely punctate; abdomen and legs testaceous; anterior femora thickened, obliquely sulcate and strongly binodose at the apex above; anterior tarsal joint 2 slightly raised over the base of 3, nigro-pectinate at tip.

♀. Antennæ short, rather slender, testaceous; head with an anteriorly-bilobed black mark on each side at the base; prothorax shining, rounded at the sides, with two coalescent oblong black spots on the disc; pygidium testaceous, sometimes obsoletely sulcate at tip and with a small black spot on each side.

*Hab.* S. AFRICA, Estcourt<sup>1</sup>, Natal (*Mus. Brit.*: ♂ ♀), Port Natal<sup>2</sup>, Mpanzi Mvoti (*Mus. Durban*: ♀).

Six ♂♂ and five ♀♀ seen, the latter corresponding with the description of *H. inarmatus*, Pic. The males have two black angular elevations on each side of the head, and a laterally-notched prothorax, the disc of which is almost covered by a very large, triangular, opaque, black patch. The head is nigro-maculate on each side at the base in both sexes. The two small spots on the pygidium and the apical depression are conspicuous in one of the females from Estcourt.

#### 16. *Hedybius curvidens*, sp. n.

♂. Elongate, shining, clothed with pallid or whitish pubescence intermixed on the elytra with erect, black, bristly hairs; antennæ (Pl. XIII. fig. 15 *b*) about as long as the body, moderately stout, tapering outwards, joints 1-6 (a black line on 1 above, and on 1-5 beneath, excepted) testaceous, for the rest black, 3 and 4 short, 4 triangular, longer and wider than 3, 5 elongate, twice the length of 4 and broader than 5, parallel-sided, 6-10 elongate-subtriangular; head (Pl. XIII. figs. 15, 15 *a*) broad, flavous, the base, eyes, and median cavity black, the cavity very deep, broad, opaque within, and limited anteriorly by an irregular V-shaped ridge, in front of which are three foveæ, the flavous raised walls of the excavation curving backwards on each side above the eyes and terminating in a stout, sinuate, sharp tooth; prothorax transversely subquadrate, dentate at the sides behind the middle, the lateral margins obliquely reflexed and ciliate anteriorly, the dorsal black patch very large, scutiform, dentate in the middle behind, the rest of the surface testaceous; elytra subparallel, blue, densely, rugulosely punctured; metasternum metallic; abdomen and legs (except the tarsi of the intermediate pair, and the bases of the tibiæ, apices of the femora, and tarsi of the posterior pair, which are black) testaceous; anterior tarsal joints 1 and 2 thickened, 2 raised above the base of 3, black at the tip.

♀. Antennæ short, rather slender, joints 1-5 (a darker

streak on 1 above excepted) testaceous, 6-11 black; head black in more than its basal half; prothorax rounded at the sides, the dorsal black patch reduced to two oval spots; elytra slightly widened posteriorly; pygidium nigro-maculate.

Length 5-5½ mm. (♂ ♀.)

*Hab.* NATAL, Ulundi, Drakensburg (*Dr. G. A. K. Marshall*: ♂ ♀: i. 1893), Frerè (*Mus. Cape Town*: ♂ ♀).

Two males and three females. A species easily recognizable by the structure of the antennæ, head, and prothorax in the ♂. The sides of the prothorax are dentate in this sex, as in *H. dentatithorax*, Pic. The ♀ may be known from that of *H. amœnus*, as here restricted, by the wholly black outer joints of the antennæ and the black posterior knees. The long parallel-sided fifth antennal joint of the ♂ is a striking character. The nigro-maculate pygidium of the ♀ is common to many *Hedybii* with testaceous abdomen. Figs. 15, 15 a (Pl. XIII.) show the head from in front and behind.

#### 17. *Hedybius dentatithorax*.

*Hedybius dentatithorax*, Pic, Bull. Soc. Ent. Fr. 1917, p. 234 (♂ ♀)<sup>1</sup>.  
? *Hedybius amœnus*, Gorh. P. Z. S. 1905, ii. p. 277 (part.)<sup>2</sup>.

♂. Antennæ (Pl. XIII. fig. 16 a) nearly as long as the body, rather slender, testaceous, joints 3 and 4 together about as long as 5, each with a polished, concave, black area beneath; head (Pl. XIII. fig. 16) broad, testaceous, black at the base (a spot in the middle of the vertex excepted), the inter-ocular excavation black along the centre, pubescent, extremely deep, with a recurved, dentiform plica in the middle in front and a smooth fovea behind it, the juxta-ocular elevations stout, angular, concave within (the excavation as seen from the anterior aspect limited in front by a curved ridge, which extends backward over and around the lateral prominences, enclosing an oval concave space); prothorax transversely subquadrate, dentate at the sides behind the middle, and with the lateral margins obliquely reflexed and ciliate anteriorly, the dorsal black patch transverse, dentate in the centre behind, the rest of the surface testaceous, the margins sometimes with a small black spot; elytra blue or green, densely, rugulosely punctured; abdomen, coxæ, and legs testaceous, the metasternum green; anterior tarsal joint 2 produced over the base of 3, black at the tip.

♀. Antennæ short, more slender, joint 11 black at the

tip; head with about the basal half black, the black portion biangulate anteriorly; prothorax subangulate at the sides, the tooth wanting, the dorsal black patch incised in the middle in front and a little smaller; pygidium testaceous.

Length  $4\frac{1}{2}$ -5 mm. ( $\sigma$   $\varphi$ .)

*Hab.* S. AFRICA, "Interior" (*Mus. Brit., ex coll. Earl of Derby*:  $\sigma$   $\varphi$ ); Bothaville<sup>2</sup> [ $\sigma$   $\varphi$ ], Newcastle, Natal [ $\sigma$   $\varphi$ ], Smithfield, Orange River [ $\varphi$ ], Transkei [ $\varphi$ ] (*Mus. Cape Town*); Transvaal<sup>1</sup> (*types of Pic*:  $\sigma$   $\varphi$ ).

The twelve specimens (six of each sex) from which the above particulars are taken agree with the description of *H. dentatithorax*, except that the author does not allude to the polished black space beneath the third and fourth antennal joints in the  $\sigma$ . The only other S. African species with toothed sides to the prothorax represented in the collections before me is *H. curvidens*, a very different insect. The  $\varphi$  is extremely like that of *H. marshalli*, Gorb. (= *inarmatus*, Pic), the latter having the black basal portion of the head reduced to two spots. Fig. 16a (Pl. XIII.) shows a  $\sigma$  antenna from beneath.

#### 18. *Hedybius amœnus*.

*Hedybius amœnus*, Gorb. in Distant's Nat. in Transvaal, p. 197, pl. i. fig. 2 ( $\varphi$ ) (1892)<sup>1</sup>; Ann. & Mag. Nat. Hist. (7) v. p. 80 ( $\sigma$   $\varphi$ ) (1900) (part.)<sup>2</sup>; [? P. Z. S. 1905, ii. p. 277 ( $\sigma$   $\varphi$ )<sup>3</sup>].

? *Hedybius atropygus*, Pic, Mélanges exot. entom. xxv. p. 2 ( $\varphi$ ) (1917)<sup>4</sup>.

$\sigma$ . Antennæ very long, rather slender, tapering outwards, testaceous, joints 3 and 4 widened, subequal, rounded at their inner apical angle, each with a long, shining, black area beneath, 5-11 elongate, nigro-maculate at the apex above; head (Pl. XIII. fig. 17) testaceous, black at the base and in the centre of the inter-ocular cavity, the latter broad, pubescent, deeply, transversely excavate and fasciculate in the middle anteriorly, and limited on each side by a stout, erect, angular prominence, in front of which is a tuft of hairs; prothorax testaceous, with a broad, oblongo-quadrate, posteriorly-bifurcate, black discoidal patch; elytra and metasternum blue or bluish-green; legs and abdomen testaceous, the pygidium included, the posterior tarsi sometimes infusate; anterior tarsal joint 2 raised above the base of 3, nigro-pectinate at tip.

$\varphi$ . Antennæ short, more slender, testaceous, joints 6-11 more or less black or infusate at the tip; head black in its basal half, the black portion biangulate in front; prothorax with the discoidal patch more or less cleft or divided

down the middle, sometimes followed by two small spots; pygidium black.

*Hab.* S. AFRICA, Estcourt<sup>2</sup> and Frere, Natal (*Dr. G. A. K. Marshall*: ♂ ♀), Pretoria<sup>1</sup>, Transvaal (*type*, ♀, of Gorham), Johannesburg and Florida, Transvaal, Parys, Reenens Pass, Vredeport (*Mus. Cape Town*: ♂ ♀), Kroonstad, Orange River<sup>4</sup> (*Mus. Brit.*), Reenens (*Mus. Durban*: ♂ ♀).

