

XV. — AID TO THE DETERMINATION OF THE DESCRIBED SPECIES OF THE COLEOPTEROUS GENUS HELOTA Mc L., AND DESCRIPTION OF A NEW SPECIES.

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INDOMALAYAN SPECIES.

- A Base of elytra coloured as apex.
- B Elytra with four convex fulvous spots.
- C Pronotum rugose, with raised patches.
- D Elytra very regularly punctate-striate all over.
- E Fulvous elytral spots large or moderately large.
- F The black colour at the tibiae restricted to the extreme base and apex.
- G Antennae dark pitchy. Upper surface and elytral epipleurae bright metallic green . . . *Vigorsi* Mc L., *Vigorsi sumatrensis* Rits. and *Vigorsi borneensis* Rits.
- G' Antennae pale fulvous.
- H Upper surface and elytral epipleurae metallic green with golden hue *scintillans* Olliff.
- H' Upper surface and elytral epipleurae dark greenish purple *Pasteuri* Rits.
- F' The black colour at the tibiae more extensive, leaving only one third of the tibiae (a ring in the middle) testaceous *Rouyeri* Rits.
- E' Fulvous elytral spots small.
- I Upper surface and elytral epipleurae bronze coloured.
- J Sides of pronotum coloured as the disk.
- K Apical half of antennae dark pitchy.
- L Elytral interstices but slightly convex . . . *Vandepolli* Rits.
- L' Elytral interstices subcostate *lugubris* Rits.
- K' Antennae entirely pale fulvous *Fruhstorferi* Rits.
- J' Sides of pronotum testaceous red.
- M Apices of elytra in the ♀ pointed, slightly prolonged *Faeae* Rits.
- M' Apices of elytra in the ♀ conjointly rounded *thoracica* Rits.
- I' Upper surface and elytral epipleurae coppery red.

- N Lateral streaks of pronotum irregularly confluent punctured, leaving some smooth interspaces. — ♂. Apices of elytra conjointly rounded, with a spine at the suture. — ♀. Apices of elytra not or slightly prolonged.
- O ♂. Anterior tibiae with a small compressed dilatation a little *before* the apex of the inner margin or without it. — ♀. Apices of elytra slightly prolonged, last ventral segment rounded posteriorly.
- P ♂. Anterior tibiae with a small dilatation; the pubescence in the impression on the apical ventral segment very dense, felting. — ♀. Apices of elytra dehiscent *Servillei* Hope.
- P' ♂. Anterior tibiae without dilatation; the pubescence in the impression on the apical ventral segment thin. — ♀. Apices of elytra not dehiscent *longipes* Rits.
- O' ♂. Anterior tibiae with a very conspicuous compressed dilatation *at* the end of the inner margin. — ♀. Apices of elytra conjointly rounded, the last ventral segment broadly truncate posteriorly *Fairmairei* Rits.
- N' Lateral streaks of pronotum regularly densely punctured, without smooth interspaces. — ♂. Apices of elytra faintly bidentate near the suture (about as in *Vigorsi*). — ♀. Apices of elytra acutely prolonged, last ventral segment truncate posteriorly *Oberthüri* Rits.
- D' Elytra not regularly punctate-striate all over.
- Q Elytra punctured in rows near the suture, the remaining portion more or less irregularly punctured.
- R Space between the suture and the line which unites the centres of the fulvous spots provided with four rather regular rows of punctures.
- S Outer half of elytra more or less punctured in rows, its sculpture not strongly contrasting with that of the inner half. — ♂. Last ventral segment without a tomentose impression. — ♀. Last ventral segment triangular with rounded tip.

