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## Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel

### Coeloptera: Fam. Coccinellidae

by R. Bielawski

Abstract: 63 species are recorded from Bhutan, all of them for the first time. The following 12 taxa are new to science: *Epilachna dorotae*, *E. bhutanensis*, *E. sexpunctata*, *E. sexsignata*, *E. sexpustulata*, *E. monsuna*, *E. septemnotata*, *Cryptogonus nepalensis bhutanensis* n. ssp., *Phymatosternus wittmeri*, *Ph. samchus*, *Ph. khalaus*, *Calvia monosha*.

Thanks to the courtesy of Dr. Walter Wittmer of the Naturhistorisches Museum in Basel I received for study a collection of Lady beetles (*Coccinellidae*) collected on an expedition to Bhutan by the staff of the museum. In this paper 11 new species are described while all species mentioned in the text are new to the Bhutan area. The material studied is deposited in the first place in the collection of the Naturhistorisches Museum in Basel and secondly, in the collection of the Zoological Institute of the Polish Academy of Sciences in Warsaw.

#### 1. *Henosepilachna sparsa* (Hbst.)

Material studied: Phuntsholding; 200–400 m, 15. IV. 1972, 1 specimen. Changra, 18 km S of Tongsa, 1900 m, 22. IV. 1972, 1 specimen.

In one specimen there are three large spots on the pronotum while on each of the elytral 14 spots. The other specimen has 2 small spots on the sides of the thorax and 12 spots on each elytra but some of these are located toward the distal end and are very small. This specimen is very similar superficially to *H. septima* (Dieke) and *H. dodecastigata* (Wied). However, the structure of the genital plate of the copulatory organ is different from these species and in spite of the shallow emargination it is similar to that in *H. sparsa* Hbst. The male copulatory organ is analogous to those given by DIEKE (1947) and LI and COOK (1961).

This species is widely distributed. Its nearest area is in Assam and Nepal.

#### 2. *Henosepilachna indica* (Muls)

Material studied: Changra, 18 km S of Tongsa, 2900 m, 22. VI. 1972, 1 specimen.

Pronotum with 5 spots. Each elytron with 6 spots. Discal spot slightly transverse. Two spots are located near the suture, one spot near the lateral margin.

This species occurs from China to Java. Its nearest area of distribution to Bhutan is Sikkim (KAPUR 1963).

### 3. *Henosepilachna ocellata* (Redt.)

Material studied: Changra, 18 km S of Tongsa, 1900 m, 22.VI.1972, 1 specimen.

On the pronotum 5 spots of which the median is the largest. Scutellum black. Elytral spots near scutellum are located posteriorly and obliquely. All spots surrounded by a lighter ring.

This species occurs in the Himalayas from Cashmere to North Bengal.

### 4. *Afidentula manderstjerna*e (Muls)

Material studied: Samchi, 300 m, 7–11.V.1972, 2 specimens.

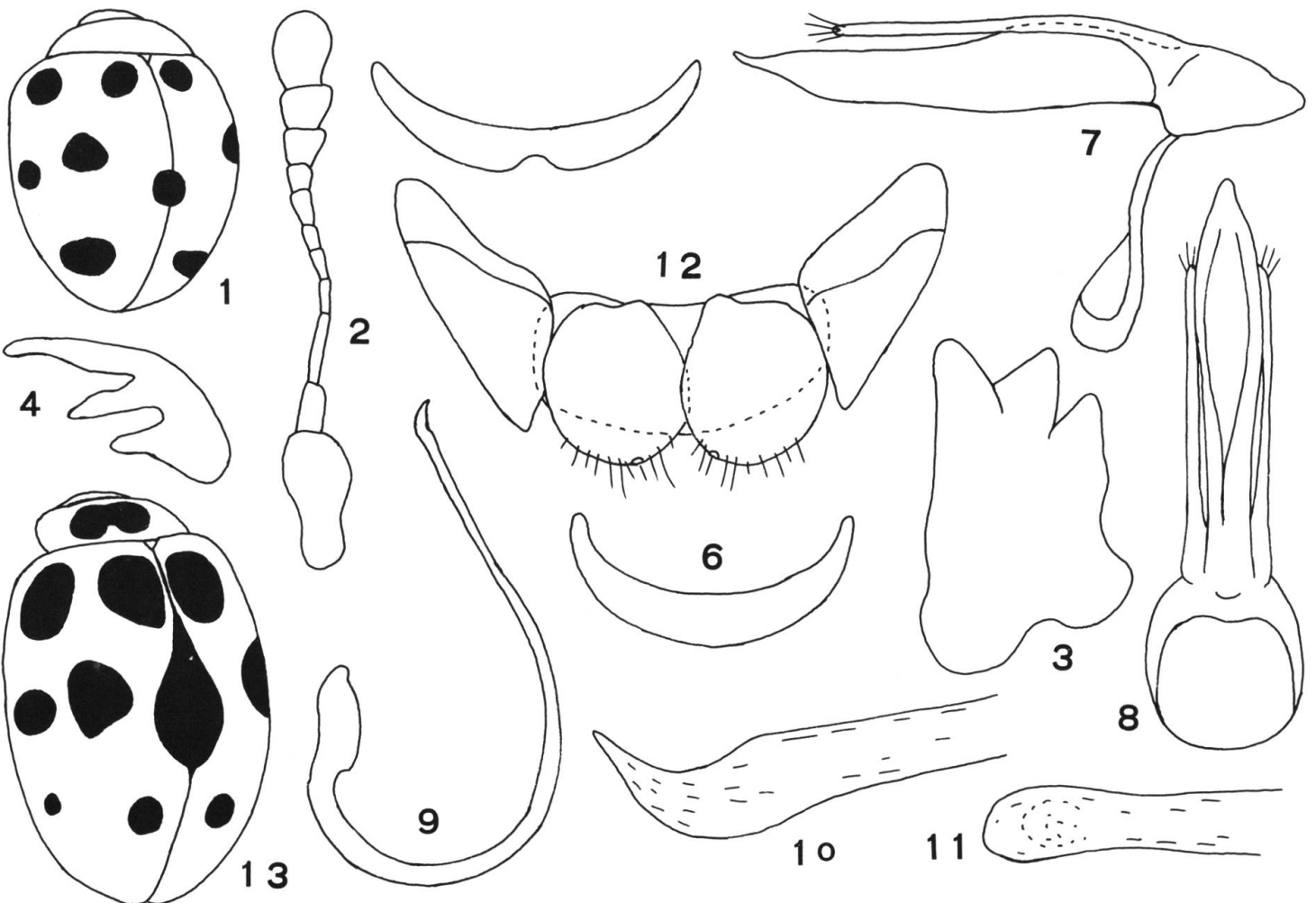
This is a very small species, very convex and almost oval in shape. Pronotum entirely testaceous or with slight darkening in the center. Elytrae with 6 spots each (fig. 1). In one specimen the subsutural spot at the center clearly coalescent with an analogous spot on the other elytron. In another specimen this spot is slightly reduced located near the suture. Antennae slender (fig. 2) with the third segment strongly elongated and the last segment of the antennal club almost oval. Mandibles with 3 large teeth (fig. 3). Claws split in two, with an additional sharply pointed tooth at the base (fig. 4). Abdominal line almost complete, reaching near the posterior margin. Last sternite in the male deeply emarginate in half of the width of the posterior margin (fig. 5). Last sternite in the female forms crescent-like arch (fig. 6). Copulatory organ of the male and female illustrated on figs, 7, 8, 12. Siphon (fig. 9) in its apical half strongly bent with very narrow siphonal sack. Siphonal apex as on fig. 10 and 11. The siphonal apex from lateral view different than that given for this species by DIEKE (1947) but almost identical with that given by KAPUR (1958).

This species known from Northwest India, North Bengal, Sikkim, Burma and China.

### 5. *Afidentula himalayana* Kapur

Material studied: Dorjula, 2600 m, 6.VI.1972, 1 specimen.

Each elytra with 7 spots of which one is subsutural and coalesces



Figs. 1–13: *Afidentula manderstjernae* (Muls.). 1, body outline. 2, antenna. 3, mandible. 4, claw. 5, last sternite of male. 6, last sternite of female. 7 and 8, copulatory apparatus of male. 9, syphon. 10, apex of syphon, lateral view. 11, apex of syphon, ventral view. 12, copulatory apparatus of female. 13, *A. himalayana* Kapur, body outline.

with that on the opposite elytra. This spot is quite strongly elongated posteriorly almost reaching the scutellar spots (fig. 13). This species has been described from Sikkim and Darjeeling (KAPUR 1963).

#### 6. *Epilachna dorotae* n. sp.

Body convex, almost oval in shape. Entire body black, only antennae upper labium, mouth appendages, legs except femora and the posterior margin of the last abdominal segments testaceous. Upper surface of the body with grey pubescence. Elytral pubescence on the spots black. Elytrae appear greyish with 6 distinct black spots (fig. 14). Punctures of the head large, deep and not very dense. Punctures on the pronotum in size much as on the head, but very dense, but toward the anterior lateral margins of the pronotum very large. Elytral punctures: small ones are densely distributed while large ones are very sparsely scattered. Abdominal line incomplete, its arch almost reaching the posterior margin, its end nearer the lateral than the anterior margin. Last sternite in the male W shaped (fig. 15). Last sternite in the female strongly emarginate with ends elongated in the shape of narrow projections (fig. 16). Spiculum gastrale narrow and very long, its length 2.45 mm. Tenth tergite very small, oval.

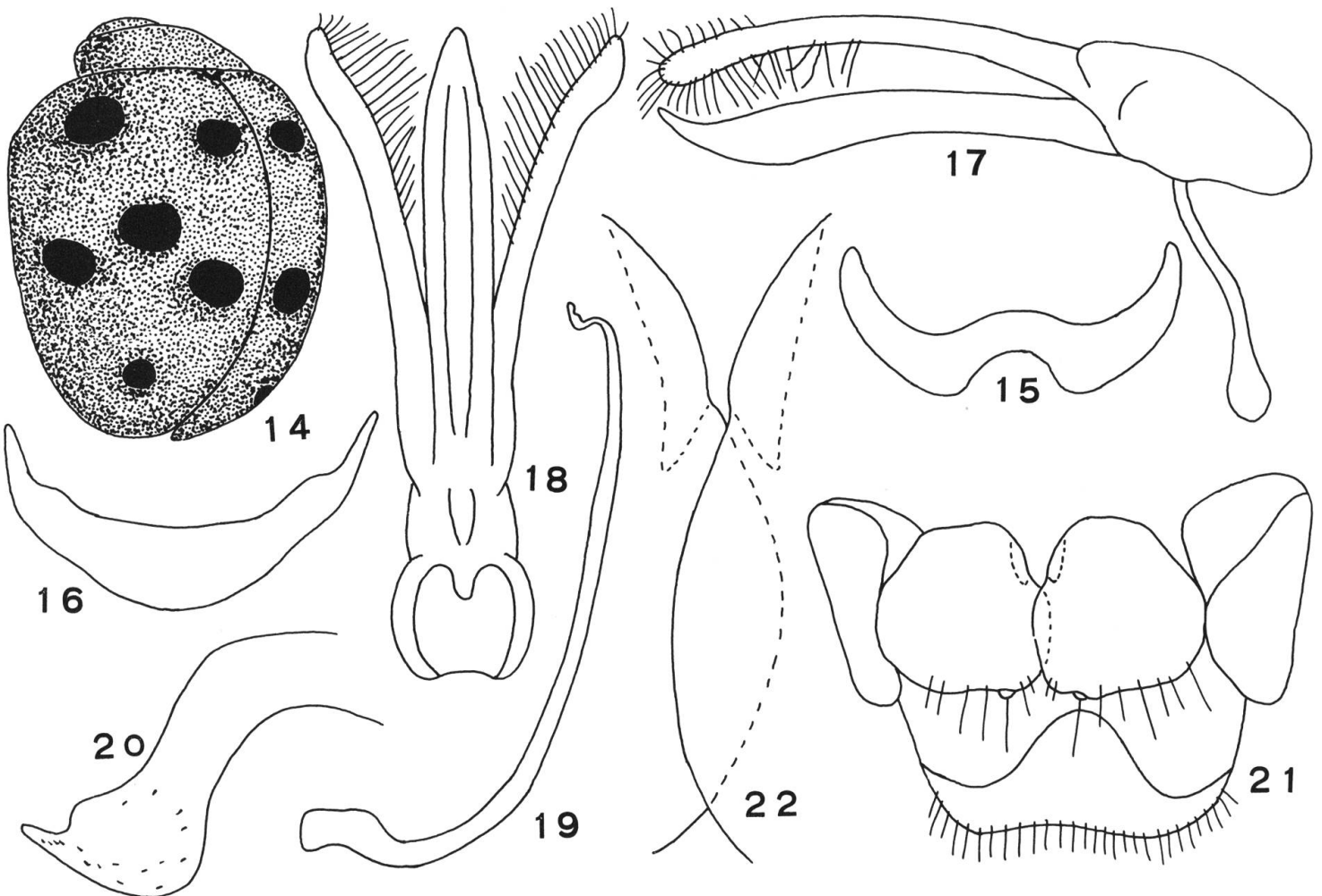
Length: 8.5–9 mm.