*H. amœnus*, as here restricted, may be described as a form of *H. plagiocephalus*, Er., with the antennal joints 3 and 4 widened, and with an elongate shining black area beneath, and 6-11 sharply nigro-maculate at the tip, in the ♂; the ♀ also has the outer joints similarly maculate. Nine ♂♂ from various localities are before me, two of them having an additional dark mark at the sides of the prothorax. The specimens from Bothaville (♂ ♀), subsequently referred by Gorham<sup>3</sup> to *H. amœnus*, probably belong to *H. dentatithorax*, Pic.

### 19. *Hedybius bimaculatus*.

*Hedybius bimaculatus*, Er. Entomographien, p. 94 (♀) (1840)<sup>1</sup>.

*Hedybius maculicornis*, Pic, L'Echange, xxvii. p. 157 (♂) (1911)<sup>2</sup>.

♂. Antennæ very long, tapering towards the tip, moderately serrate from joint 3 onwards, testaceous, joints 3-11 at the apex above and beneath, and 1 with a streak above, black (the black mark beneath 3 and 4 rugulose and opaque), 3 and 4 triangular, subequal, each a little shorter than 5, 5-11 elongate; head (Pl. XIII. fig. 18) black, except in front, very deeply eroso-excavate between the eyes, the excavation finely pubescent within, raised and fasciculate in the centre in front, limited anteriorly by a prominent curved ridge and laterally by a sharp, angular, ciliated, erect tooth, the face rather short; prothorax rounded at the sides, testaceous, with two small black spots on the disc; elytra and metasternum blue or green, the former rather coarsely punctured; legs and abdomen testaceous; anterior tarsal joints 1 and 2 thickened, 2 extending over the base of 3, black at the tip.

♀. Antennæ short, more slender, the joints from 4 onwards more or less infuscate or black at the apex, above and beneath; head with the exposed basal half black, testaceous in front; prothorax as in ♂; pygidium black.

*Hab.* S. AFRICA<sup>2</sup>, Cape of Good Hope<sup>1</sup> (*type* of Erichson; *Raffray*, in *Mus. Cape Town*; *Mus. Oxon.*), Stellenbosch, Ceres, Rondebosch, Mooresbosch, Hopefield (*Mus. Cape Town*).

Redescribed from a pair from Stellenbosch (mounted on the same piece of card) communicated by Dr. Péringuey, the sexes agreeing with the respective published descriptions; three other males are also available for examination, the one from Ceres 4 mm. only in length. Very like *H. amœnus*, Gorh., but easily separable, in the male sex, by the absence of the shining oblong black areas beneath the antennal joints 3 and 4 (these joints being simply maculate above and beneath in *H. bimaculatus*), the more rounded sides of the prothorax in both sexes, the discoidal marking reduced to two small spots, and the more coarsely punctured elytra. Two ♀♀ in the British Museum are without locality-label. The ♂ in the Oxford Museum, from an old collection, is correctly named.

## 20. *Hedybius quadricornis*.

*Hedybius quadricornis*, Gorh. P. Z. S. 1905, ii. p. 276 (♂ ♀).

♂. Antennæ long, stout, tapering, testaceous, joints 1-11 nigro- or fusco-maculate at the tip above, 3-10 triangular, 3 as long as 4; head (Pl. XIII. figs. 19, 19*a*) broad, testaceous, green at the extreme base, very deeply eroso-excavate, the cavity limited on each side of the anterior margin by two shining tuberculiform prominences, and laterally by two horn-like processes—the upper one very stout, erect, nigro-setose in front, the lower one curved downward, long, more slender, ciliate at the tip; prothorax arcuately produced in the middle in front; anterior tarsal joint 2 with a claw-like prolongation extending over the base of 3; abdomen testaceous at the apex, above and beneath.

♀. Antennæ much shorter, rather slender, the basal joints testaceous, the others infusate; pygidium black.

Length (to tip of elytra)  $3\frac{1}{2}$  mm. (♂ ♀.)

*Hab.* S. AFRICA, Willowmore, Cape of Good Hope (*Dr. Brauns*: 1. v. 1903).

A rather small form, with the head (except at the extreme base), prothorax, and legs (the posterior tarsi excepted) testaceous; the elytra greenish or æneous, densely, finely punctate, with a few erect hairs intermixed with the close silvery pubescence; the prothorax convex, dull, minutely punctate. The ♂ cephalic armature is very different from that of any of the allied species. Two pairs of *H. quadricornis* have been lent me for examination by Dr. Péringuey. Figs. 19, 19*a* (Pl. XIII.) show the head from above and in profile.

21. *Hedybius lineaticornis*, sp. n.

♂. Antennæ stout, tapering, nearly as long as the body, joints 1-11 more or less distinctly nigro- or fusco-lineate above, 3 and 4 triangular, each with a shining black area beneath, 4 broader and slightly longer than 3, 5-10 elongate-subtriangular; head (Pl. XIV. fig. 20) broad, flavescent, transversely, sinuately nigro-lineate within the median cavity and black at the base, the excavation deep, pubescent, and divided by a transverse pallid plica, the anterior walls of the cavity curving backwards on each side over the eyes and enclosing an oval depression behind; prothorax testaceous, with two confluent oblong black spots on the disc, the transverse patch thus formed dentate in the middle behind; elytra and metasternum green or bluish-green, the former densely punctured; abdomen and legs testaceous; anterior tarsal joint 2 slightly produced over the base of 3, black at the tip.

♀. Antennæ short, rather slender, joints 6-11 infusate towards their apices; head black in its basal half; pygidium black.

Length  $3\frac{4}{5}$ - $4\frac{4}{5}$  mm. (♂ ♀.)

*Hab.* ORANGE RIVER COLONY, Bloemfontein Kopje and near Norvals Pont (*E. B. Poulton*: ix. 1905), Likhoele, Basutoland, and Smithfield, O.R.C. (*Mus. Cape Town*).

The above description is taken from three pairs captured by Prof. Poulton, a pair from Likhoele, and two males from Smithfield. Pic's "description abrégée" of *H. atropygus* (1917), type ♀, from Orange River, may apply to this species or to *H. amœnus*, the black pygidium being common to the females of these and other allied forms; but in the absence of the ♂ it would be impossible to locate his insect with certainty.

22. *Hedybius deliquescens*, sp. n.

*Hedybius amœnus*, Gorch. Ann. & Mag. Nat. Hist. (7) v. p. 80 (♂) (part.) (1900)<sup>1</sup>.

♂. Antennæ (Pl. XIV. fig. 21 a) long, shorter than in *H. amœnus*, stout, tapering outwards, testaceous, joints 3-6 or 7 nigro-lineate above, 3 and 4 without shining black area beneath, 3 a little narrower than 4, 4-8 somewhat rounded on their inner edge (4-8 not subangulate at the apex as in *H. amœnus*); head (Pl. XIV. fig. 21) broad, testaceous, except at the base, very deeply excavate between the eyes, the excavation with two shining, angular, black spaces and a

central, dentiform, erect plica (the depressed area appearing trisulcate), the juxta-ocular prominences large, dentiform, ciliate anteriorly, the face shorter than in *H. amœnus*; prothorax also shorter and more transverse, broadly explanate at the sides behind the middle and then abruptly narrowed to the base, the black discoidal patch subquadrate, excised in front, the rest of the surface testaceous; elytra blue or bluish-green, with the apex narrowly testaceous in some specimens, densely, rugulose punctate; legs and abdomen testaceous, the metasternum metallic, the pygidium nigrobimaculate; anterior tarsal joints 1 and 2 slightly thickened, 2 black at the tip.

♀. Antennæ short, slender, joints 6–9 obsolete nigromaculate; head with the basal half black; pygidium black.

*Var.* The elytra with two broad bluish-green fasciæ—one basal and the other subapical, the latter narrowly interrupted at the suture,—for the rest testaceous. (♂.)

Length 4 mm. (♂ ♀.)

*Hab.* NATAL, Estcourt<sup>1</sup> and Frere (*Dr. G. A. K. Marshall*); Mfongosi, Zululand (*W. E. Jones, in Mus. Cape Town: var.*).

Described from 5 ♂♂, one ♀, and a ♂ of the maculate variety, the males of the two forms agreeing precisely in their structural characters. Gorham, in his second account of *H. amœnus*<sup>1</sup>, noticed the colour of the antennæ of one of these males; but he failed to observe the difference in structure of the antennæ themselves, as well as that of the head in the same sex. *H. lineaticornis* and *H. braunsi* also have some of the antennal joints similarly lineate above in ♂. The variation in the colour of the elytra is quite exceptional in the present genus.