- T Apices of elytra pointed and slightly prolonged in the ♀ *Kolbei* Rits.
- T' Apices of elytra not prolonged in the ♀ . . . *ventralis* Rits.
- S' Outer half of elytra rugose in consequence of the very dense punctuation, its sculpture therefore strongly contrasting with that of the inner half. — ♂. Last ventral segment with a tomentose impression. — ♀. Last ventral segment transverse *gemmata* Gorh.
- R' The two innermost striae only rather regular.
- U Raised thoracical patches impunctate or nearly so. (Large or moderately large species: 18 $\frac{1}{2}$ — 12 $\frac{1}{2}$ mm.).
- V Middle of metasternum in the ♂ glabrous, without a pubescent spot. — Apices of elytra in the ♀ rounded.
- W Metasternum pitchy black. Femora and tibiae more or less dark pitchy *fulviventris* Kolbe.
- W' Metasternum fulvous yellow. Femora and tibiae partially black, partially fulvous yellow . . . *distincta* Rits.
- V' Middle of metasternum in the ♂ with a pubescent spot. — Apices of elytra in the ♀ pointed.
- X Apices of elytra in the ♀ rather bluntly prolonged; last ventral segment as long as the 3rd and 4th taken together *Gorhami* Olliff.
- X' Apices of elytra in the ♀ very acutely prolonged; last ventral segment decidedly shorter than the 3rd and 4th taken together . . . *caudata* Rits.
- U' Raised thoracical patches strongly punctured. (Smaller species: 8 $\frac{1}{2}$ — 9 mm.).
- Y Prothorax broad, raised patches (especially the central one) very distinct, their punctuation being much sparser than that on the surrounding parts. — ♂. Angular tooth near the apex of the inner margin of the anterior tibiae very distinct. — ♀. Apices of elytra bluntly pointed *sinensis* Olliff.
- Y' Prothorax narrower, raised patches (especially the central one) less obvious, owing to their denser punctuation, more agreeing with that on the surrounding parts. — ♂. Angular tooth near the apex of the inner margin of

- the anterior tibiae less distinct. — ♀. Apices of elytra acutely pointed *tonkinensis* Rits.
- Q' Elytra irregularly and very densely punctured all over, and provided with glossy warts or granules of different size and shape. (Small species: 8 — 10 mm.).
- Z Anterior angles of pronotum coloured as the disk, middle portion of prosternum bronze coloured *Lesnei* Rits.
- Z' Anterior angles of pronotum and middle portion of prosternum fulvous.
- a Tibiae pale fulvous, their base and their apical half dark pitchy. The punctuation on the elytra fine and extremely dense, the sutural interstices with a row of punctures and bordered by a line. *acutipennis* Rits. and *verrucosa* Rits.
- a' Tibiae pale fulvous, with the base and a complete or incomplete ring just below the middle pitchy. The punctuation on the elytra coarser, the sutural interstices smooth and bordered by a row of very distinct punctures which is separated from the disk, especially on the apical half, by a narrow smooth costa *thibetana* Westw., *Donckieri* Rits., *Westwoodi* Rits. and *Jentinki* Rits.
- C' Pronotum more finely and evenly punctured, without raised patches.
- b Prosternum unicolorous.
- c Prosternum entirely metallic green or bronze.
- d Tibiae unicolorous (dark pitchy or bronze).
- e Upper surface bronze green, elytral spots proportionately large. — ♂. Anterior tibiae not angularly dilated at the end, the middle tibiae only with a minute tooth on their inner edge near the apex *Candezei* Rits.
- e' Upper surface dark bronze, elytral spots small. — ♂. Anterior tibiae angularly dilated at the end, the middle and hind tibiae both with a minute tooth on their inner edge near the apex *Mariae* Rits.
- d' Tibiae bicolorous (dark pitchy or metallic green and reddish testaceous).