Male genitalia as on fig. 17–18. Penis from lateral view slightly S-shaped, narrow before the curvature its sharp end is slightly widened. Viewed from ventral side with parallel sides. Length of penis 2.1 mm., width from the side 0.25 mm., from below 0.35 mm. Basal part of penis strongly elongated. Trabes narrow and very short. Siphon (fig. 19), almost straight, with siphonal a small sack, at the end bent and slightly widened, with sharp spine at the tip (fig. 20).

Female copulatory apparatus as on Fig. 21. Genital plates transverse, overlapping, somewhat thickened at base from inside (fig. 22). Length of the genital plate 0.54 mm., width 0.55 mm.

Holotype and paratype: Changra, 18 km S of Tongsa, 1900 m, 22. VI. 1972.

In the structure of the female as well as the male genitalia this species is closest to *E. magna* (Dieke) – a species described from Fukien (China). It differs from it however quite clearly in the body shape, color as well as pattern and the number of elytral spots. Difference between these species can also be seen in the shape of penis and the apex of the siphon. From other species it can also be distinguished easily by the black



Figs. 14–22: + *Epilachna dorotae* n. sp.: 14, body outline. 15, last sternite of male. 16, last sternite of female. 17 and 18, copulatory apparatus of male. 19, syphon. 20, apex of syphon, lateral view. 21, copulatory apparatus of female. 22, inner margin of genital plates.

color of its head, pronotum and elytra and by the presence of spots formed by differently colored pubescence.

I named this species after my wife Dorota.

#### 7. *Epilachna mystica* (Muls)

Material studied: 87 km from Phuntsholing, 1700 m, 22.V.1972, 8 specimens; Chimakothi, 1900–2300 m, 22.V.1972, 7 specimens. Thimphu, 31.V.1972, 2 specimens 13 km E of Wangdiphodrang, 1300 m, 7.VI.1972, 1 specimen. Sampa, 1400 m, 7.VI.1972, 9 specimens. Changra, 18 km S of Tongsa, 1900 m, 22.VI.1972, 1 specimen.

This is probably one of the more commonly encountered species of the *Epilachninae*. Elytral coloration is variable but always retaining its characteristic pattern.

This species is known from Nepal, Sikkim, Northern Bengal and Burma.

#### 8. *Epilachna dumerili* (Muls)

Material studied: Samchi, 300 m, 7–11.V.1972, 40 specimens.

All specimens are identically colored. Pronotum without spots. On each elytra 5 large, black spots. The sub-scutellar spots and sub-humeral spots located at the same level. I discussed this species in detail (BIELAWSKI 1964). *E. dumerili* Muls. is known from Nepal, India and Burma (BIELAWSKI 1972).

#### 9. *Epilachna marginicollis* Hope

Material studied: Tangu, 22 km from Thimphu, 2600–2800 m 30.VI.1972, 1 specimen.

KAPUR (1958) gives the only data available for this species.

On the basis of the structure of the claws and the last sternite in the female he assigns it to the genus *Afissa* Dieke. He also gives drawing of the entire specimen. KAPUR (1963) also mentions it in another paper while describing a new species. The description below is based on the specimen from Bhutan (a male) and several specimens from the collection of the Zoological Institute of the Polish Academy of Sciences in Warsaw from Sikkim and North Bengal. This species occurs in Nepal, North Bengal and Burma (KAPUR 1958).

Body slightly convex, elongately oval in shape. Head pale brown with black base. Mouth appendages and antennae testaceous. Pronotum with large, black spot covering most of its surface so that only the lateral

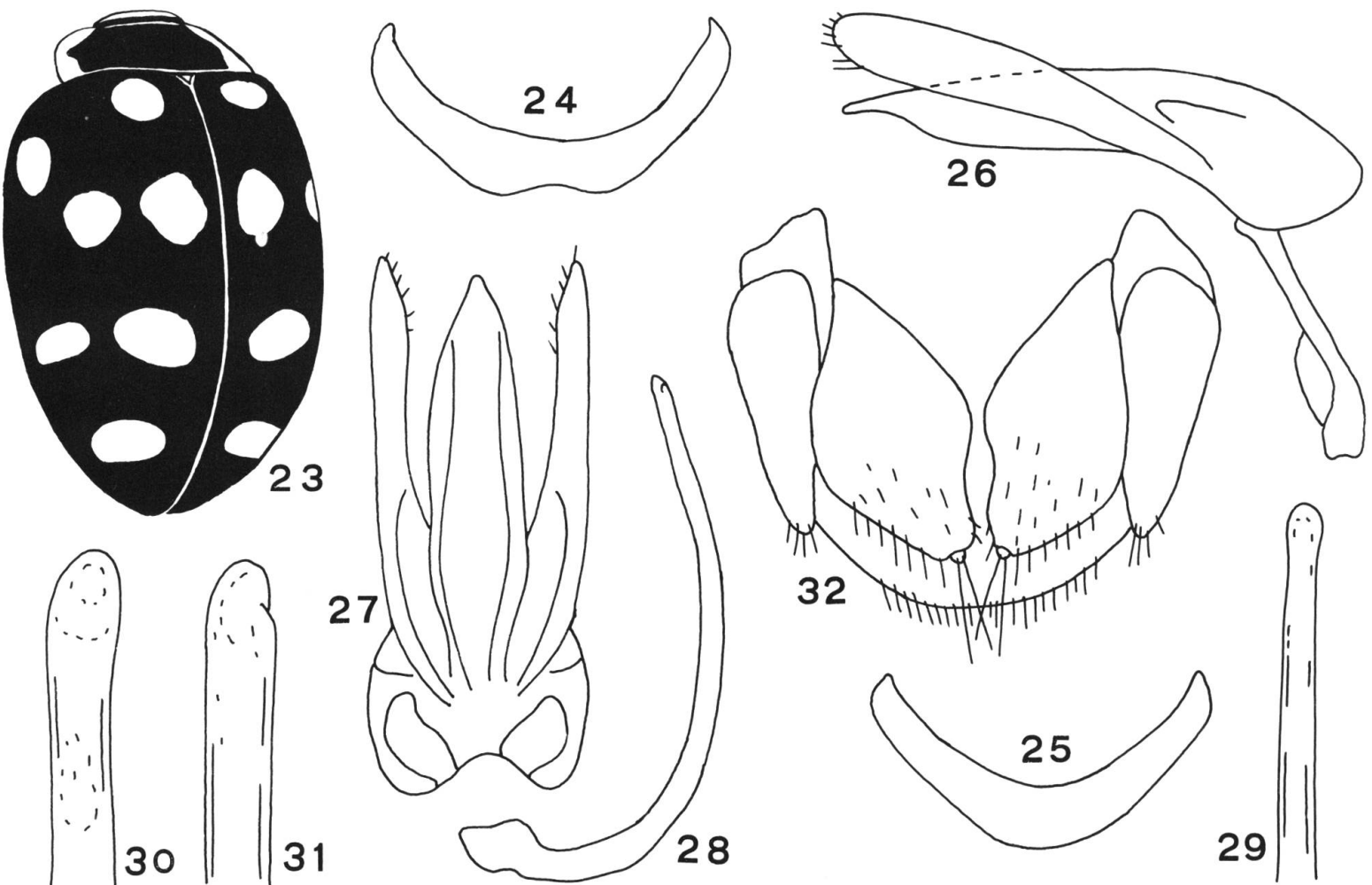
margins and sometimes the frontal margin are testaceous. The pronotal black spot spreads slightly along the middle of its length forming an inconspicuous projection. Scutellum black. Elytrae black with 7 yellow, moderately sized spots (fig.23). None of the spots reaches the lateral margin or the suture. Legs entirely testaceous. Ventral side black, except the lateral margins of the abdominal segments which are brownish (the first segment is entirely black, the last all brown).

Punctures on the head dense, interspace with distinct microsculpture. Pronotal punctures smaller than those on the head, very dense with a minute microsculpture between them. Small punctures on the elytrae of the same size as those on the head, also very densely dispersed. Large elytral punctures several times larger than the small ones, deep and sparsely dispersed. Interspace between the elytral punctures almost smooth. Humeral tubercles on the elytra large, strongly protruding and located near the humeral angles. Elytral apices widely rounded. Elytrae covered with greyish, short pubescence. Claws divided, without tooth at the base, inner claw shorter and slightly wider than the outer. Abdominal lines incomplete, its arch reaching  $\frac{2}{3}$  the length of the segment, its end slightly bent and located nearest the anterior margin. Last sternite in the male strongly curved, and, along the apical margin, strongly and widely emarginate (fig.24). Last sternite in the female short, strongly curved in form of wide U (fig.25). Subgenital plates in the male normally developed. Spiculum gastrale narrow and not widened along the tips. Length 0.95 mm.

Total length of studied specimens 5.6–6.8 mm. Length of Bhutan specimen 6.0 mm.

Male copulatory apparatus as on figs. 26 and 27. Its size relative to the total size of the abdomen very small. Length from the apex of the parameres to the base 0.95 mm. The parameres attached to the base of the penis from below. Length of penis equal to that of the parameres. Penis, viewed laterally, almost straight with long and narrow tip from its base to about  $\frac{2}{3}$  of its length of equal width. Penis, seen ventrally slender narrowed at the base with tip slightly elongated. Siphon slender, slightly curved just in front of the small, almost triangular siphonal sack (fig.28). Anterior side of the siphon seen from above with parallel sides (fig.29). The end of siphon as on figs.30 and 31. Length of penis 0.5 mm, width from the side 0.15 mm., from below 0.17 mm.

Female copulatory apparatus as on fig.32. Genital plates slightly oblique, pear shaped. Base of the plate slightly elongated, slender. Sexual tubercles relatively small, pubescence numerous and long. Outer



Figs. 23–32: *Epilachna marginicollis* (Hope): 23, body outline. 24, last sternite of male. 25, last sternite of female. 26 and 27, copulatory apparatus of male. 28, siphon. 29, anterior part of siphon, ventral view. 30, apex of siphon, ventral view. 31, apex of siphon, lateral view. 32, copulatory apparatus of female.

margin of the genital plate before its end widely and distinctly emarginate, its length 0.47 mm, width 0.25 mm.

This species in coloration of the elytra (pale spots on black background) resembles *E. pembertoni* Cr., a species described from Bhutan. It differs from it in the number of elytral spots. In *E. pembertoni* Cr., there are 6 spots on each elytra, in *E. marginicollis* (Hope) 7 spots on each elytra. In the presence of 7 spots on each elytra it is similar to *E. bhutanensis* n. sp. described below.