### 23. *Hedybius braunsi*, sp. n.

♂. Moderately elongate, shining, clothed with whitish pubescence intermixed with long erect hairs; the head and prothorax sparsely, minutely, the elytra densely, finely, rugulose punctured. Antennæ slender, tapering, nearly as long as the body, testaceous, joints 1–4 or 5 nigrolineate above, 3 and 4 without shining black area beneath, 3–5 elongate-subtriangular, equal in length, 6–11 still longer, 11 longer than 10; head (Pl. XIV. fig. 22) broad, flavous or testaceous, black at the base (except at the middle of the vertex), depressed and trifoveate between the eyes (the two anterior foveæ oblique and usually black), the depression limited on each side by a concave, oval, raised

space, the face (as seen from in front) bifoveate above; prothorax strongly transverse, rounded at the sides, testaceous, nigro-bimaculate on the disc, the black markings sometimes narrowly produced behind; elytra and metasternum green, the elytra parallel and comparatively short; legs and abdomen testaceous; anterior tarsal joints 1 and 2 thickened, 2 raised above the base of 3, nigro-pectinate at tip.

♀. Antennæ short, rather slender, testaceous; prothorax with two rather small oblong black spots; pygidium black, not sulcate.

Length  $3\frac{1}{2}$ – $4\frac{1}{2}$  mm. (♂ ♀.)

*Hab.* S. AFRICA, Willowmore (*Dr. Brauns*: ♂ ♀), Prieska [♂], Kimberley [♀] (*Mus. Cape Town*).

Four males and three females, communicated by Dr. Péringuey. A small form resembling *H. lineaticornis*, but differing from it in the more slender, differently-coloured antennæ in the ♂, the third and fourth joints of which are elongate and want the shining black area beneath. The ♀ is smaller than that of *H. erosus*, Er., and wants the deep median sulcus on the pygidium.

#### 24. *Hedybius sculpticeps*.

*Hedybius sculpticeps*, Gorb. P. Z. S. 1905, ii. p. 275 (♂ ♀).

♂. Antennæ (Pl. XIV. fig. 23 *a*) very long, tapering outwards, testaceous, joint 11 at the tip and the inner edge of 2–5 black, 3 longer than 4, 4 triangular, 5–11 elongate, 5 much widened, triangular, 6–10 more or less angulate at their inner apical angle; head (Pl. XIV. fig. 23) large, in great part flavous, very deeply eroso-excavate, the cavity with an X-shaped black patch which is continued backwards to behind the eyes, the face or anterior portion vertical, greatly developed, deeply sulcate in the middle above; anterior tarsal joint 2 raised above 3 at the tip, nigro-pectinate at apex.

♀. Antennæ much shorter, slender, feebly serrate, joints 5–11 more or less infuscate, 3 and 4 subequal, 5 a little wider than 6.

Length (to tip of elytra)  $4\frac{1}{2}$ –5 mm. (♂ ♀.)

*Hab.* S. AFRICA, Willowmore (*Dr. Brauns*: x. 1915).

Dr. Péringuey has lent me a male and two females of this species. The triangular dilatation of the fifth antennal joint is a remarkable character in the ♂. The prothorax is strongly transverse, flavous, with a broad nigro-cæruleous patch extending across the disc; the elytra are densely,

rugosely punctured, brilliantly metallic cupreo-violaceous, tinted with green or blue; the abdomen is metallic; the intermediate and posterior legs are partly infuscate in both sexes. Gorham's measurements must have included the projecting tip of the abdomen. The ♀ of the present insect is very like that of *Philhedonus coriaceus* (Er.), one of the specimens from Willowmore having been mounted with a ♂ of the latter on the same stage.

### 25. *Hedybius plagiocephalus*.

*Hedybius plagiocephalus*, Er. Entomographien, p. 93 (♂ ♀) (1840)<sup>1</sup>.

♂. Antennæ very long, rather slender, slightly tapering outwards, testaceous, joints 3–10 more or less angulate at their inner apical angle, joints 3 and 4 subtriangular, subequal in length, each with a small shining black area at the apex beneath, 5–11 elongate, 11 black at the tip; head (Pl. XIV. fig. 24) testaceous, black at the base and in the centre of the deep pubescent inter-ocular cavity, which is shaped as in *H. amœnus*, and bordered laterally by an angular, erect prominence preceded by a tuft of hairs; prothorax testaceous, with a large black, posteriorly-bifurcate discoidal patch, which is sometimes greatly extended outwards; elytra and metasternum blue or bluish-green; legs and abdomen testaceous, the posterior tarsi infuscate; anterior tarsi as in *H. amœnus*.

♀. Antennæ short, more slender, the outer joints sometimes infuscate; pygidium black.

*Hab.* S. AFRICA (*Mus. Brit.*: ♂), Cape of Good Hope<sup>1</sup> [♂ ♀], Port Elizabeth and Uitenhage [♀] (*Mus. Oxon.*), Howick, Natal [♂] and Caffraria [♀] (*Mus. Brit.*), Algoa Bay [♂ ♀] and Transkei [♂] (*Mus. Cape Town*), Grahams-town (*ex coll. Fry and Mus. Durban*: ♂).

The nine males seen agree with Erichson's description in having long, testaceous antennæ in the ♂, the small black marks beneath joints 3 and 4 being almost invisible from above. The ♀ seems to be separable from that of *H. amœnus* by the non-maculate antennæ. The ♂ cephalic cavity wants the hook-like prominence in the centre in front visible in the allied *H. dentatithorax*, Pic, the ♀ of the latter, moreover, having the pygidium testaceous in the two sexes. The pair from Algoa Bay, communicated by Dr. Péringuey, has enabled me—as was the case with *H. bimaculatus*, Er.—to define with certainty the sexes of the present species.

26. *Hedybius superciliosus*.

♂. *Hedybius superciliosus*, Boh. Ins. Caffraria, i. p. 466 (1851) <sup>1</sup>.

*Hedybius anceps*, Gorh. Ann. & Mag. Nat. Hist. (7) v. p. 81 (♂ ♀) (Jan. 1900) <sup>2</sup>.

*Hedybius prænotatus*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 173 (♂) (Oct. 1900) <sup>3</sup>.

? *Hedybius pygidialis*, Pic, L'Echange, xxvii. p. 157 (♀) (1911) <sup>4</sup>.

♂. Antennæ very elongate, as long as or longer than the body, tapering towards the apex, testaceous, joint 4 with a shining black area beneath (noticed by Boheman and not mentioned by Gorham), 11 black at the tip above; head (Pl. XIV. fig. 25) very broad, the interocular excavation extremely deep, fasciculate in the centre in front, black within, the vertical, anteriorly-ciliate, juxta-ocular prominences testaceous, thickened and very conspicuous; prothorax usually immaculate, rarely with two very small black spots on the disc; elytra blue or bluish-green, densely punctate; abdomen (pygidium included) and legs testaceous; anterior tarsal joint 2 extended over the base of 3, nigro-pectinate at tip.

♀. Antennæ short, rather slender, slightly infusate in their outer half; head black in more than the basal half; pygidium nigro-maculate.

*Hab.* S. AFRICA, River Limpopo <sup>1</sup>, Vryburg in Bechuanaland <sup>3</sup>, Estcourt, Malvern, Frere, and Durban, Natal, Transvaal <sup>4</sup>.

Numerous examples of each sex are before me, the males showing the shining black area beneath the fourth antennal joint noted by Boheman. The type (♀) of *H. prænotatus*, Ab., lent me by Dr. Péringuey, agrees exactly with the same sex of *H. anceps*, Gorh.; the "spots" near the anterior margin of the prothorax in the former are due to portions of the base of the head showing through the transparent chitin of the pronotum, the true spots, which are rarely present in either sex, arising from the convex disc. A ♂ from Natal in the Cape Town Museum is marked as having been compared with Boheman's type.

27. *Hedybius erosus*.

*Hedybius erosus*, Er. Entomographien, p. 93 (♂) (1840) <sup>1</sup>.

*Hedybius sycophanta*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 172 (♀) (1900) <sup>2</sup>.

? Var. *Hedybius multimaculatus*, Pic, Mélanges exot.-entom. xxv. p. 2 (♀) (1917) <sup>3</sup>.