- f ♂. The top of the dilatation of the anterior tibiae rounded, the apical ventral segment subtruncate posteriorly, without a pubescent impression. — ♀. Apical ventral segment regularly rounded at the apex *Margarethae* Rits.
- f' ♂. The top of the dilatation of the anterior tibiae angular, the apical ventral segment broadly truncate posteriorly with protruding lateral angles, and with a large pubescent impression. — ♀. Apical ventral segment broadly truncate at the apex, the lateral angles rounded *Krugi* Rits.
- e' Prosternum entirely fulvous.
- g Anterior angles of pronotum fulvous.
- h Legs partially fulvous, partially metallic green or coppery.
- i Tibiae metallic green, in one case (*Grouvellei*) dark pitchy.
- j Anterior and posterior elytral spots situated between the same striae, viz. between the 3rd and 7th *Guerini* Hope.
- j' Anterior and posterior elytral spots situated between different striae.
- k Anterior spots situated between the 4th and 6th, the posterior ones between the 3rd and 6th striae.
- l Sides of elytra normally punctured. Apices of elytra in the ♀ pointed.
- m Sides of pronotum broadly bordered with fulvous *Desgodinsi* Rits.
- m' Only the anterior angles of the pronotum fulvous.
- n Clypeus subtruncate anteriorly, with broadly rounded lateral angles.
- o Lateral margins of posterior third of elytra not serrulated. Elytral epipleurae not or sparingly punctured *curvipes* R. Oberth. and *pustulata* Rits.
- o' Lateral margins of posterior third of elytra minutely and remotely serrulated. Elytral epipleurae punctured all along *epipleuralis* Rits.
- n' Clypeus very broadly truncate anteriorly . . . *elongata* Rits.
- l' Sides of elytra, outwards from the yellow spots, very coarsely punctured. Apices of elytra in the ♀ conjointly rounded *Renati* Rits.

- k' Anterior spots situated between the 4th and 7th, the posterior ones between the 3rd and 7th striae.
- p Tibiae metallic green or golden *ocellata* Rits.
- p' Tibiae dark pitchy. *Grouwellei* Rits.
- k'' Anterior spots situated between the 4th and 7th, the posterior ones between the 3rd and 6th striae.
- q Outer margin of elytra entire.
- r Pronotum remotely and very irregularly punctured, the punctures along the lateral edges more or less confluent *Dohertyi* Rits.
- r' Pronotum regularly densely punctured . . . *Magdalenae* Rits.
- q' Outer margin of elytra serrulate along their posterior third.
- s Shape shorter *serratipennis* Rits.
- s' Shape more elongate *guttata* Rits.
- i' Tibiae more or less extensively reddish fulvous.
- t Anterior and posterior elytral spots situated between the same striae, viz. between the 3rd and 6th.
- u Pronotum finely punctured.
- v Prothorax transversely trapezoidal . *rotundata* Rits. and *Dureli* Rits.
- v' Prothorax narrower, more elongate trapezoidal *Helleri* Rits.
- u' Pronotum coarsely punctured.
- w Elytral epipleurae reddish testaceous . . . *attenuata* Rits.
- w' Elytral epipleurae brassy *Lewisi* Rits.
- t' Anterior elytral spots situated between the 4th and 6th, posterior ones between the 3rd and 6th striae *Moutoni* Rits.
- h' Legs fulvous, without metallic green, and, especially in the ♂, slender and elongate . . *laevigata* R. Oberth. and *tibialis* Rits.
- g' Anterior angles of pronotum coloured like the disk.
- x Anterior pair of elytral spots situated between the 4th and 6th, the posterior pair between the 3rd and 6th striae *intermedia* Rits.
- x' Anterior pair of elytral spots situated between the 3rd and 7th, the posterior pair between the 3rd and 6th striae *sumbawensis* Rits.