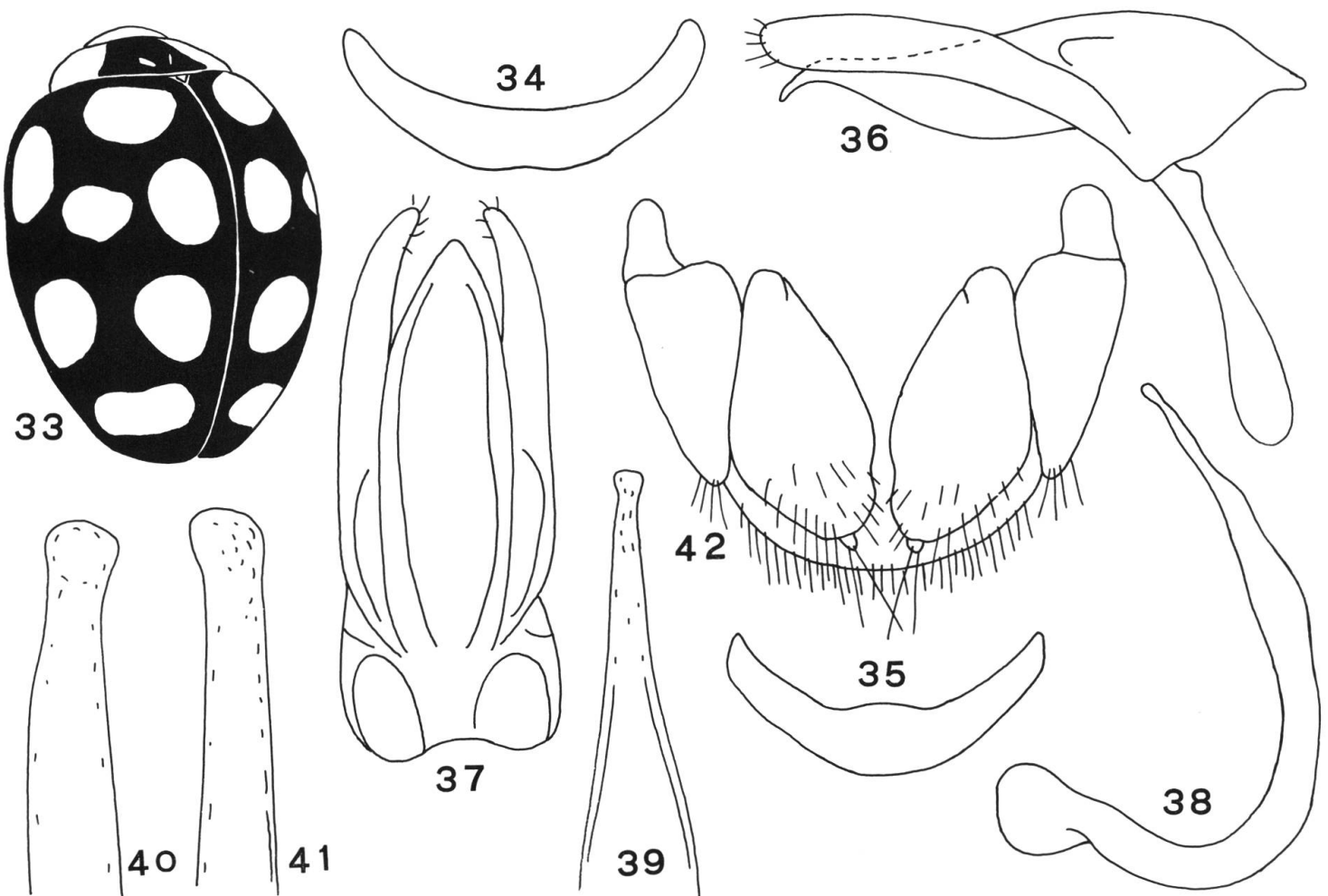
#### 10. *Epilachna bhutanensis* n. sp.

Body relatively strongly convex, its form short and strongly oval. Head, antennae and mouth appendages light brownish. Pronotum testaceous with a large, black or piceous spot, which extends in the middle from the base to the front of the pronotum, lateral margins with strong arcuate emargination, near the base of the black spot two very small oblique pale spots. Lateral margin of the pronotum in its posterior very narrowly black. On the black spot before the scutellum evident two small lighter spots. Scutellum black. Elytra black with 7 large yellowish spots (fig. 33). The spots never reach the elytral margins or the suture. Legs entirely brownish. Ventral side black except the lateral portion of the abdominal segments brownish.

Punctures on the head, large, deep, widely dispersed, space between them glabrous. Punctures on the pronotum smaller than those on the head, not very dense, spaces between them also glabrous. Elytral punctation: Small punctures larger than those on the head, quite sparsely dispersed. Large punctures very numerous, densely but irregularly dispersed. Interspaces between the punctures with irregular microgrooves and tiny scratches. Humeri raised and strongly protruding. The humeral tubercles situated somewhat away from the humeral angles and closer to the frontal than to the lateral margin. Elytral apices widely rounded. Elytral pubescence grey, remarkably short. Claws divided, without tooth at base. Both claws of equal length but inner slightly wider than the outer. Abdominal line incomplete, its arch reaching  $\frac{2}{3}$  of the length of the segment, its ends equidistal to the lateral and the posterior margin. Last sternite in the female feebly curved, on its caudal margin slightly and shallowly emarginated (fig. 34). Last sternite in the female quite long, slightly convex, (fig. 35). Spiculum gastrale narrow, long, at the base slightly widened. Its length 1.05 mm.

Total body length: 5.0–6.0 mm.

Male copulatory organ as on figs. 36 and 37. The male copulatory



Figs. 33–42: *Epilachna bhutanensis* n. sp.: 33, body outline. 34, last sternite of male. 35, last sternite of female. 36 and 37, copulatory apparatus of male. 38, syphon. 39, anterior part of syphon, ventral view. 30, apex of syphon, ventral view. 41, apex of syphon, lateral view. 42, copulatory apparatus of female.

apparatus short in proportion to the abdomen. Length from the tip of the parameres to the end of the base 1–25 mm. Parameres set in the basal part. Penis slightly shorter than the parameres. Penis viewed from the side slightly S-shaped and narrowing from the base to the apex. Its apex elongated and with hook-like curvature. From ventral view penis wide with dull tip. Siphon massive, from half of its length quite strongly curved, (fig. 38). In the apical half of unequal width, moving narrowly toward the apex (fig. 39). Siphonal sack small. End of siphon as on figs. 40 and 41. Penis length 0.68 mm, width from the lateral view 0.25 mm; from ventral view 0.30 mm.

Female copulatory apparatus on figs. 42. Genital plates slightly oblique, pear shaped, its base wide. Sexual tubercles large, its pubescence numerous and long. Interior margin of the genital plates slightly emarginate before the tip. Length of genital plate: 0.5 mm, width 0.25 mm.

Holotype ♂: Tongsa, 2150 m, 24.VI.1972.

Paratypes: 1 from the same locality as the type. 1 from collection of the Zoological Institute, PAN, Warsaw, identified as *Afissa marginicollis* (Hope). India: Darjeeling dist. Forest 1 km E of Jorkposi, 2210 m, 23.V.1971, A.R. Bhaumik.

This species can be distinguished from *E. pembertoni* Cr., *E. lugubris* (Dieke), *E. sureilica* (Kapur), and *E. parvula* Cr. by the presence on each elytra of 7 light spots on black background. It seems close to *E. marginicollis* (Hope) in which there are also pale spots on each elytra. These spots in this species however are clearly smaller. The body shape in both species is also different. In *E. marginicollis* (Hope) the body is slightly convex and quite elongated. In *E. bhutanensis* n. sp. it is convex and almost oval. There are also distinct differences in the punctures of the dorsal surface and the shape of the last abdominal sternite. The siphons of both species are entirely different. In spite of the superficial similarity both species are very distinct.

#### 11. *Epilachna decemmaculata* Redtb.

Material studied: Chimakothi, 2200 m, 22.V.1972, 1 specimen. Thimphu, 2300–2500 m, 31.V.1972, 1 specimen.

The pronotum with a rather large, transverse, black spot. Scutellum pale. Five spots on each elytrae (fig. 43), the humeral spot near the humeral tubercle is slightly emarginate towards the suture. In one specimen the humeral and the scutellar spots are enlarged and almost contiguous. Legs pale. Last sternite in the female very long and strongly

curved (fig.44), with narrow and elongated tips. Genital plates quite strongly elongated with sparse pubescence, (fig.45).

This species is known from China, Himalayas, Cashemere, Tibet and India. The area nearest to Bhutan is Nepal reported in BIELAWSKI 1971 where I discussed this species in detail.

#### 12. *Epilachna elvina* Muls.

Material studied: 87 km from Phuntsholing-Timpfu, 1680 m, 21.–23.V.1972, 2 specimens.

Three spots on the pronotum. Scutellum black. Elytrae each with 5 spots, (fig.46). The scutellar spot rather small, located near the suture but not contiguous with it. Humeral spot from the side of the humeral tubercle somewhat emarginate (towards the suture), the preapical spot slightly widened transversally. Tibiae of the middle and especially of the posterior legs slightly darkened. Last sternite in the female short, slightly arched (fig.47). Genital plate quite wide with numerous, long setae (fig.48). This species is known from the northern provinces of India.

*E.elvina* Muls., externally resembles *E.maculivestis* Muls., from which it can be easily distinguished by the presence of the 3 spots on the pronotum. The male copulatory apparatus in these two species is very different.

#### 13. *Epilachna maculivestis* Muls.

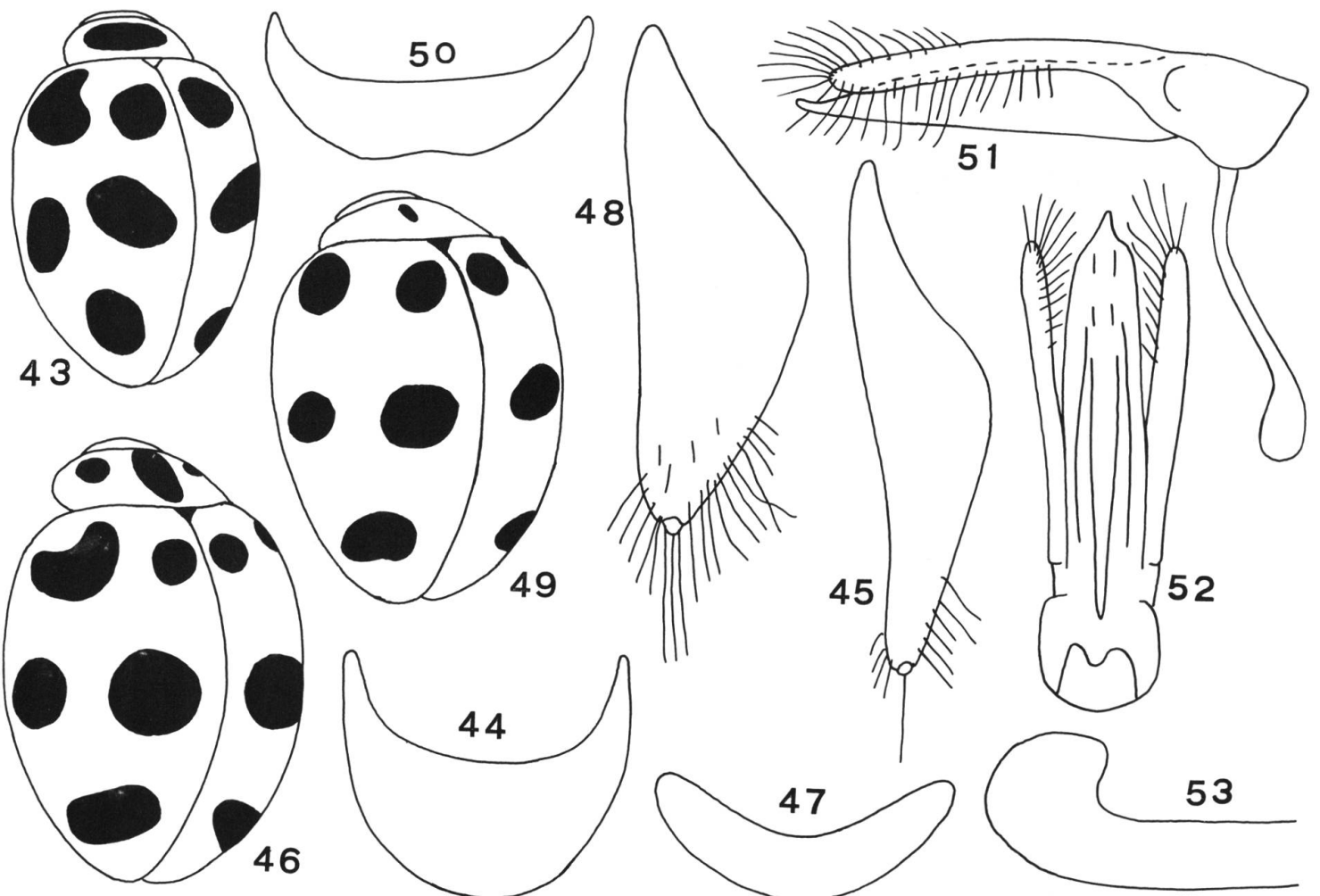
Material studied: Samchi, 300 m, 7.–11.V.1972, 1 specimen.