♂. Antennæ very long, tapering outwards, moderately serrate, testaceous, joint 1 streaked with black above, 3 and

4 without black area beneath; head (except in front and behind the eyes) in great part black, broad, the inter-ocular space very deeply eroso-excavate, the excavation shining, with a testaceous mark (which is flavo-ciliate behind) in the middle in front, and limited on each side posteriorly by a stout angular prominence, the epistoma sulcate (Pl. XIV. fig. 26); prothorax testaceous, with a spot beneath the anterior angles, a broad, laterally-excised, posteriorly-bifurcate median vitta, and a small spot on each side of it (these sometimes coalescent with the median stripe) black, the lateral margins in some specimens distinctly notched behind the middle; elytra and metasternum green or bluish-green, the elytra densely, rugulosely, rather finely punctate; legs and abdomen in great part testaceous, the pygidium nigro-bimaculate and deeply sulcate; anterior tarsal joints 1 and 2 thickened, 2 raised above the base of 3, black at the tip.

♀. Antennæ short, rather slender, wholly testaceous; head flattened, testaceous, nigro-bimaculate at the base; prothorax with the black median vitta broken up into two oblong patches on the anterior part of the disc and two small spots near the base (the latter sometimes obsolete), the adjacent spots wanting; pygidium black, deeply sulcate as in ♂.

Length 5-5½ mm. (♂ ♀.)

*Hab.* S. AFRICA, Cape of Good Hope<sup>1</sup>, Matjesfontein<sup>2</sup>, Lion's Head, Cape Town, Willowmore, Dunbrody<sup>3</sup>, Smithfield, Orange River Colony, Likhoele, Basutoland.

An imperfectly known insect, distinguishable in both sexes by the deeply sulcate pygidium. Dr. Péringuey has lent me paired examples of *H. erosus* and the unique type (♀) of *H. sycophanta*, the ♀♀ agreeing perfectly *inter se*. *H. multimaculatus* (type ♀) has two small additional spots at the base of the prothorax. The series in the Cape Town Museum includes six males.

## 28. *Hedybius longicoxis*.

*Hedybius longicoxis*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 172 (♀) (1900).

*Hab.* S. AFRICA, Pretoria.

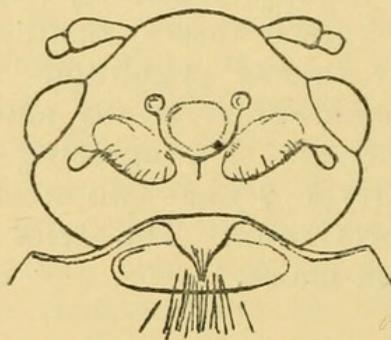
This species, the type (♀) of which is before me, seems to be nearly related to *H. erosus*, Er. It has the head, antennæ (the extreme tip excepted), prothorax, coxæ, legs, and abdomen (the nigro-fasciate pygidium excepted) flavous, the elytra and metasternum bluish-green; the head with two very large patches at the base, and the prothorax with a

broad median vitta (which is cleft in front and obliquely biramose behind), black; the head and prothorax are opaque and the elytra shining, the latter densely, finely punctate; the head is very large. The pygidium is feebly sulcate at the tip (as in some ♀♀ of *H. marshalli*), the groove being much shorter and shallower than in *H. erosus* and *H. sulci-pygus*. The type is labelled, in the author's handwriting, "*Hedybius longicoccyx*," the specific name obviously referring to the shape of the broad prothoracic vitta, which resembles that of *H. erosus*, Er., ♂; the published name "*longicoxis*" must therefore have been a misprint, but, unfortunately, it cannot now be changed.

29. *Hedybius kabetensis*, sp. n.

♂. Elongate, widened posteriorly, shining, thickly clothed with cinereous pubescence which is abundantly intermixed with long, erect, soft, blackish hairs; black, the antennæ (except at the base and apex) testaceous, the prothorax flavous, the elytra with a bluish or greenish lustre, the ventral segments 1-4 wholly or in part rufescent; the head and prothorax extremely finely, the elytra densely, roughly punctate. Head (text-fig. 2) broadly hollowed above and with three large deep foveæ between the eyes, two small foveæ in front of these, and a stout, angular, post-ocular

Text-fig. 2.



Head of *Hedybius kabetensis*, ♂.

prominence on each side, the central fovea bordered posteriorly by an arcuate ridge; antennæ moderately long, serrate. Prothorax transverse, a little wider than the head, rounded at the sides, obliquely narrowed behind, transversely excavate anteriorly, and with the anterior margin produced in the middle into a long, triangular, dentiform, porrect process, the black hairs on the disc condensed into a scattered tuft behind the cavity in one specimen. Elytra moderately elongate. Pygidium constricted and abruptly narrowed

beyond the middle, the produced apical portion deeply subtriangularly emarginate at the tip, and raised on each side from near its base. Anterior tarsal joints 1 and 2 thickened, 2 extending over the base of 3.

♀. Antennæ almost wholly black; pygidium not constricted posteriorly, simple.

Length  $4\frac{1}{2}$  mm. (♂ ♀.)

Hab. E. AFRICA, Kabete (T. J. Anderson: 28. ii. 1918).

Two pairs. Near *H. hamatipygus*, from Rhodesia and the Transvaal, the elytra densely, roughly punctured, and the legs black; the ♂ with antennæ almost wholly testaceous, the frontal cavity deeply trifoveate, and the pygidium black and very differently shaped. *H. cucullatus* and *H. acanthopygus* are also nearly related to the present insect. *Attalus grandis*, Ab., from Abyssinia (type ♀?) (1890), a ♀ of which, found by Raffray, is before me, will perhaps prove to be congeneric, when the ♂ is found.

### 30. *Hedybius sulcipygus*, sp. n.

♀. Moderately elongate, rather broad, widened posteriorly, shining, the elytra clothed with whitish pubescence intermixed with long, erect, blackish bristly hairs, the rest of the surface and the legs with long, soft, pallid hairs; testaceous, the eyes, two small oblong spots on the disc of the prothorax, scutellum, anterior coxæ, and pygidium infuscate or black; the head and prothorax very sparsely, minutely, the elytra densely, finely, subrugulose punctate. Head nearly as wide as the prothorax, transversely excavate anteriorly; antennæ short, slender. Prothorax strongly transverse, rounded at the sides. Elytra moderately long. Pygidium sulcate.

Length  $3\frac{3}{4}$  mm.

Hab. S. AFRICA, Salisbury (Dr. G. A. K. Marshall).

One specimen. Separable from all the allied S. African forms by the wholly testaceous head. The only other species known to me with a sulcate pygidium are *H. erosus*, Er., and *H. longicoxis*, Ab., which are much larger forms, the former having more coarsely punctured elytra. *H. (Malachius) viridipennis*, F., from the Cape of Good Hope, a species not identified by Erichson or myself, has a red head, but its identification with the insect before me is too doubtful to be accepted; the description is as follows:—  
“M. pubescens rufus elytris pectoreque viridi-æneis. . . . Statura omnino præcedentium [*Collops 4-maculatus*, F.]. Caput rufum, immaculatum. Thorax rufus macula mediana

obscura. Elytra viridia, nitida, immaculata. Corpus rufum pectore viridi."

31. *Hedybius hamatipygus*, sp. n.

♂. Elongate, much widened posteriorly, shining, thickly clothed with whitish pubescence intermixed with long, erect, darker hairs; head (the labrum excepted), the terminal three or four outer joints of the antennæ, the scutellum, tibiæ, and the tarsi in part in one specimen black, the rest of the antennæ (except joint 1 above), the prothorax, the femora to near the tip, anterior coxæ, and abdomen rufous or testaceous, the elytra and metasternum blue or bluish-green; the head and prothorax obsoletely punctulate, the elytra uneven and densely, finely, subrugulose punctured. Head (Pl. XIV. fig. 27) narrower than the prothorax, with a very broad, deep, shining, arcuate, frontal excavation, which is limited on each side by a stout, subconical, supraocular tooth, and anteriorly by a bisinuate plica, the plica interrupted in the middle by a short, stout, cleft, ciliate, horn-like prominence; antennæ moderately long, stout. Prothorax transverse, convex, obliquely narrowed posteriorly; produced and transversely excavate in the centre anteriorly, and furnished with a spiniform, erect, matted tuft of black hairs in front. Elytra wider than the prothorax, incompletely covering the abdomen. Pygidium abruptly constricted before the apex; the apical portion narrow, tubulate, deeply semicircularly emarginate, and armed on each side with a stout, blackish, downwardly-curved hook, the terminal ventral segment excavate and armed with similar upwardly-curved hooks. Legs very hairy; anterior tarsal joints 1 and 2 thickened, 2 extending over the base of 3.

Length (to tip of elytra) 4-4½ mm.

*Hab.* S. AFRICA, Pretoria, Transvaal (*L. M. Bucknill*: 1913: type), Salisbury, Rhodesia (*Dr. G. A. K. Marshall*: iii. 1895).