- x'' Anterior pair of elytral spots situated between the 4th and 7th, the posterior pair between the 3rd and 6th striae *neglecta* nov. spec.
- b' Prosternum bicolorous (middle portion fulvous, lateral portions metallic green or bronze).
- y Tibiae entirely metallic green.
- z Anterior pair of elytral spots between the 4th and 6th, the posterior pair between the 3rd and 6th striae *cereopunctata* Lewis.
- z' Elytral spots between the same striae, viz. between the 3rd and 6th *brevis* Rits.
- y' Tibiae metallic green at the base, the rest fulvous.
- aa Anterior and posterior elytral spots situated between the same striae, viz. between the 3rd and 7th.
- bb Prothorax quadrate. Posterior tibiae in the ♂ armed on the inner margin of the apical half with some irregular black denticles . . . *Gestroii* Rits.
- bb' Prothorax narrowed to the front margin (trapezoidal).
- cc Length not quite 7 mm.
- dd Pronotum irregularly densely punctured . . *notata* Rits.
- dd' Pronotum regularly densely punctured . . *Severini* Rits.
- cc' Length 8—9 mm. 1)
- ee Appendage at the apex of the anterior tibiae in the ♂ toothlike, diverging from the inner margin of the tibia.
- ff The toothlike appendage more or less pointed or narrowly rounded at the tip, not broadly truncate.
- gg The appendage elongate.
- hh The appendage elongate triangular *Breitaudeaui* Rits.
- hh' The appendage parallel-sided *indicator* Rits.
- gg' The appendage short and broad *Jordani* Rits.
- ff' The appendage broadly truncate at the tip . *Boysi* Rits.
- ee' Appendage at the apex of the anterior tibiae in the ♂ not diverging, its outer margin parallel with the inner margin of the tibia *Olliffi* Rits.

1) *Helota dubia* Rits. too, belongs to this group of species, but the female sex only is known to me.

- aa' Anterior and posterior elytral spots situated between different striae.
- ii Anterior elytral spots situated between the 4th and 7th, the posterior ones between the 3rd and 7th stria. ¹⁾
- jj Last ventral segment in the ♂ with a pubescent impression *consanguinea* Rits.
- jj' Last ventral segment in the ♂ without a pubescent impression.
- kk Anterior tibiae in the ♂ slender, faintly notched. The club of the antennae pale coloured. The posterior tibiae untoothed *Boulei* Rits.
- kk' Anterior tibiae in the ♂ broader, more deeply notched. The terminal joints of the club of the antennae dark coloured. The posterior tibiae with some minute black denticles on the inner margin of the apical third . . . *Sharpi* Rits.
- ii' Anterior elytral spots situated between the 3rd and 7th, the posterior ones between the 3rd and 6th stria *Fryi* Rits.
- ii'' Anterior elytral spots between the 4th and 7th, the posterior ones between the 3rd and 6th stria *Hopei* Rits.
- ii''' Anterior elytral spots between the 3rd and 7th, the posterior ones between the 3rd and 8th stria.
- ll Length 8¹/₂ mm. *affinis* Rits.
- ll' Length 6 mm. *culta* Olliff.
- B' Elytra without convex fulvous spots.
- mm Pronotum bicolorous: broadly fulvous along the sides, which colour passes gradually into metallic green along the middle.
- nn Tibiae dark coloured all over, metallic green along the outside *immaculata* Rits.
- nn' Tibiae pale fulvous on the apical half. . . *Bouchardi* Rits.
- mm' Pronotum uniformly metallic greenish blue . *Marthae* Rits.
- A' Basal portion of elytra fulvous, apical portion metallic green.
- oo Flattened lateral margins of elytra very narrow *semifulva* Rits.
- oo' Flattened lateral margins of elytra broader.

1) *Helota pusilla* R. Oberth. too, belongs to this group of species, but the female sex only is known.

- pp Tarsi fulvous *fulvitaris* Rits.
pp' Tarsi dark pitchy brown *difficilis* Rits.

AFRICAN SPECIES.