A small elongated spot on the pronotum. Scutellum black. Elytrae dark testaceous, each with five circular spots (fig.49). None of spots reaches the lateral margins of the suture. Last sternite in the male with emarginate posterior margin (fig.50).

Length of the specimen studied: 5.4 mm.

Male copulatory apparatus as on figs.51 and 52. Penis somewhat longer than the parameres straight, at the end somewhat narrowed and slightly bent. Viewed from below with parallel lateral margins to the apical narrowing, the tip narrow, somewhat elongated into a point. Parameres slightly bent their base elongated covered with numerous, rather long setae. Trabes very narrow, widened toward the end, its length less than the length of the penis. Siphon slender, very long with very small siphonal sack. Tip of the siphon as on fig.53. Length of penis 0.96 mm, its width from the side 0.2 mm, from below 0.22 mm. Length of trabes 0.75 mm.

This species was described from Tibet and reported also from



Figs. 43–45: *Epilachna decemmaculata* Redtb., 46–48, *E. elvina* Muls., 49–53: *E. machinestis* Muls.: 43, 46 and 49, body outline; 44 and 47, last sternite of female; 45 and 48, genital plates; 50, last sternite of male; 51 and 52, copulatory apparatus of male; 53, apex of syphon, lateral view.

Nepal (BIELAWSKI 1972). In this paper it is discussed in greater detail and female copulatory organ is illustrated.

#### 14. *Epilachna atypica* (Dieke)

Material studied: Phuntsholing, 200–400 m, 25.IV.1972, 1 specimen, 87 km from Phuntsholing, 1680 m, 22.V.1972, 1 specimen.

Entire body dark brownish, ventral side black. On the pronotum a small spot in the middle. Scutellum pale. On each of the elytrae 6 spots, (fig. 54), none reaching the lateral margin or the suture. Legs and antennae entirely pale. Claws split into two without a tooth at the base. Abdominal lines complete. Last sternite in the female rather short and strongly curved, (fig. 55), total length: 4.7 mm.

Female copulatory apparatus as on fig. 56. Genital plates strongly elongated, widest  $\frac{1}{3}$  from the base. Pubescence scarce, not very long. Length of the genital plate 0.78 mm, width 0.19 mm.

One of the few species with spots not contiguous with the suture. Known from North Bengal. This species was also mistakenly reported from Flores island (BIELAWSKI 1959).

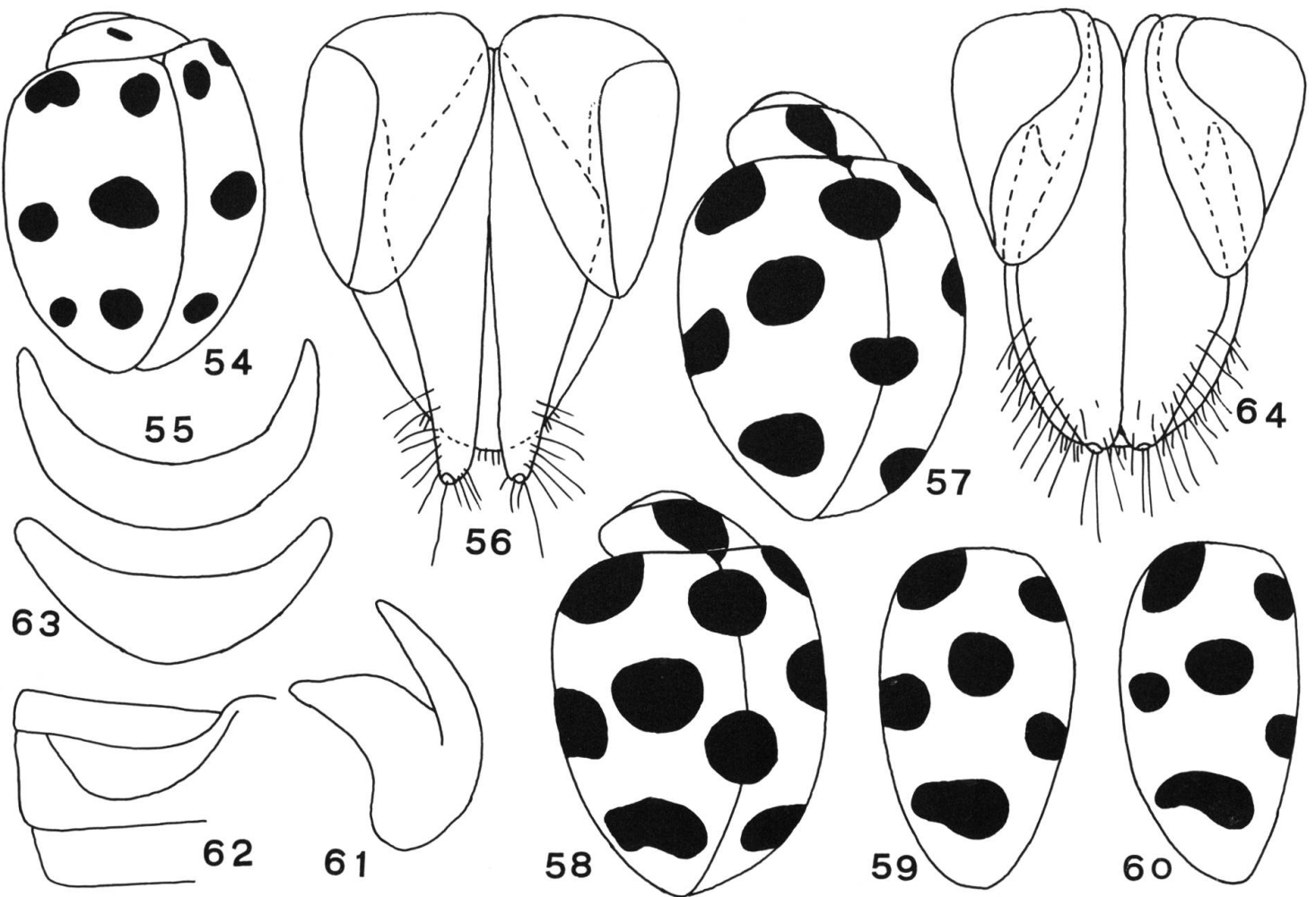
#### 15. *Epilachna bengalica* (Dieke)

Material studied: Chimakothi, 1900–2300 m, 22.V.1972, 1 specimen, 21 km E of Wangdiphodrang, 1700–2000 m, 15.VI. and 25.VI.1972, 3 specimens. 18 km S of Tongsa, Changra, 1900 m, 22.VI.1972, 1 specimen.

Head pale. Pronotum with black median spot nearly extending from the anterior to the posterior margin. Scutellum black. Elytra with 6 spots each two of which are located on the suture (fig. 57). Humeral spot always reaching the margins of the humeral angles while the lateral spot may or may not reach the lateral margin (figs. 58–60). Preapical spot more or less transverse and always nearer the lateral margin than to the suture. Elytral punctures both large and small distinct and deep. Legs very darkened. Claws (fig. 61), with very wide outer tooth. Abdominal line complete (fig. 62). Last sternite in the female rather long, feebly curved, with rounded tips (fig. 63). Body length: 4.8–5.4 mm.

Female copulatory apparatus as on fig. 64. Genital plates elongated with narrowed base. Its greatest width slightly beyond half of its length. Pubescence numerous and long. Length of genital plate 0.72 mm, width 0.22 mm.

This species has been described from North Bengal and reported also from Sikkim.



Figs. 54-64: 54-56, *Epilachna atypica* (Dieke), 57-64, *E. bengalica* (Dieke): 54, 57 and 58, body outline. 59 and 60, elytra. 55 and 63, last sternite of female. 56 and 64, copulatory apparatus of female. 61, claw. 62, femoral line.

The type of coloration present in *E. bengalica* (Dieke) occurs also in several species which are very similar and often known only from the female specimens. Known differences between them refer to the coloration of the pronotum, scutellum and legs, the shape of the abdominal lines and the last sternite of the abdomen. *E. bengalica* (Dieke) differs from these species rather clearly in its distinct and deep elytral punctation.

In order to make it easier to identify species with 6 or 7 elytral spots known to occur in Bhutan so far I am giving below a key based on their external characters:

- |   |                              |
|---|------------------------------|
| 1. On each elytra 7 spots . . . . .                               | 2                            |
| – On each elytra 6 spots . . . . .                                | 3                            |
| 2. Scutellum black, elytral apex black . . . . .                  | <i>undecimspilota</i> (Hope) |
| – Scutellum and elytral apices pale . . . . .                     | <i>septemnotata</i> n. sp.   |
| 3. Two spots on the suture . . . . .                              | 4                            |
| – No spots on the suture . . . . .                                | <i>atypica</i> (Dieke)       |
| 4. Scutellum black, large punctures on the elytra very deep       |                              |
|   | <i>bengalica</i> (Dieke)     |
| – Scutellum pale, large punctures on the elytra shallow . . . . . | 5                            |
| 5. Three spots on the pronotum . . . . .                          | <i>sexpunctata</i> n. sp.    |
| – One spot on the pronotum . . . . .                              | 6                            |
| 6. Tibiae pale . . . . .  | <i>sexsignata</i> n. sp.     |
| – Tibiae dark . . . . .   | 7                            |
| 7. Femora and entire antennae pale . . . . .                      | <i>sexpustulata</i> n. sp.   |
| – Femora and antennae partially dark . . . . .                    | <i>monsuna</i> n. sp.        |

#### 16. *Epilachna sexpunctata* n. sp.

Body quite strongly convex, shape widely oval. Head and antennae brownish. On the pronotum three large black spots. Scutellum testaceous. Elytrae each with 6 spots, (fig. 65). Humeral spot reaching the lateral margin. Preapical spot slightly transverse. Spots on the suture rather small.

Punctures on the head small and sparsely scattered, interspaces glabrous. Punctures on the pronotum small, deep, very dense and regular distributed over the entire surface. Large punctures on the elytrae distinct but shallow and sparsely distributed, small punctures barely visible. Legs entirely pale brownish. Abdominal lines incomplete, its arch reaching slightly beyond  $\frac{3}{4}$  of the length of the segment. Last sternite in the female short, rather strongly curved with rounded tips, in half of its length rather less sclerotised (fig. 66), body length: 5.5 mm.

Female copulatory organ as on fig. 67. Genital plates rather short and wide. Its base elongated and wide. Hairs numerous and rather long. Length of genital plate 0.73 mm, width 0.24 mm.

Holotype: Phuntsholing, 200–400 m, 25.IV.1972, female.

This species can be easily distinguished from the closely related species by the presence of three spots on the pronotum while other species have only one spot. It is close to *E. sexsignata* n. sp. from which it differs in the shape of the last sternite and the size of genital plates in the female. In *E. sexpunctata* n. sp. the length of the genital plate is 0.73 mm, while in *sexsignata* n. sp. 0.95 mm. The newly described species is also similar to *E. sexpustulata* n. sp. and *E. monsuna* n. sp. from which it differs among others in the coloration of the legs which are pale in *E. sexpunctata* n. sp. while in the other two species darkish.