Two males, precisely similar. This species somewhat resembles *H. hirtus*, F. (= *oculatus*, Thunb.), which has simple anterior tarsi, &c. The ♂ pygidial armature is very remarkable.

32. *Hedybius cucullatus*, sp. n.

♂. Moderately elongate, shining, thickly clothed with pallid or whitish pubescence intermixed with long, erect, soft hairs; brassy-black, the head above, the prothorax, and abdomen testaceous, the antennæ infusate with the basal

joints testaceous beneath; the head obsoletely, the prothorax somewhat closely, punctulate, the elytra shagreened and rugulosely punctulate. Head (Pl. XIV. fig. 28) narrower than the prothorax, with an oblique, deep, angulate groove on each side between the eyes above, the two grooves transversely coalescent on the vertex, and each limited behind by a tuberculiform plica, the central space raised, triangular, and truncate posteriorly; antennæ very elongate, rather stout, sharply serrate. Prothorax transverse, obliquely narrowed posteriorly; deeply foveate, binodose, and produced in the middle in front, the anterior margin triangularly raised in the centre. Elytra broader than the prothorax, rapidly widening posteriorly. Legs slender, hairy; anterior tarsal joints 1 and 2 thickened, 2 extending over the base of 3. Pygidium emarginate, and armed with a stout black hook on each side at the tip, the terminal ventral segment bifid.

Length  $3\frac{1}{5}$  mm.

*Hab.* E. AFRICA, W. slopes of Kenya on the Meru-Nyeri Road, alt. 6000–8500 ft. (*S. A. Neave*: ii. 1911).

One male. Near *H. hamatipygus* ( $\sigma$ ), the antennæ very long and sharply serrate, the prothoracic tuft replaced by a triangular elevation of the anterior margin, the legs black, the head testaceous above.

The Abyssinian *Attalus grandis*, Ab. (type  $\text{f}$ ?), is very like the present insect, but it is larger and has longer elytra. The  $\sigma$  cephalic structure is somewhat similar to that of *H. simoni*, Ab., and *H. acanthopygus*.

### 33. *Hedybius acanthopygus*, sp. n.

$\text{f}$ . Moderately elongate, slightly widened posteriorly, shining, thickly clothed with whitish or pallid pubescence intermixed on the elytra with long, erect, bristly hairs; testaceous, the eyes, antennæ (the basal joints in part excepted), scutellum, and tip of pygidium black, the elytra and metasternum blue or bluish-green; the head and prothorax obsoletely punctulate, the elytra densely, very finely subrugulosely punctured. Head narrower than the prothorax, flattened; antennæ short, serrate, rather slender. Prothorax transverse, rounded at the sides. Elytra moderately long.

$\sigma$ . Antennæ longer and stouter, the basal five or six joints usually testaceous; head (Pl. XIV. fig. 29) shining and flavescent anteriorly, subopaque at the base, with a deep, irregular, arcuate furrow between the eyes above, and a

raised, transversely-cordate, deeply bifoveate space in the middle, the lateral margins of which are sometimes elevated into a small tooth behind; pygidium constricted at the apex, and there armed with two long, curved, black spines, the terminal ventral segment with two similar spines; anterior tarsal joints 1 and 2 thickened, 2 extending over the base of 3, black at the tip.

Length  $2\frac{4}{5}$ – $3\frac{1}{5}$  mm. (♂ ♀.)

*Hab.* S. AFRICA, Salisbury, Rhodesia (*Dr. G. A. K. Marshall*: i. 1895, ii. 1906).

Five ♂♂, 3 ♀♀. A small form, with testaceous head, prothorax, and legs, and bluish-green elytra; the male with a transversely-cordate, bifoveate, raised area in the middle of the head, followed by a deep subarcuate groove, and the tip of the abdomen armed with four long black spines. The antennæ vary in colour, and in one ♂ there is a scutiform dark patch on the disc of the prothorax. The ♂ cephalic structure is very like that of *H. simoni*, Ab.

### 34. *Hedybius aulicus*.

♀. *Cistela aulica*, Fabr. Spec. Ins. i. p. 148 (1781)<sup>1</sup>.

*Hedybius aulicus*, Blair, Ann. & Mag. Nat. Hist. (9) v. p. 162 (1920)<sup>2</sup>.

*Cantharis collaris*, Thunb. Dissert. iii. p. 203<sup>3</sup>.

*Hedybius collaris*, Er. Entomographien, p. 95 (♂ ♀) (1840)<sup>4</sup>.

*Attalus rugipennis*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 174 (♀) (1900)<sup>5</sup>.

? *Philhedonus rugulosus*, Gorb. P.Z. S. 1905, ii. p. 278 (♂ ♀)<sup>6</sup>.

*Hedybius* sp.?, Dixey and Longstaff, Trans. Ent. Soc. Lond. 1907, p. 378<sup>7</sup>.

? *Hedybius atripes*, Pic, Mélanges exot.-entom. xxv. p. 2 (1917)<sup>8</sup>.

♂. Antennæ long, rather stout, sharply serrate; head (Pl. XIV. fig. 30) rather small, black, the space between the labrum and epistoma (=clypeus of Erichson) testaceous, the vertex with a very deep, smooth, transverse, somewhat oblique furrow on each side, the two furrows coalescent and extending forwards for a short distance at the middle, and each bordered anteriorly by a curved ridge; anterior tarsal joints 1 and 2 thickened, 2 extending over 3 above; prothorax short, with a black patch of variable extent on the anterior part of the disc.

♀. Antennæ short, rather slender, more feebly serrate; head about as broad as in ♂, slightly depressed in the middle; prothorax often wholly rufous.

*Hab.* S. AFRICA, Cape of Good Hope<sup>1348</sup> (*type of Fabricius, in Mus. Brit.*), Lion's Head, Cape Town<sup>5</sup>, Table Mt.<sup>7</sup>, Dunbrody, Willowmore<sup>6</sup>, Ceres, Camps Bay, Port Elizabeth,

Grahamstown, Giftsberg, Saldanha Bay, Klipfontein, Johannesburg, &c.

A common S. African insect, the very long series examined including the types (♀ ♀) of *C. aulica* and *A. rugipennis*, two specimens (♀) of *P. rugulosus* from Willowmore, and numerous examples (♂ ♀) recently captured by Mr. R. E. Turner in Cape Colony. Gorham described the anterior tarsi of the ♂ of *P. rugulosus* as 4-jointed, possibly owing to the third joint being concealed beneath the superiorly-elongated second joint; his description of the head and antennæ of that sex apply exactly to the species before me. *A. rugipennis*, type ♀, has the prothorax wholly reddish, as in some of the females from Saldanha Bay, Lion's Hill, and Table Mt. A metallic blue or greenish insect, with black antennæ (the three basal joints in part excepted) and legs, a partly or wholly rufescent, short prothorax, and closely punctate, tuberculate elytra, the elytra much widened posteriorly, with abundant silvery, subfasciately-arranged pubescence, intermixed with erect blackish bristly hairs. The head in the ♂ is small, compared with that of the allied forms.

### 35. *Hedybius* (?) *sericeus*.

*Philhedonus sericeus*, Gorh. P. Z. S. 1905, ii. p. 277 (♀)<sup>1</sup>.

*Hab.* S. AFRICA, Bothaville, Orange River Colony<sup>1</sup> (*Dr. Brauns: Mus. Cape Town, Mus. Brit.*), Pretoria (*Mus. Brit.*), Klerkadorp (*E. G. Alston, in Mus. Cape Town*).

Of this species I have seen seven examples: two from Bothaville, two from Pretoria, and three from Klerkadorp, all ♀ ♀.

A rather broad, shining, cinereo-pubescent, cæruleous insect, with a strongly transverse, red prothorax (a narrow scutiform or wedge-shaped mark in the middle in front excepted, this being obsolete in one of the specimens before me), and black antennæ (the testaceous lower surface of joints 1-3 excepted) and legs; the elytra closely, finely punctate; the antennæ short, rather stout, serrate. *P. sericeus* is almost certainly congeneric with *Hedybius aulicus*, F., and it is therefore provisionally transferred to the same genus.

### 36. *Hedybius* (?) *rufiventris*, sp. n.

♀. Elongate, much widened posteriorly, shining, thickly clothed with whitish pubescence intermixed with long, erect,

blackish hairs; nigro-cæruleous, the prothorax and abdomen rufous, the antennæ (the testaceous outer edge of joints 1-4 excepted) and legs black; the head and prothorax sparsely, minutely, the elytra densely, finely, rugulosely punctate, the elytra with an indication of raised lines on the disc. Head narrower than the prothorax, with an oval convex space in the middle between the eyes; antennæ rather short, stout, sharply serrate. Prothorax moderately transverse, convex, rounded at the sides, obliquely narrowed posteriorly, the margins narrowly reflexed. Elytra at the base much wider than the prothorax, rapidly widening to near the apex. Legs hairy.