- A Pronotum bicolorous (black and fulvous).
B Disk of pronotum with *one* black vitta. Basal half of elytra fulvous, apical half black.
C Elytral interstices flat or nearly flat, the 7th interstice more or less strongly raised in the ♂.
D Fulvous basal half of elytra without black spot; the apices of the elytra in the ♀ pointed, without a sutural tooth.
E The apices of the elytra in the ♀ but slightly prolonged, in the ♂ broadly rounded; 7th elytral interstice in the ♂ strongly raised . . . *guineensis* Rits.
E' The apices of the elytra in the ♀ more strongly prolonged, in the ♂ more narrowly rounded; 7th elytral interstice in the ♂ but slightly raised *Sjöstedti* Rits. var.
D' Fulvous basal half of elytra with one or two black spots on each elytron.
F One black spot on each elytron.
G The black spot situated in the basal half of the fulvous portion and placed between the 3rd and 4th striae.
H Apices of elytra in the ♀ pointed, without a sutural tooth, in the ♂ rather narrowly rounded; basal ventral segment in the ♂ with a small hairy spot in the middle *Sjöstedti* Rits. 1)
H' Apices of elytra in the ♀ obliquely truncate between the 3rd interstice and the suture and with a small sutural tooth; (♂ unknown) . *africana* Olliff.
G' The black spot situated in the apical half of the fulvous portion and placed between the 4th and 5th striae *Lujae* Rits.
F' Two black spots on each elytron *Ferranti* Rits.

1) When describing the male sex of this species (Notes Leyd. Mus. Vol. XXV, p. 164), I have overlooked the following characteristic: the middle of the metasternum bears on both sides of the median line a linear streak of erect rufous stiff hairs.

These hairs are also discernable in the male of *Helota guineensis* Rits., but in this species they seem to be less numerous. I have failed to find these hairs in *Helota Lujae* Rits. and *Ferranti* Rits.

- C' Elytral interstices alternately raised.
- I Black apical half of elytra with a faint bronze hue. — ♂. Middle of metasternum and of 1st ventral segment without a hairy spot.
- J Black apical half of elytra without a fulvous stripe in the middle; tibiae black *costata* Rits.
- J' Black apical half of elytra with a fulvous stripe in the middle (5th interstice); tibiae with a broad fulvous ring var. *stigma* Rits.
- I' Black apical half of elytra with a faint purplish hue. — ♂. Middle of metasternum and of 1st ventral segment with a hairy spot . . . *semipurpurea* Rits.
- B' Disk of pronotum with *three* black vittae. Elytra fuscous, all over with longitudinal black stripes *Pauli* Weise.
- A' Pronotum unicolorous (purplish blue). Basal half of elytra fulvous, apical half purplish blue *tripartita* Rits.

Correction to the „Systematical Catalogue”
(vide antea p. 125).

By an oversight ¹⁾ I have quoted the specimen from Bandar Baroe (Sumatra or.), registered in the Catalogue sub n^o. 49a, as „*sumbawensis*”. It does not belong to this species, which is not represented in the Museum, but to a new though closely allied one, described in the following lines under the name

Helota neglecta.

It is closely allied not only to *sumbawensis* Rits. from the island of Soembawa, but also to *intermedia* Rits. from British Bhotan, having the prosternum fulvous and the anterior angles of the pronotum coloured like the disk, but it is distinguished from both by the different position of the anterior pair of elytral spots, these being placed between the 4th and 7th striae.

♂. Length 6,5 mm. — Subshining; above coppery bronze, the fulvous elytral spots surrounded with bluish black; the antennae dark pitchy, the two basal joints metallic green; the anterior angles of the pronotum coloured like the disk, not fulvous; the anterior elytral spots placed be-

1) At the time that I received the specimen, I attached to it, after determination, a label with the annotation „an *sumbawensis* Rits. ♂.” In dressing the „Catalogue” I overlooked the little word „an” and wrote *sumbawensis*, neglecting a re-examination.

tween the 4th and 7th, the posterior ones between the 3rd and 6th striae. Underside reddish testaceous, the head bronze green, the epipleurae brassy; the coxae and the basal two third of the femora are reddish testaceous, the rest of the femora dark pitchy with a bright metallic hue at the tip, the tibiae and the tarsi coppery bronze.