#### 17. *Epilachna sexsignata* n. sp.

Body rather strongly convex, almost oval in shape. Head and antennae testaceous. Pronotum with a black spot in the middle located nearer to the anterior than to the posterior margin. Scutellum pale. Each elytra with 6 spots. Humeral spot somewhat emarginate on its exterior and like the lateral spot does not reach the lateral margin. Spots located on the suture rather large.

Punctures on the head small, distinct and densely set. Punctures on the pronotum small, shallow, densely and regular set over the entire surface, but somewhat shallower on the sides. Large and small elytral punctures rather distinct, large, sparsely distributed, small punctures densely distributed.

Legs all pale brownish. The abdominal lines end just in front before the anterior margin of the segment while its arch reaches slightly above  $\frac{2}{3}$  of the length of the segment. Last sternite in the female rather long, narrowing towards the ends from its middle, the entire surface uniformly sclerotised (fig. 68). Length of the body 6 mm.

Female copulatory apparatus as on fig. 69. Genital plates very wide and long. The base elongated and very wide. Setae numerous but short. Length of the genital plate 0.95 mm, width 0.32 mm.

Holotype: 21 km E of Wangdiphodrang, 1700–2000 m, 25.VI.1972, female.

In the presence of one rather large spot on the pronotum the species is similar to *E. bengalica* (Dieke). From this species it can be distinguished by its pale scutellum and legs. Genital plates in both species are different, the base in *E. sexsignata* n. sp. is wide while in *E. bengalica*

(Dieke) very narrow. In its outward appearance *E. sexsignata* is also similar to *E. maculicollis* (Sic), a species known from Taiwan.

18. *Epilachna sexpustulata* n. sp.

Body rather strongly convex, widely oval. Head and antennae light brown. Pronotum orange-brownish with a quite large black spot reaching the posterior but not the anterior margin. Scutellum pale colored. Elytrae each with 6 spots (fig. 72). Prescutellar spots almost coalescent, slightly larger than the spots on the posterior half of the elytrae. The humeral spot barely touches the margin. Punctures on the head of medium size, deep and dense. Punctures on the pronotum small deep and very densely set over the entire surface. Punctures large and small on the elytrae very shallow and indistinct, fading among tiny irregular net-like microsculpture.

Femora pale, tibiae strongly darkened shading into black. Abdominal lines incomplete. Last sternite in the male rather long, its posterior margin rather widely but shallowly emarginate (fig. 73). Body length: 5.5 mm.

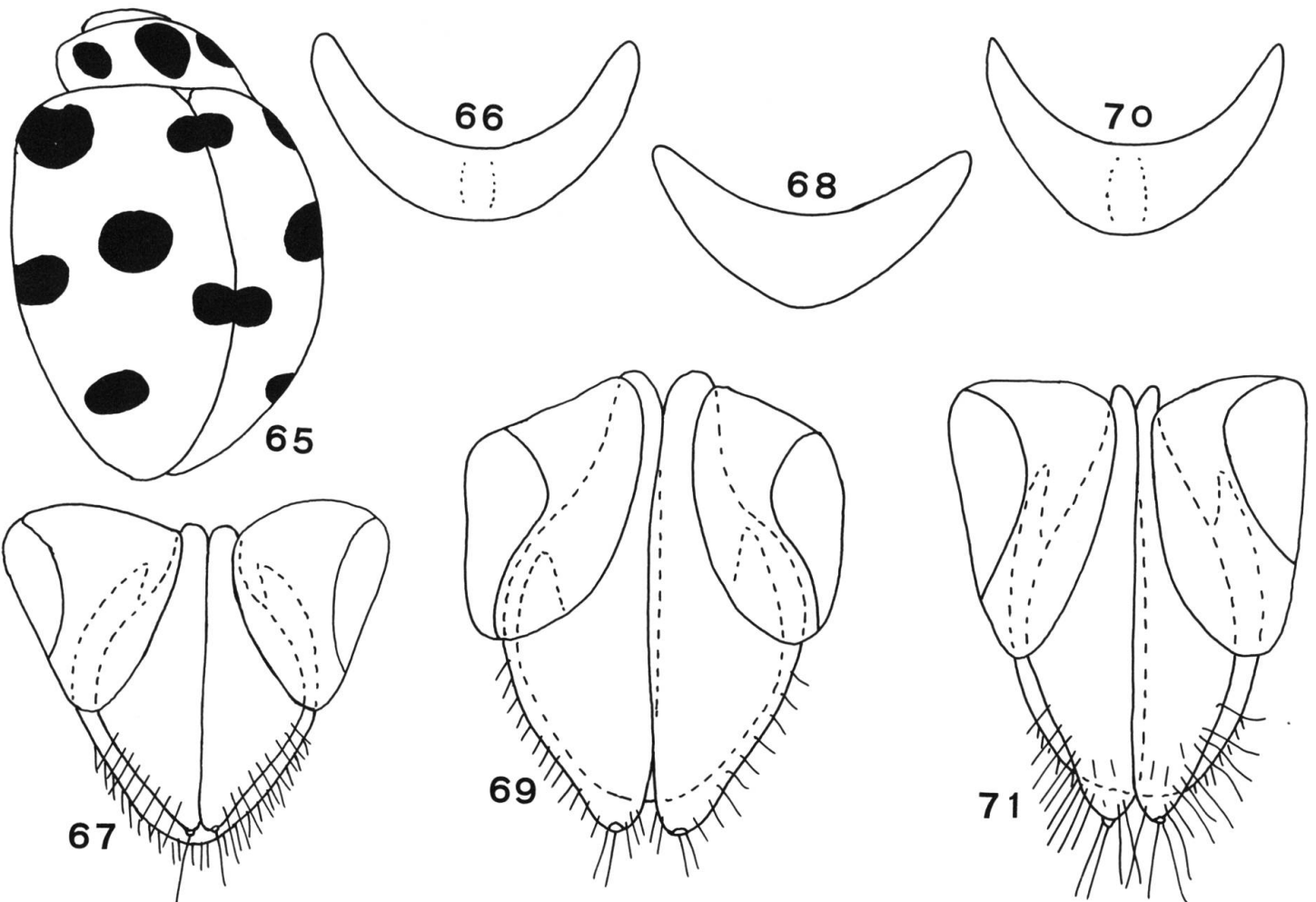
Male copulatory apparatus as on figs. 74 and 75. Penis slightly longer than the parameres; from the lateral view slightly curved, at  $\frac{1}{3}$  before the apex somewhat widened, its tip almost straight ending in a short point. Seen from the ventral side it has lateral margins almost parallel, its tip forming a short point. Parameres with numerous long setae. Trabes narrow, with parallel sides almost through its entire length its length slightly greater than the length of the penis. Siphon slender, very long with a small siphonal sack. Tip of the siphon as on fig. 76. Length of penis 0.8 mm, width from lateral view 0.2 mm, from ventral view 0.25 mm.

Holotype: 13 km East of Wangdiphodrang, Tan Chu, 1300 m, 7. VI. 1972, male.

*E. sexpustulata* n. sp. is very close to *E. monsuna* n. sp. These species clearly differ in their copulatory apparatus and also in the coloration of the femora and antennae. In *E. monsuna* n. sp. the antennal club and femora are dark. In *E. sexpustulata* n. sp. the femora and the entire antennae are pale.

19. *Epilachna monsuna* n. sp.

Body quite strongly convex in shape and somewhat oblong, oval. Head brownish. Apical half of the antennae black. Pronotum light testaceous with a large, black, almost heart shaped spot in the middle. Scutellum pale. Elytrae light testaceous, each with 6 spots (fig. 77). Only



Figs. 65-71: 65-67, *Epiplachna sexpunctata* n. sp. 68 and 69 - *E. sexsignata* n. sp., 70 and 71 - *E. monisima* n. sp.: 65, body outline. 66, 68, 70, last sternite of female. 67, 69 and 71, copulatory apparatus of female.

the humeral spot may reach the lateral margin over very short space. Preapical spot in various degrees transversely elongated.

Punctures on the head small, very dense except in the center where they are sparser. Punctures on the pronotum smaller than on the head and very dense. Punctuation on the elytra: Larger punctures exceptionally large, rather deep but sparsely scattered. Small punctures almost invisible, very small, shallow and camouflaged by microsculpture in the form of small, irregular scratches.

Femora partly darkened, tibiae black. Abdominal line incomplete (fig. 78), ends far from the anterior margin of the segment. Last sternite in the male (fig. 79), with the posterior margin narrowly and shallowly emarginate. Last sternite in the female (fig. 70), rather long, strongly arched, less sclerotised in the middle. Body length: 5.5–6.0 mm.

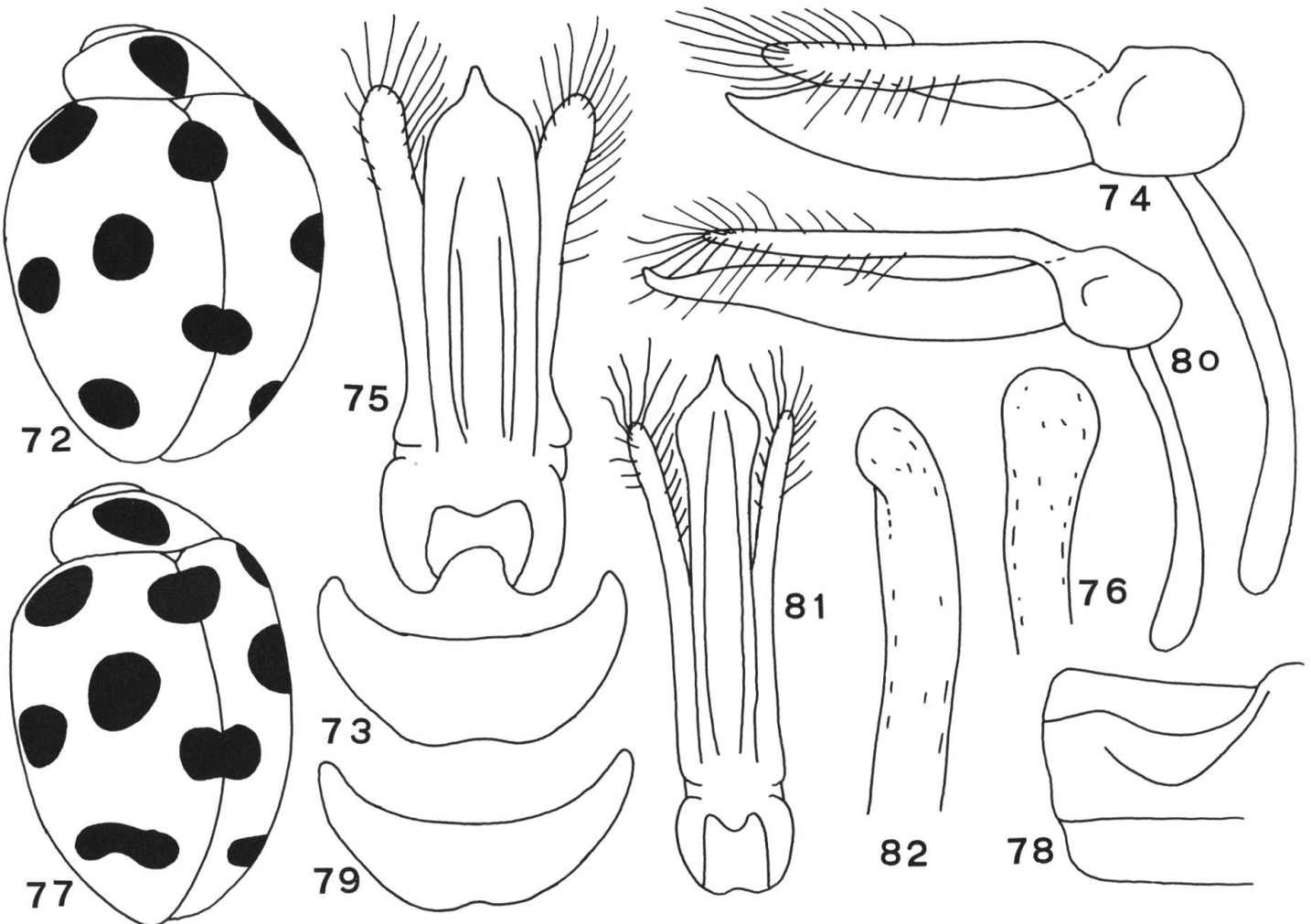
Male copulatory apparatus as on figs. 80 and 81. It is very large in proportion to the size of the abdomen. Penis longer than the parameres. Seen from the lateral view it is narrow, slightly curved, with the end narrow and bent. In the ventral view it is clearly widened before the pointed tip. Parameres narrow, straight, with quite numerous, long setae. Trabes narrow and short, shorter than penis. Siphon very long, slender with rather large siphonal sack. End of the siphon (fig. 82), not widened. Length of penis 1.27 mm, width from lateral side 0.2 mm, from the ventral side 0.24 mm.