Length 4 mm.

*Hab.* E. AFRICA, Mt. Kokanjero, S.W. of Elgon, Uganda Protectorate (*S. A. Neave*: viii. 1911).

One example. Very like the S. African *H. (Philhedonus) sericeus*, Gorh. (♀ only of which is known), and separable from it by the less transverse prothorax, the sharply serrate antennæ, and the red abdomen.

### 37. *Hedybius diversipennis*.

*Hedybius diversipennis*, Pic, L'Echange, xxiii. p. 131 (♂) (1907).

♂. Tête large, rouge en avant noire en arrière, fortement creusée et munie au milieu d'une épine (foncée en dessus) et en avant d'un appendice avec 4. gibbosités dentiformes; antennes assez courtes, diminués à l'extrémité, noires avec articles 1-3 rouges le premier épais. [*Pic.*]

♀. Head rugose, rufous, black at the base, flattened, depressed in the middle in front; abdomen red, the terminal one or two dorsal segments nigro-maculate.

*Hab.* RHODESIA, Plumtree (*type of Pic*: ♂), Empandeni (*Mus. Cape Town*: ♀).

A robust, shining, pilose, rufescent insect, with the base of the head, the metasternum, the femora in part, and the pygidium in the ♀, black, and the elytra each with two blue or violaceous patches—one basal, excised behind, the other subapical, both nearly or quite reaching the suture,—and the elytra themselves as coarsely punctured as in *Illops corniculatus*, Er. Dr. Péringuey has sent me two females of it for determination.

### 38. *Hedybius quadripustulatus*, sp. n.

♀. Elongate, widened posteriorly, shining, thickly clothed with pallid pubescence intermixed with long, erect, soft,

yellowish hairs; flavo-testaceous, the eyes, a small oblique streak on each side of the head at the extreme base, an elongate, scutiform patch on the disc of the prothorax (not reaching the base), the scutellum, a transverse patch on the pygidium, and the metasternum black; the elytra each with two large fusco-cæruleous spots—one basal, subtriangular, reaching the scutellum and inner margin, the other larger, oblique, not reaching the suture, subapical; the head and prothorax very minutely punctulate, the elytra closely, distinctly punctured. Head rather broad, narrower than the prothorax; antennæ short, comparatively slender. Prothorax strongly transverse, rounded at the sides. Elytra moderately long, incompletely covering the abdomen, the nigro-maculate pygidium thus being very conspicuous.

Length 5 mm.

*Hab.* W. RHODESIA, Kafue River (*J. Drury, in Mus. Cape Town*).

One ♀, captured in 1906. Larger, broader, and more robust than *H. simoni*, Ab., the type of which (♂) is before me, the latter having an immaculate head and prothorax and cæruleo-bifasciate (basal and apical) elytra. The bifasciate variety of *H. deliquescens* (No. 22) is also not unlike the present insect. The elytral markings resemble those of various species of *Urodactylus*, Thoms. (= *Mixis*, Ab.). *H. diversipennis*, Pic, is a larger insect, with coarsely punctured elytra.

### 39. *Hedybius simoni*.

♂. *Hedybius simoni*, Ab. de Perrin, Rev. d'Ent. xix. pp. 164, 171 (1900).

♂. Antennæ moderately long, rather stout, serrate; head (Pl. XIV. fig. 31) short, nearly as wide as the prothorax, with a V-shaped furrow between the eyes (the central area appearing triangularly raised), limited on each side posteriorly by a transverse tumid space; prothorax deeply, transversely excavate on the disc in front, the anterior margin subangularly produced and obsoletely tuberculate in the middle; anterior tarsal joint 2 raised above the base of 3, black at the tip.

*Hab.* S. AFRICA, Makapan, N.E. of the Transvaal, province of Zoutpansberg (*E. Simon*).

The unique type of this insect has been lent me by Dr. Péringuey. It is a small (length 3 mm.), testaceous form, with a broad basal and apical fascia on the elytra and the metasternum cæruleous, the terminal joints of the

antennæ infusate. The general coloration is very like that of various species of *Urodactylus*, Thoms. (= *Mixis*, Ab.), and of *Philhedonus* (*Anthocomus*) *felix*, Gorh.

#### 40. *Hedybius erichsoni*.

♀. *Malachius erichsoni*, Boh. Ins. Caffraria, i. p. 459 (1851).

♀. Elongate, robust, widened posteriorly, shining, clothed with fine scattered pubescence intermixed with numerous long, erect, blackish, bristly hairs; nigro-cæruleous or violaceous, the elytra each with a broad, outwardly-dilated, ante-median, orange-red fascia (not reaching the suture, but extending to the outer margin), the antennæ and legs black or metallic; the head and prothorax very sparsely, finely (at the sides more coarsely), the elytra coarsely, closely, rugulose punctate. Head short, narrower than the prothorax, deeply, transversely excavate anteriorly; antennæ moderately long, rather stout, tapering. Prothorax strongly transverse, rounded at the sides, obliquely narrowed posteriorly. Elytra at the base slightly broader than the prothorax.

♂. Antennæ longer and stouter, rapidly tapering from joint 4 onward, 1-3 testaceous beneath, 3-5 oblongo-quadrate, 3 a little longer and wider than 4; head (Pl. XIV. fig. 32) with two stout conical tubercles between the eyes, and a very deep, large, trapezoidal excavation in front of this, in the centre of which is a horn-like prominence, the excavation extending to the vertical anterior margin of the epistoma; eyes convex and more prominent; anterior tarsal joints 1 and 2 thickened, 2 extending to beyond the middle of 3 above.

Length 4-5½ mm. (♂ ♀.)

*Hab.* S. AFRICA, Pretoria (*Mus. Brit.*: ♂ ♀), Shiluwane, Potchefstrom (*Mus. Cape Town*: ♂ ♀), Salisbury (*Dr. G. A. K. Marshall, Mus. Cape Town*), River Gariep (*type of Boheman*), Zambesi and Transvaal (*ex coll. Fry*).

Redescribed from 2 ♂♂ and 12 ♀♀. This insect is coloured like the much smaller *H. maculifer*, Ab. (= *bimaculatus*, Boh., nec Er.), the ♂ of which has simple anterior tarsi, short antennæ, and a non-tuberculate head. The elytral puncturing is coarse. The ♂-cephalic cavity is shaped as in *H. 4-guttatus*, Thunb., except that it is not continued backward on each side. A co-type (♀) has been lent me by Dr. Sjöstedt.

41. *Hedybius quadriguttatus*.

*Cuntharis quadriguttata*, Thunb. Dissert. iii. p. 205 (1801)<sup>1</sup>.

*Hedybius quadriguttatus*, Pic, L'Echange, xxvii. p. 157 (♂) (1911)<sup>2</sup>.

“Thorace flavo macula nigra, elytris violaceis maculis quatuor albidis. . . . Tota violaceo-nigra, exceptis antennis, thoracis margine et maculis elytrorum albidis. Thorax orbiculatus, marginatus. Elytra singula in medio et apice notantur macula majuscula albida.” [*Thunberg*.]

♂. Antennæ long, stout, tapering outwards, black, joints 1-4 testaceous beneath, 3 and 4 equal in length, 5-10 elongate-triangular; head (Pl. XIV. figs. 33, 33 a) bluish-black, nearly as wide as the prothorax, with a very deep, eroded, trapezoidal excavation between the eyes, and a deep oblique furrow on each side behind them, the lateral furrows preceded by a vertical, dentiform, supra-ocular prominence, and limited behind by a sharp oblique ridge, the vertex also angularly raised and subfasciculate in the middle; prothorax convex and produced in the middle anteriorly, closely punctulate, with strongly reflexed margins, black, the lateral and basal margins broadly rufo-testaceous; elytra moderately long, parallel, transversely rugulose and finely, densely punctate, cyaneo-violaceous, with a transverse whitish mark at the middle of the disc and a larger flavous patch at the apex; legs and under surface nigro-cyaneous, the anterior tarsal joints 1 and 2 thickened, testaceous.

Length 4 mm.

*Hab.* S. AFRICA, Cape of Good Hope<sup>1 2</sup> (*type of Thunberg*), Umvoti, Natal (*Mus. Cape Town*).