The head is broad, not strongly produced in front of the eyes, rather remotely covered with large very distinct punctures on the raised middle portion between the eyes; the narrowed front portion truncate with broadly rounded lateral angles, its punctuation very minute.

The prothorax is transverse, slightly narrowing in faintly curved lines towards the front margin, the front angles subacute; the base bisinuate, the median lobe rounded, the lateral angles acute; the upper surface covered with punctures which are large and close together on the sides, towards the middle they get smaller and are wider apart, leaving a smooth line (broadest towards the base) along the middle. The scutellum is strongly transverse, glossy and impunctate.

The elytra are elongate ovate, the apices bluntly rounded, the sutural angle more narrowly than the outer one, no trace of a sutural tooth; each elytron with ten regular striae of punctures (the 10th marginal) which become finer towards the suture; the interstices are impunctate, slightly costate at the end, especially the 3rd and 9th which join the apical margin.

Beneath the head shows some very large punctures in the middle portion, laterally it is more densely covered with smaller punctures; the prosternum bears some distinct punctures which are larger and closer together along the sides; on the sides of the metasternum the punctures are large, the middle is smooth and shining; the elytral epipleurae show a few rather indistinct punctures. The ventral segments are extremely finely and indistinctly punctured; the apical segment, which is slightly longer than the preceding one, is broadly rounded posteriorly and shows a shallow semicircular pubescent impression at the tip, which impression is accompanied on both sides by an indistinct smaller one; each ventral segment bears on both sides of the middle an erect hair, on the apical segment these hairs are more numerous. The tibiae are distinctly punctured, those of the anterior pair of legs are strongly curved in their apical half, the others are straight.

Hab. Sumatra or.: Bandar Baroe. — One male specimen collected by M. Moissinac, presented in exchange to the Leiden Museum by Mr. L. H. D. de Vos tot Nederveen Cappel. — n^o. 49a of the Catalogue.

Consequently one must read in the Catalogue, page 134:

49. *neglecta* Rits. Zool. Med. Mus. Leid. I, 1915, p. 238.

a. ♂. **type**. Sumatra or.: Bandar Baroe, M. Moissinac (L. H. D. de Vos tot Nederveen Cappel).

Moreover one must intercalate in the List of species not yet represented in the Leiden Museum, after *intermedia* Rits., l. c. p. 138:

sumbawensis Rits. Notes Leyd. Mus. XXXI, 1909, p. 183, ♀ from the island of Soembawa. — Type in the German Entomological National-Museum at Berlin-Dahlem.

Finally the following quotation ought to be inserted in the List of the species described after the publication of Junk's Coleopterorum Catalogus, pars 34:

neglecta Rits. Zool. Med. Mus. Leiden, I, 1915, p. 238.

Summary of the principal divisions of the Indomalayan species with reference to the pages.

- p. 229. A. Base of elytra coloured as apex.
 B. Elytra with four convex fulvous spots.
 C. Pronotum rugose, with raised patches.
 D. Elytra very regularly punctate-striate all over.
- p. 230. D'. Elytra not regularly punctate-striate all over.
 Q. Elytra punctured in rows near the suture, the remaining portion more or less irregularly punctured.
 R. Space between the suture and the line which unites the centres of the fulvous spots provided with four rather regular rows of punctures.
 R'. The two innermost striae only rather regular.
- p. 231. Q'. Elytra irregularly and very densely punctured
 p. 232. all over and provided with glossy warts or granules. (Small species: 8—10 mm.).
 C'. Pronotum more finely and evenly punctured, without raised patches.
 b. Prosternum unicolorous.
 c. Prosternum entirely metallic green or bronze.
- p. 233. c'. Prosternum entirely fulvous.
- p. 235. b'. Prosternum bicolorous (middle portion fulvous, lateral portions metallic green or bronze).
- p. 236. B'. Elytra without convex fulvous spots.
 A'. Basal portion of elytra fulvous, apical portion metallic green.

Leiden Museum, November 1915.