Female copulatory organ on fig. 71. Genital plate narrow, elongated with numerous, rather long setae, its greater width slightly beyond the half of this length towards the apex. Length of genital plate 0.87 mm, width 0.2 mm.

Holotype: 21 km E of Wangdiphodrang, 16.VI.1972, male.

Paratype: Nobding, 41 km E of Wangdiphodrang, 2800 m, 15.VI.1972, female.

This species differs from the previous species in having a somewhat elongated body and an exceptionally long male copulatory apparatus. Its copulatory apparatus resembles somewhat that of *E. maculicollis* (Sic.), from Taiwan, but differs in having incomplete abdominal lines. It is also similar to *E. nilgirica* (Ws) from which however it differs in a large spot on the pronotum. In its elytral punctuation it is close to *E. sexpustulata* n. sp. but the male copulatory organs in these species are different, also the antennae in *E. monsunae* n. sp. are black in the apical half while in the *E. sexpustulata* n. sp. the antennae are pale.



Figs. 72–82: 72–76, *Epilachna sexpustulata* n. sp., 77–82 – *E. monsunia* n. sp.: 72 and 77, body outline; 73 and 79, last sternite of male; 74 and 75, 80 and 81, copulatory apparatus of male; 76 and 82, apex of siphon; lateral view; 78, femoral line.

20. *Epilachna septemnotata* n. sp.

Body strongly convex, oval in shape but somewhat tapering off towards the posterior end. Head brownish. Anterior half of antennae black. Pronotum testaceous with a large, black spot extending from the anterior to the posterior margin. Lateral margins of the pronotal spot parallel. Scutellum pale. Elytrae each with 7 spots (fig. 83), two spots located on the suture. Coalesce with the opposite spots. The humeral spot reaches the anterior and the lateral margins. The spot along the middle of the elytrae, located along the side, reaches the lateral margin. Before the apex of the elytrae there are two spots of which the outer almost touches the lateral margin. Elytral tip pale.

Punctures on the head medium size and dense. Punctures on the pronotum small, deep, very dense over the entire surface. Elytral punctures large and small, but not very distinct, shallow, with margins fading due to microsculpture up very tiny, irregular scratches.

Femora brownish, tibiae somewhat darker almost piceous. Abdominal lines complete, its arch reaching very near the posterior margin of the segment. Last sternite in the male (fig. 84), with the posterior margin rather widely but shallowly emarginate, its tips wide, somewhat arcuate. Body length: 5.4 mm.

Male copulatory organ figs. 85 and 86. Penis slightly longer than the parameres, from the lateral view very slightly curved, its end forming a short, feebly bent point (fig. 87). Seen from ventral side gradually tapering off towards the end into a short point (fig. 88), before the base somewhat narrowed. Parameres rather wide, straight with numerous long setae. Trabes narrow, long, its length equal to the total length and the base together. Siphon very long, slender, with rather large signonal sack. End of the siphon slightly widened. Length of the penis 0.7 mm, width from the lateral side 0.13 mm, from the ventral side 0.19 mm.

Holotype: km 87 Phuntsholing-Thimphu, 1680 m, 22.V.1972, Male.

This species differs from other species in having 7 spots on each elytra and light pale elytral apices. It is similar to *E. monsuna* n. sp. where the preapical spot is rather transverse and narrowed in the middle, thus giving an appearance in being formed of two coalescent spots. However, the copulatory apparatus in these two species is quite different. In the number of spots it resembles *E. undecempilota* (Hope) from which it differs in a pale apex of the elytrae, a pale scutellum, and different punctuation on the pronotum. In the *E. septemnotata* n. sp. the punctures are evenly distributed over the entire surface including the

lateral margins while in *E. undecemspilota* (Hope) the lateral punctures are larger and more sparsely distributed than on the rest of the pronotum. *E. septemnotata* n.sp. is also similar to *E. quindecimguttata* (Dieke), a species described from China. It differs however, from this species, in having pale elytral apex, oval body and entirely different shape of the penis.

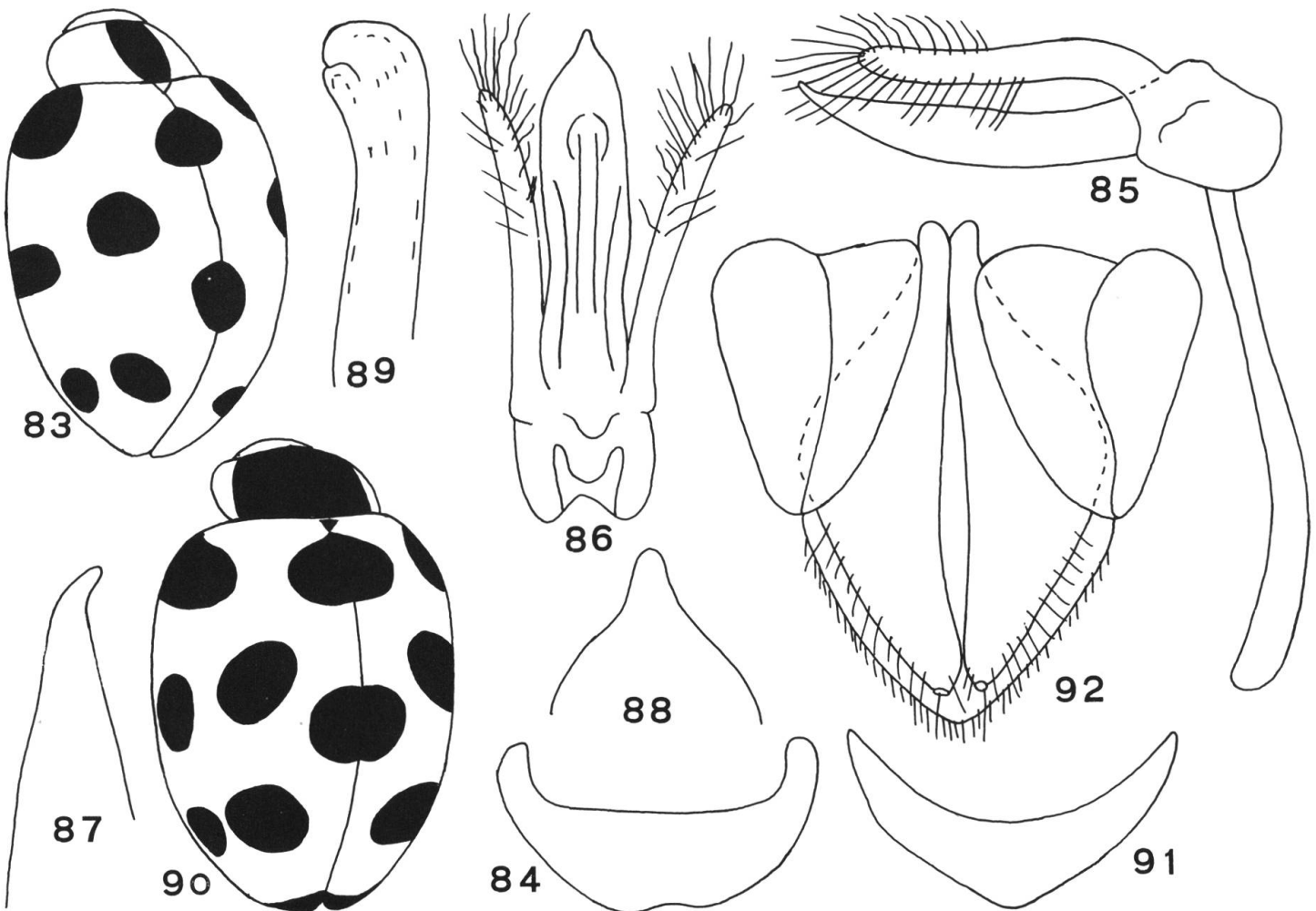
#### 21. *Epilachna undecemspilota* (Hope)

Until recently under this name figured specimens which belonged to other species. It was unclear how this species looks like. DIEKE (1947) and following him BIELAWSKI (1967) assumed that this species was characterised by 5 spots on each elytra and one small spot on the pronotum. KAPUR (1958), describing a new species, discussed this species in detail and clarified its characteristics. He indicated that this species has black pronotum with pale margins, six spots on each elytra, black elytral apices and that the preapical spot is probably a result of two coalescent spots. KAPUR gave a complete illustration of the type of *E. undecemspilota* (Hope). On the basis of this information, I am assigning two specimens from Bhutan to this species. The Bhutan specimens differ slightly from the illustration of the type specimen, namely; the preapical spot is divided into two (fig.90), in one specimen, but in the other specimen these two spots are located very close to each other and the space between them is somewhat darkened. This shows that occasionally the spots may coalesce.

Material studied: 21 km E of Wangdiphodrang, 1700–2000 m, 25.VI.1972, 2 specimens.

Head brownish slightly darkened towards the posterior. Antennal club black. Pronotum black with yellowish margins. Scutellum black. Elytrae light testaceous, each with 7 spots and black apex, spots on the suture rather large, the subscutellar reaches the scutellum, humeral spot reaches the lateral margin, the spot in the middle reaches nearly to the lateral margin.

Punctures on the head medium size, densely distributed but sparser in the middle. Punctures on the pronotum small, rather deep, dense but nearer the lateral margins larger and sparser. Elytral punctures large and small but distinct and shallow. Small spots very densely distributed, large, spots sparse and unevenly distributed. Femora, except the first pair and tibiae almost entirely black. Claws divided into two, without a tooth at the base, the outer very wide. Last sternite in the female (fig.91)



Figs. 83-92: 83-89, *Epilachna septemnotata* n. sp. 90-92 - *E. undecenspilota* (Hope): 83 and 90, body outline. 84, last sternite of male. 85 and 86, copulatory apparatus of male. 87, end of penis, lateral view. 88, end of penis, ventral view. 89, apex of syphon, lateral view. 91, last sternite of female. 92, copulatory apparatus of female.

with the posterior margin somewhat angular, tips elongated, almost sharp. Body length: 5.5 mm.

Female copulatory organ fig. 92. Genital plates elongated, the base narrow, somewhat curved exteriorly, its greatest width in the middle of its length, setae numerous but short. Length of the genital plate 0.72 mm, width 0.22 mm.

In its habitus this species resembles *E. quindecimguttata* (Dieke) especially in the black elytral apices. However the genital plates in *E. undecempilota* (Hope) are different in shape and size and are more than twice as long. In the body shape *E. quindecimguttata* (Dieke) is more elongated. The new species is also similar to *E. septemnotata* n. sp. The differences between these had been given in the discussion of the latter.

#### 22. *Sumnius vestita* (Muls)

Material studied: Phuntsholing, 200–400 m, 6.V.1972, 1 specimen, Samchi, 300–350 m, 7.–11.V.1972, 2 specimens.

All three specimens in question are identically colored. All have the characteristic pattern I gave in my paper (BIELAWSKI 1972, fig. 24) in which I discussed this species in detail.

#### 23. *Sumnius haematica* (Gorh)

Material studied: Samchi, 300 m, 7.–11.V.1972, 1 specimen.

Head and pronotum reddish. Elytra black with reddish spot running along it and at the bending towards the suture. In its anterior part this spot spreads out considerably while bending. Body length 6.8 mm.