The above description is taken from a ♂ communicated by Dr. Péringuey. Pic<sup>2</sup> also has given an account of this insect, but he does not allude to the colour of the prothorax. The sides of the head are deeply, obliquely sulcate on each side, as in the ♂ of *H. marshalli*. Figs. 33, 33 a (Pl. XIV.) show the head from above and in profile.

42. *Hedybius flavocinctus*, sp. n.

♀. Moderately elongate, shining, finely pubescent, without longer hairs intermixed; nigro-cæruleous or black, the basal margin of the prothorax, and the basal joints of the antennæ beneath or in part (1 black above), testaceous, the elytra violaceous or blue, each with a narrow, oblique, sinuate, flavous median fascia not quite reaching the suture or outer

margin; the head and prothorax sparsely, minutely, the elytra densely, finely punctate. Head much narrower than the prothorax; antennæ moderately long, feebly serrate. Prothorax transverse, convex, rounded at the sides. Elytra widened posteriorly.

♂. Antennæ much longer, rather stout, strongly serrate; head (Pl. XIV. fig. 34) wider, transversely excavate above, and with a smooth fovea on each side behind the eyes, the excavation bituberculate within, its anterior margin deeply trisinuate and also tuberculate in the middle; prothorax very broad, transversely subquadrate, nodose near each hind angle; elytra subparallel, about as broad as the prothorax, with a prominent, oblique humeral carina; anterior tarsal joints 1 and 2 slightly thickened, 2 raised above the base of 3.

Length  $2\frac{1}{2}$ –3 mm. (♂ ♀.)

*Hab.* S. AFRICA, Darling, Cape Colony (*L. Péringuey, in Mus. Cape Town: x. 1905*).

One male, five females. A very peculiar, isolated form, provisionally included under *Hedybius*, the ♀ having the facies of a typical *Attalus*, the ♂ with remarkable characters.

#### PHILHEDONUS.

*Philhedonus*, Gorham, Ann. & Mag. Nat. Hist. (7) v. p. 82 (1900) [type *P. coronatus*, Gorh.].

*Hedybiocephalus*, Pic, L'Echange, xix. p. 144 (1903).

These genera are each based upon a single species with 4-jointed anterior tarsi in ♂, Pic's type having a broader head and angulate sides to the prothorax in the same sex, characters insufficient for generic separation, similar specific differences occurring amongst the numerous *Hedybii* \*.

##### 1. *Philhedonus coronatus*.

*Philhedonus coronatus*, Gorh. Ann. & Mag. Nat. Hist. (7) v. p. 82 (♂ ♀) (1900) (nec Fairm.).

♂. Antennæ short (as in ♀), rather stout, moderately serrate; head (Pl. XIV. fig. 35) much narrower than the prothorax, flattened, rugulose, opaque, with four arcuately-arranged, compressed tubercles extending across the vertex; prothorax angularly produced in the centre in front, and

\* There is another allied monotypic S. African Malachiid genus with 4-jointed anterior tarsi in ♂—*Colpometopus*, Ab., type *pithecus*, Ab. (1900) (= *Troglops basicornis*, Fairm., 1894),—but this insect has the head and antennæ differently formed, an apterous ♀, &c.

there furnished with an erect, matted, dentiform tuft of hairs; anterior tarsi 4-jointed, 1 and 2 long, 2 simple.

*Hab.* RHODESIA, Salisbury.

Seven males and two females seen. A robust, elongate insect, with the head, antennæ (the testaceous basal joints excepted), legs, and under surface black; the prothorax red, a transverse black patch or two spots on the disc excepted; the elytra long, widened behind, blue or bluish-green, finely punctured, pilose; the antennæ short in both sexes. The head and prothorax are relatively smaller than in the similarly coloured *Hedybi*. Gorham suggests that the angular anterior production of the ♂ prothorax is a stridulating-organ, but this cannot be the case.

## 2. *Philhedonus natalicus*, sp. n.

♂. Moderately elongate, much widened posteriorly, the head dull, the prothorax opaque, the elytra shining, clothed with fine pubescence intermixed with long hairs; black, the antennæ in part, prothorax, and anterior legs (the bases of the femora excepted) testaceous or rufo-testaceous; the head closely, minutely, the elytra finely and rather sparsely, punctured, the prothorax almost smooth. Head (Pl. XIV. fig. 36) short, narrower than the prothorax, flattened and uneven between the eyes, the vertex transversely sinuato-excavate, the groove limited anteriorly by an angulate ridge, which is triangularly produced backward in the centre; antennæ short, rather stout, subserrate. Prothorax transverse, rounded at the sides, convex, angularly extended forward in the middle in front. Elytra comparatively short, depressed on the disc below the base. Anterior tarsi 4-jointed.

♀. Antennæ shorter and more slender; head and prothorax shining, the former smoother and simply flattened, the latter not produced in the middle in front.

Length  $3\frac{1}{2}$ –4 mm. (♂ ♀.)

*Hab.* NATAL, Malvern (*Mus. Cape Town*).

One pair. Much smaller and less elongate than *P. coronatus*, Gorh., the head of the ♂ simply angulato-carinate and excavate on the vertex, without tubercles, the prothorax immaculate, the elytra rather short, more finely punctured, the anterior legs in great part testaceous. The opaque surface of the prothorax of ♂ may be due to immaturity.

3. *Philhedonus coriaceus*.

♀. *Hedybius coriaceus*, Er. Entomographien, p. 95 (1840)<sup>1</sup>.

♀. *Hedybius coriaceus*, var. *obscuritarsis*, Pic, L'Echange, xxvii. p. 157 (1911)<sup>2</sup>.

♂. Elongate, widened posteriorly, shining, clothed with fine whitish pubescence intermixed on the elytra with long, erect, black hairs; head (except two very small spots in front in one specimen and the black basal portion, the latter sharply defined and trisinate anteriorly), antennæ (except joints 6–11, which are black), prothorax (except a very broad, large, transversely-cordate, black space in front, not quite reaching the anterior margin), and legs (the tarsi in part excepted) testaceous, the scutellum and elytra cæruleo- or cupreo-violaceous, the metasternum and abdomen green. Head (Pl. XIV. fig. 37) broad, the testaceous anterior portion flattened, subopaque, closely punctulate, the black basal portion limited in front by a trisinate ridge, the vertex with a  $\Lambda$ -shaped, concave area in the centre, the space on each side of this somewhat depressed; antennæ rather slender, moderately long, joints 6–10 elongate-triangular. Prothorax broad, as wide as the head and the basal portion of the elytra, rounded at the sides, much narrowed behind; very sparsely, minutely punctate, with a matted tuft of long, curled, erect hairs in the centre in front. Elytra more or less uneven, rugulose punctate. Pygidium bidentate at the tip. Anterior tarsi 4-jointed, 1 and 2 thickened, long.

♀. Antennæ shorter and more slender, the basal joints sometimes nigro-lineate above; head simply flattened; prothorax with a similar transverse black space on the disc anteriorly, which is biramose behind in one specimen; intermediate tibiæ and tarsi (or the tarsi alone), and the posterior legs wholly or in part, black.

Length 4–5½ mm. (♂ ♀.)

*Hab.* S. AFRICA, Cape of Good Hope<sup>1</sup> (*type of Erichson*: ♀), Willowmore, Saldanha Bay, Cape Town, Clanwilliam, Bechuanaland, Garies (*Mus. Cape Town*); E. AFRICA<sup>2</sup>.

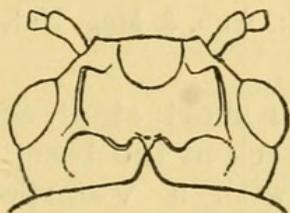
Three ♂♂ captured by Dr. Brauns at Willowmore are referred to this species. The numerous ♀♀ seen vary greatly *inter se* (three of these having very uneven, sparsely punctured elytra), but some of them agree well with Erichson's description of that sex, these specimens having the posterior legs black. The head, when partly withdrawn, appears to have two black patches at the base in both sexes.

The prothoracic tuft of the ♂ resembles that of *Hedybius hirtus*, F. The ♀ may be known from that of *Hedybius sculptilis*, Gorh., by the narrower fifth antennal joint and the less transverse prothorax.

4. *Philhedonus caffrarius*, sp. n.

♂. Elongate, widened posteriorly, shining, cinereo-pubescent, with longer blackish erect hairs intermixed; black, the oral organs in part, a transverse space on the epistoma, joints 1-4 of the antennæ (a streak on 1 excepted), the prothorax, and abdomen (a patch at the apex of the pygidium excepted) testaceous, the elytra nigro-violaceous; the head and prothorax very sparsely, minutely, the elytra somewhat closely, finely punctate. Head (text-fig. 3) narrower than the prothorax, with a smooth, deep, transverse, interocular excavation, which is limited in front by the short, convex epistoma, laterally by an angular ridge, and posteriorly by a prominent, transverse, mesially-interrupted carina, the

Fig. 3.