The species is known from Assam and Himalaya (MADER 1955).

#### 24. *Rodolia guerini* (Cr.)

Material studied: Punakha, 1560 m, 8.VI.1972, 1 specimen. Changra, 10 km S of Tongsa, 1900 m, 22.VI.1972, 2 specimen.

Body surface reddish. On the pronotum at its base just in front of the scutellum a rather large, transverse, black spot. On the frontal part of the elytrae two black coalescent spots which form a short of transverse band. In the posterior part of the elytrae a rather large black spot equidistal to the margin and from the suture. This species is known from India (KAPUR 1951) and Sikkim (KAPUR 1963).

#### 25. *Cryptogonus orbiculus fulvocinctus* (Muls)

Material studied: Phuntsholing, 200–400 m, 5.V.1972, 1 specimen.

Head yellow-testaceous. Pronotum black with anterior angles yellow-testaceous. Elytrae with lateral margin very broadly yellow-testaceous (fig. 93).

The specimen in question is a female. Its last tergite, genital plates and receptaculum seminis are similar to those illustrated by KAPUR (1948). Also prosternal carinae are as in *C. orbiculus* (Gyll). In this form both sexes have the head pale. It is surprising to find this form in Bhutan because it had not been reported previously from the mountainous regions but was found at low altitudes. It was described by MULSANT (1853) without locality data other than "Asia" and it was reported from Ceylon (KAPUR 1948, BIELAWSKI 1957). The nearest area of the typical form is Assam.

## 26. *Cryptogonus postmedialis* Kapur

Material studied: Phuntsholing, 200–400 m, 25.IV.1972, 1 specimen, 87 km from Phuntsholing, 1700 m, 22.V.1972, 5 specimens. 21 km E of Wangdiphodrang, 1700–2000 m, 15.VI.1972, 5 specimens.

Head in the males pale, in the females black. On each elytra an oval yellowish spot located at  $\frac{1}{3}$  from the posterior margin (fig. 97). This spot varies somewhat in different specimens but these differences are insignificant.

This species is similar to *C. orbiculus* (Gyll.). Differences between these species are discussed by BIELAWSKI (1957).

One specimen is of another color but it is only an individual variation.

Head and anterior angles of the pronotum yellow. Pronotum and elytra completely black, (fig. 98). This form has been reported so far from India, Assam and Burma.

## 27. *Cryptogonus quadriguttatus* (Ws.)

Material studied: 87 km from Phuntsholing on the road to Thimphu, 1680 m, 22.V.1972, 1 specimen. Punakha, 1560 m, 8.VI.1972, 3 specimens. Changra (Kunga Rabdeg Dzong), 18 km S of Tongsa, 1900 m, 21.–24.VI.1972, 1 specimen.

Head black, sometimes with its base narrowly pale. Pronotum black, sometimes the anterior angles paler. On each of the elytrae two large, oval, yellowish spots. The first spot near the anterior margin, the second  $\frac{1}{3}$  from the anterior elytral margin (fig. 94). This species is known from Sikkim, Assam and Bengal.

**28. *Cryptogonus bimaculatus* Kapur**

Material studied: Samchi, 300m, 7–11.V.1972, 1 specimen.

Head and anterior margin of the pronotum orange, the rest of the surface of the pronotum, scutellum and elytral spots black. On each elytra in the middle of the length rather large somewhat oval spot (fig.95). This species was known only from Assam and Burma.

**29. *Cryptogonus nepalensis bhutanensis* n.sp.**

All specimens seen are almost identically colored. Head yellowish. Pronotum black, most often with yellowish anterior angles or with the humeral angles and the anterior margin yellowish. Scutellum black. Base and apex of the elytrae rather widely black. On each elytrae two large, black spots and one spot common to both (fig.96). Ventral side black, legs brownish.

Holotype: 87 km from Phuntsholing, 22.V.1972, male.

Paratypes: 5 specimens from the same locality as the type. Chimakothi, 1900–2300 m, 22.V.1972, 1 specimen; 7.VI.1972, 2 specimens. 13 km E of Wangdiphodrang, 1300 m, 7.VI.1972, 2 specimens. 13 km E of Wangdiphodrang, Tan Chu, 7.VI.1972, 1 specimen. Nobding, 41 km E of Wangdiphodrang, 2800 m, 17.VI.1972, 1 specimen. Changra, 18 km S of Tongsa, 1900 m, 22.VI.1972, 1 specimen.

This subspecies superficially resembles *C. ariasi* (Muls) which occurs in India, Sikkim and Burma (KAPUR 1948). This subspecies differs from *C. nepalensis* Biel. in the color pattern of the elytra. The last sternite and the male copulatory apparatus are almost identical with that of *C. nepalensis* Biel. (BIELAWSKI 1972), only the fissures at the end of penis are feebly marked.

**30. *Cryptogonus himalayensis* Kapur**

Material studied: Kamjee, 1300 m, 24.IV.1972, 2 specimens.

One specimen in color pattern is identical with the typical form: head and pronotum black, elytra black except that the posterior third is brownish-yellow and the elytral apex is narrowly black (fig.99). In the second specimen the head is yellowish. Pronotum black with the angles and anterior margin yellowish. Elytrae black with wide indistinct band in their posterior half (fig.100), formed by the spreading of the black pattern at the elytral apices. This species was known until now only from Sikkim and Burma.

**31. *Cryptogonus complexus* Kapur**

Material studied: Phuntsholing, 200–400 m, 25.IV.1972, 3 specimens. Samchi, 3000 m, 7–11.V.1972, 5 specimens.

Head yellow orange. Pronotum black with the narrowly orange lateral and anterior margins. Elytra black with the posterior apex yellow-orange (fig. 101).

This species until now was known from Assam, Sikkim and Burma.

**32. *Jauravia quadrinotata* Kapur**

Material studied: 87 km from Phuntsholing, 1700 m, 21–23.V.1972, 2 specimens. 21 km E of Wangdiphodrang, 1700–2000 m, 15.VI.1972, 1 specimen.

This species was described from India (KAPUR 1946) and recently reported from Nepal (BIELAWSKI 1972).

**33. *Phymatosternus octoguttatus* Miyat.**

Material studied: Punakha, 1560 m, 8.VI.1972, 1 specimen.

This species was recently described from South China (MIYATAKE 1961). The specimen in question differs in color pattern slightly from the description but I think it is within the natural infra-specific variation. The head and pronotum are black, only the anterior margin of the head and the lateral margins of the pronotum are pale. Elytral spots large while the black color of the suture and of the elytral apices are quite wide. As a result the elytral pattern is dominantly black (fig. 102).

**34. *Phymatosternus wittmeri* n.sp.**

Body rather strongly convex, almost oval. Pubescence on the upper part of the body dense, silver but on the discal spot black, the setae long and almost erect. Head black except the anterior margin, mouth appendages, and antennae which are all testaceous. Pronotum black with the lateral margins reddish. Scutellum black. Elytrae reddish with black margins, suture and large spot (fig. 103). Black pattern of the lateral elytral margin, of the humeral tubercles and towards the posterior rather strongly sided, it also spreads out along the suture on the anterior part of the elytra. Ventral side black, only the margins of segments of the abdomen pale. Legs reddish with darkened femora.

Punctures on the head small and very sparse, interspaces with distinct but irregular microsculpture. Punctures on the thorax larger than on the head and densely distributed, interspaces between them practically glabrous. Punctures on the elytrae dense, rather large but of vari-

able size. Punctuation of the elytrae not very distinct due to rather strongly developed microsculpture in form of irregular, deep notches located mostly on the margins of the punctures. The prosternal carinae reach towards the apex through  $\frac{3}{4}$  of the length of the prosternal process and there almost join together. Abdominal lines reach almost the posterior margin and their arches are very short and end near the posterior margin. Last sternite in the male (fig. 104) very short and feebly curved, with its posterior margin slightly emarginate. Spiculum gastrale narrow, long on both ends slightly widened. Length of spiculum gastrale 0.63 mm, body length: 3.5 mm.

Male copulatory organ (figs. 105 and 106); penis slightly longer than the parameres, from lateral view almost straight, widest about  $\frac{1}{3}$  from the end. The end wide and truncate. From the ventral view broad, spreading somewhat from the base towards the end and here somewhat elongated. The parameres slightly curved, with scarce, long setae at the end. The base almost triangular. Trabes long, narrow, its length shorter than length of the penis and the basal part together. Siphon slender with a small siphonal sack (fig. 107). The end of the siphon as on fig. 108.

Holotype: Punakha, 1560 m, 8. VI. 1972, male. Paratype: 21 km E of Wangdiphodrang, 1700–2000 m, 25. VI. 1972, 1 male.

*Phymatosternus wittmeri* n. sp. is closest in the elytral pattern to *Ph. hainanensis* Miyat. and *Ph. lewisii* (Cr.) from which it differs in elytral punctuation and in the male copulatory apparatus. In the structure of the copulatory apparatus it is nearest to *Ph. saundersi* (Cr.) (BIELAWSKI 1959).

I am naming this species after Dr. Walter Wittmer, a well known coleopterist who was leading the expedition to Bhutan.

### 35. *Phymatosternus samchus* n. sp.

Body feebly convex, almost oval. Pubescence on the upper surface of the body erect, black on the black background, goldenish on the pale surface. Head dark testaceous paler on sides, labium and mouth appendages pale brownish. Pronotum black with yellow margins which cover from each side about  $\frac{1}{3}$  of the surface. Scutellum almost piceous. Elytrae black with 3 yellow, large spots each (fig. 109). Two spots are located in the anterior half adjacent to each other and coalescent. The third posterior spot nearer to the margin than to the suture. The largest spot is the anterior of the first two and, is sharply set off from the black background, its margins are testaceous. Legs pale yellow. Ventral side almost piceous.

Punctures on the head medium sized, sparsely scattered, interspaces practically glabrous. Punctures on the pronotum very small, shallow, sparse and barely visible, interspaces between them glabrous. Punctures on the elytrae medium size, shallow, sparse, barely visible, interspaces between them with scarce scratches and minute impressions. Prosternal carinae reaching  $\frac{3}{4}$  of the length of the prosternal process. The abdominal lines join the posterior margin of the segment. Last sternite in the female very short, very feebly curved, with thickened posterior margin, (110). Body length: 2.8 mm.

Female copulatory apparatus on fig. 111. Genital plates with very narrow and strongly elongated base. The setae are numerous and long. Length of the genital plate 0.3 mm, width 1.0 mm. Receptaculum seminis as on fig. 112.

Holotype: Samchi, 300 m, 7–11.V.1972, female.

In its appearance is species in part corresponds to the GORHAM's description (1894) for *Scymnus flavoguttatus* described from India but placed by KORSHEFSKY (1932) in the genus *Platynaspis*. It differs from it, however, in the coloration of the pronotum. In *P. flavoguttatus* (Gorh.) there are 3 yellowish spots on the black background while in *Ph. samchus* n.sp. the pronotum is black with yellow margins.

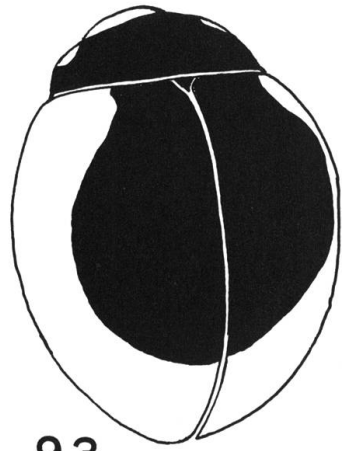
### 36. *Phymatosternus khalaus* n.sp.

Body moderately convex, almost oval. Pubescence on the dorsal surface of the body short, delicate, goldenish on the pale, black on the dark background. The entire body pale, yellow-testaceous. Middle of the pronotum somewhat darkened. On each of the elytrae large, black spot (fig. 113). This spot is located in the middle of the elytra and is indistinctly set off from the background.