Head of *Philhedonus caffrarius*, ♂.

vertex also transversely excavate behind this, the cavity divided by a short median carina; antennæ moderately long, sharply serrate. Prothorax convex, transverse, rounded at the sides, much narrowed behind, depressed in the middle in front; the anterior margin triangularly raised in the centre, and with a pallid, acute, dentiform process arising from beneath the central prominence. Elytra moderately long, wider than the prothorax. Anterior tarsi simple, 4-jointed.

Length 4 mm.

*Hab.* CAFFRARIA (*ex coll. Sharp*).

One ♂, from an old collection. This insect is nearly related to *P.* (*Hedybius*) *coriaceus*, Er., the ♂ of which has a very differently shaped head and prothorax, a metallic abdomen, &c.

5. *Philhedonus fossulifer*.

♂. *Hedybiocephalus fossulifer*, Pic, L'Echange, xix. p. 144 (1903).

♂. Head (Pl. XIV. fig. 38) large, broad, flattened, with a compressed angular prominence in the centre of the vertex and four transversely-placed, equidistant foveæ in a line with the posterior margin of the eyes; antennæ rather short, serrate, tapering outwards, joint 1 above and the apices of 6-11 sharply nigro-maculate; prothorax broad, angulate laterally, and angularly raised and feebly dentate in the centre in front.

*Hab.* S. AFRICA, Dunbrody, Uitenhage, Cape Colony (O'Neil: *Mus. Brit.*; *Mus. Cape Town*; *Mus. Durban*).

I have seen fifteen examples of this species, all males. An opaque (the somewhat shining elytra excepted), closely cinereo-pubescent, black insect, with the anterior portion of the head, the antennæ in part, the prothorax (a broad oblongo-quadrangle median patch excepted), and sometimes the anterior or intermediate tibiæ and tarsi in part, testaceous.

6. *Philhedonus felix*.

*Anthocomus felix*, Gorh. Ann. & Mag. Nat. Hist. (7) vii. p. 357 (♂ ♀) (1901).

♂. Antennæ rather short, stout, serrate; head (Pl. XIV. fig. 39) testaceous, black at the base, transversely depressed on the vertex, and with a v-shaped, laterally-prominent carina between the eyes, the carina obliquely grooved on each side behind, the front longitudinally bi-impressed; prothorax with a large triangular or scutiform black patch on the anterior part of the disc, deeply, transversely foveate in the centre in front, and with a triangular, erect prominence arising from the middle of the anterior margin; terminal dorsal segment of abdomen constricted and tubulate at the apex, emarginate at the tip, a pair of long, slender, hook-like processes projecting beneath it; anterior tarsi simple, 4-jointed.

♀. Antennæ shorter and more slender; prothorax with the black patch on the disc reduced to a narrow line or altogether wanting; pygidium testaceous, as in ♂.

*Hab.* RHODESIA, Salisbury.

Three ♂♂ and two ♀♀ seen. Gorham noticed the absence of the overlapping anterior tarsal joint in the ♂ of this species, but he failed to observe that the tarsi themselves

were 4-jointed, and that the species really belonged to his own genus *Philhedonus*, described during the previous year. The ♂-prothoracic prominence was also overlooked. A small form not unlike *Hedybius simoni*, Ab., in great part testaceous above, the elytra with the base and a large subapical patch on the disc nigro-violaceous, the legs variable in colour in the male.

*Alphabetical numbered list of species of Illops, Hedybius, and Philhedonus enumerated in the present paper; those without generic indication belong to Hedybius, and those marked with an asterisk are described as new.*

\*acanthopygus, 33.  
 albipennis, 7.  
 amœnus, 18.  
 aulicus, 34.  
 billbergi, 3.  
 bimaculatus, Er., 19.  
 \*braunsi, 23.  
 \*caffraricus (*Philhedonus*), 4.  
 clypeolus, 12.  
 coriaceus (*Philhedonus*), 3.  
 corniculatus (*Ilops*), 1.  
 coronatus, Gorh. (*Philhedonus*), 1.  
 \*cucullatus, 32.  
 \*curvidens, 16.  
 \*deliquescens, 22.  
 dentatithorax, 17.  
 \*dentiger (*Ilops*), 2.  
 diversipennis, 37.  
 \*duplocinctus (*Ilops*), 3.  
 erichsoni, 40.  
 erosus, 27.  
 felix (*Philhedonus*), 6.  
 \*flavinasus, 10.  
 \*flavocinctus, 42.  
 formosus, 8.  
 fossulifer (*Philhedonus*), 5.  
 \*hamatipygus, 31.  
 hirtus, 1.  
 \*kabetensis, 29.  
 \*lamelliger, 13.  
 \*lineaticornis, 21.  
 lividus, 6.  
 longicoxis, 28.  
 maculifer, 9.  
 marshalli, 15.  
 \*natalicus (*Philhedonus*), 2.  
 plagiocephalus, 25.  
 \*plicatilis, 14.  
 quadricornis, 20.

quadriguttatus, 41.  
 \*quadripustulatus, 38.  
 \*rufiventris, 36.  
 sculpticeps, 24.  
 sericeus, 35.  
 simoni, 39.  
 smaragdulus, 4.  
 \*sulcipygus, 30.  
 superciliosus, 26.  
 \*trilobatus, 11.  
 variicornis, 5.  
 \*verrucosus, 2.

SYNONYMS, VARIETIES, ETC.

anceps, 26.  
 atripes, 34.  
 atropygus, 18.  
 bi-interruptus, 8.  
 bimaculatus, Boh., 9.  
 collaris, 34.  
 coronatus, Fairm., 12.  
 elongatus, 3.  
 fasciculatus, 5.  
 inarmatus, 15.  
 lætus (*Ilops*), 1.  
 longicoccyx, 28.  
 luteonotatus, 3.  
 maculicornis, 19.  
 multimaculatus, 27.  
 obscuritarsis (*Philhedonus*), 3.  
 oculatus, 1.  
 prænotatus, 26.  
 pygidialis, 26.  
 quadrimaculatus, 1.  
 rugipennis, 34.  
 rugulosus, 34.  
 simplicifrons, 1.  
 sycophanta, 27.  
 trabeatus (*Ilops*), 1.

## EXPLANATION OF PLATES XIII. &amp; XIV.

The figures, except those of the antennæ, give an enlarged view of the head and anterior margin of the prothorax, from above, the head in some cases being also shown from in front (figs. 11 *a*, 15 *a*) or in profile (figs. 19 *a*, 33 *a*). They are all diagrammatic, it being impossible to indicate the complicated structure in one figure. The antennæ are shown from above, 16 *a* from beneath. The explanation of the figures of the species illustrated on the two Plates is given under each insect in the text. All are taken from ♂♂.

XLIX.—*On the Discovery of the missing Type Specimen of the Ascidian Oculinaria australis, Gray.* By R. KIRKPATRICK.

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THE type—and, until 1918, the only known specimen—of *Oculinaria australis*, Gray, has been missing for over fifty years. The unique specimen, preserved in spirit, was presented to the British Museum (Nat. Hist.) by Dr. Bowerbank, and was described by Gray in 1868 (P. Z. S. 1868, p. 564), a text-figure of only a portion being given. Gray's description is as follows:—"The mass is cylindrical, about 8 inches long and  $1\frac{1}{3}$  inch in diameter in spirits. It is white, with ends rather tapering and rounded. It entirely consists of a large number of more or less oblong cysts, placed closely side by side on every side of an imaginary central axis, the cysts covering the ends of the mass like the rest of the body. The cysts are hard, cartilaginous, rather convex externally, with two concavities having an opening at the base of each. . . . The outer surface of the cyst is covered with a thick hard skin, strengthened externally with embedded particles of sand. . . ."

Nothing more was heard of *Oculinaria* till 1886, when Herdman\* placed the genus in his family Polystyelidæ; but, when examining the Tunicata in the British Museum, he was unable to see the type of *O. australis*, because it could not be found.

Later, Michaelsen and Hartmeyer had wished to see this specimen in order to gain some knowledge of the affinities of the genus; but they, also, were disappointed. Gray's diagnosis was wholly based on external characters, and no

\* 'Challenger' Tunicata, part ii. p. 323.



Champion, G. C. 1921. "XLVIII.—Revision of the African species of Hedybius, Er., and its allies, with an account of their accessory  $\sigma$ -characters [Coleoptera]." *The Annals and magazine of natural history; zoology, botany, and geology* 8, 449–494. <https://doi.org/10.1080/00222932108632611>.

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