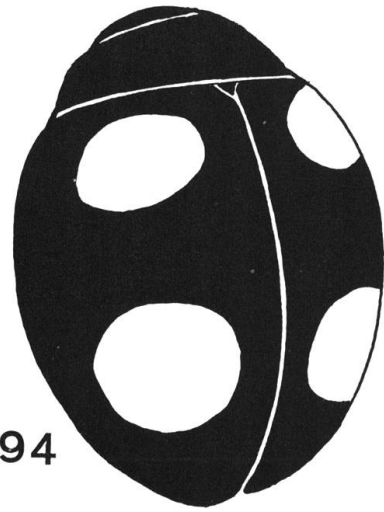
Punctures on the head of medium size, sparse, interspaces with distinct net-like microsculpture. Punctures on the pronotum of the same size as on the head, densely scattered, interspaces glabrous. Punctures on the elytrae larger than those on the pronotum, rather densely scattered but shallow. Tiny, irregular notches can be seen on their margins. The abdominal lines reach the posterior margin of the segment and barely bent. Last sternite in the male (fig. 114) short, with tips somewhat elon-

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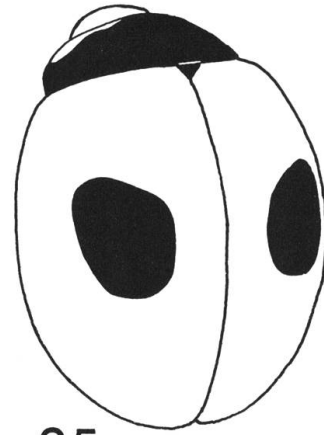
Figs. 93–101: Body outline: 93, *Cryptogonus orbiculus fulvocinctus* (Muls.). 94, *C. quadriguttatus* (Ws.). 95, *C. bimaculatus* Kapur. 96, *C. nepalensis bhutanensis* n.ssp. 97, *C. postmedialis* Kapur. 98, *C. postmedialis* Kapur. 99, *C. himalayensis* Kapur. 100, *C. himalayensis* Kapur. 101, *C. complexus* Kapur.



93



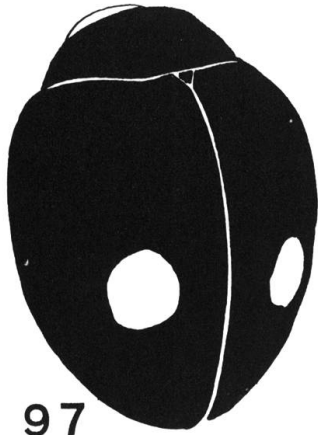
94



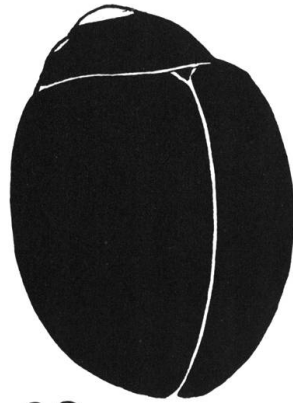
95



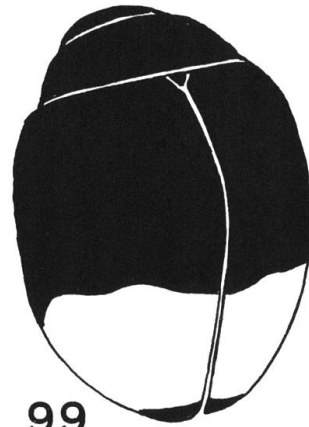
96



97



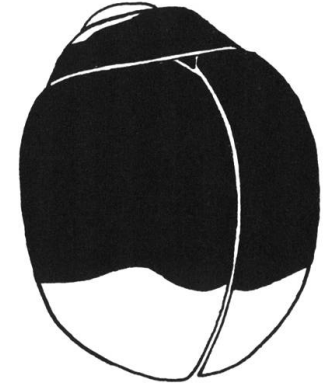
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99



100



101

gated and sharp. Spiculum gastrale 0,75 mm. narrow, towards the end strongly spread. Body length: 3.0 mm.

Male copulatory apparatus as on figs. 115 and 116. Penis somewhat shorter than the parameres. The penis from the lateral view appears somewhat bent at half of its length. Viewed from the ventral side it is broad, with the margins irregularly curved, an asymmetrical end forming a broad point. Length of penis 0.45 mm, width from the lateral view 0.1 mm, from the ventral view 0.2 mm. Trabes rather wide but shorter than penis and the base together. Siphon slender, strongly curved with large, elongated siphonal sack (fig. 117). Siphon's end as on fig. 118.

Holotype: Khala, 200 m, 24.IV.1972, male.

This species can be distinguished from other known species by its color pattern. It resembles in its appearance somewhat *Jaurawia assamensis* Kapur and even more *Cryptogonus bimaculatus* Kapur.

### 37. *Chilocorus politus* (Muls.)

Material studied: Balu Jhura, 200 m, 28.IV.1972, 1 specimen. This species has been reported from Nepal (BIELAWSKI 1972), and is also known from India and Java.

### 37a. *Exochomus urophygialis* Muls.

Material studied: Chimakothi, 1.VII.1972, 1 specimen. Thimphu, 2440 m, 16–14.IV.1972, and 27.VI.1972, 3 specimens. Tangu, 22 km N of Thimphu, 2700 m, 30.VI.1972, 1 specimen. Paro-Taktsang, 2700 m, 2.V.1972, 1 specimen.

Head, pronotum, scutellum and legs black. Elytrae reddish-brown with a quite large, almost crescent shaped, black spot on the elytral apex. Pronotum and elytrae with distinct but short pubescence. This species is known so far from Northern India and Kashmir.

### 38. *Brumus suturalis* (F.)

Material studied: Samchi, 300–350 m, 7–11.V.1972, 2 specimens. Kamjee, 1300 m, 24.V.1972, 1 specimen.

A species known from India, Himalayas and Ceylon. Nearest area Nepal (BIELAWSKI 1972).

### 39. *Callicaria superba* (Muls.)

Material studied: Chimakothi, 1900–2300 m, 22.V.1972, 1 specimen.

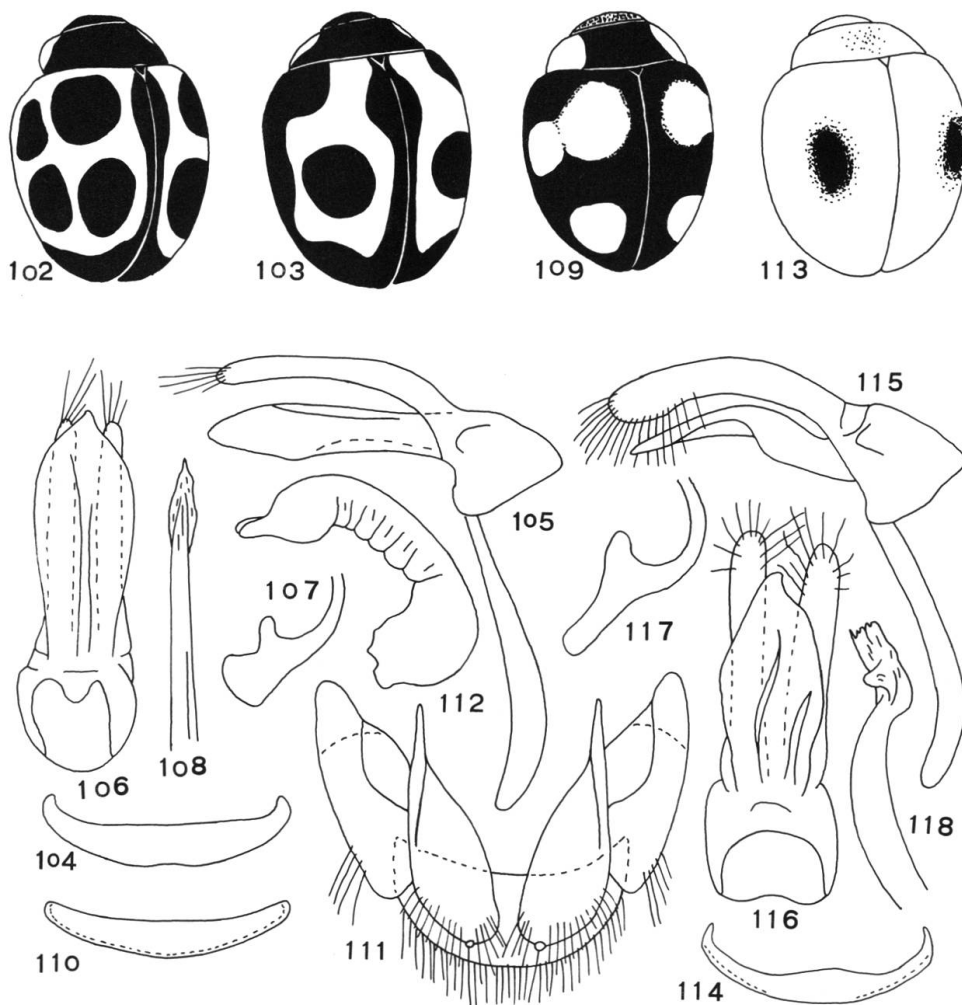
Upper surface of the body bloody red, ventral side black. On the

pronotum near the black scutellum two rather large, oval, black spots. On each elytra 7 spots. The spots are small and arranged according to the pattern 1, 3, 3.

This species occurs in Japan, Ryukyu, Islands, Formosa, India, Tibet and in the Himalayas. In the last papers dealing with the fauna of the areas near Bhutan it was not mentioned. (KAPUR 1948 and 1963, BIELAWSKI 1971 and 1972).

#### 40. *Leis dimidiata* (F.)

Material studied: 13 km E of Wangdiphodrang, Tan Chu, 1300 m, 7.VI.1972, 1 specimen.



Figs. 102–118: 102, *Phymatosternus octoguttatus* Miyat. 103–108, *Ph. wittmeri* n.sp. 109–112, *Ph. samchus* n.sp. 113–118, *Ph. khalaus* n.sp.: 102, 103, 109 and 113, body outline. 104 and 114, last sternite male. 105, 106, 115 and 116, copulatory apparatus of male. 107 and 117, syphon, sack. 108 and 118, apex of syphon, lateral view. 110, last sternite of female. 111, copulatory apparatus of female. 112, receptaculum seminis.

The specimen in question has the posterior  $\frac{2}{3}$  of the elytrae black, the anterior part of the elytrae testaceous with a small black spot on the humeri.

This species has been reported from Japan, China, Taiwan, North India, Himalayas, Nepal, Sikkim and Kashmir.

41. *Synia melanaria* (Muls)

Material studied: Samchi, 300 m, 7–11.V.1972, 1 specimen.

Head and pronotum reddish-brown, the elytrae black (ab. *rougeti* Muls.). More detailed discussion of this species can be found in papers by BIELAWSKI (1957, 1964). *S. melanaria* Muls. is known from China, India, Ceylon, Vietnam and the Philippine Islands.

42. *Aiolocaria dodecaspilota* (Hope)

Material studied: Sampa, 1400 m, 7.VI.1972, 2 specimens.

This species was known from Nepal and Burma.

43. *Cyphocaria duvauceli* (Muls)

Material studied: 87 km from Phuntsholing, 1700 m, 22.V.1972, 1 specimen.

On the base of the pronotum one black spot at both sides of the scutellum. On each elytra, 4 medium sized black spots and 1 spot about  $\frac{1}{4}$  from the anterior margin very near the suture almost coalescent with the analogous spot on the other elytra. This species is known from South China, Burma, Sumatra and Java.

44. *Balia eucharis* (Muls)

Material studied: Chimakothi, 1900–2300 m, 22–24.V.1972, 5 specimens. Timphu, 2300–2500 m, 4.V.1972, 4 specimens. Paro 2300 m, VI. 1972, K.Nishioka, 2 specimens. Wangdi–Dorju-la, 3100 m, 26.VI.1972, 1 specimen.

Different specimens have very varied coloration and until now various forms had been considered as separate species. In the Bhutan material five different forms can be distinguished. From areas nearest Bhutan, however, only one form was reported from Nepal and Sikkim: *B. gustavi* Muls. which Kapur however considers as a valid species (KAPUR 1958). The remaining four forms are reported from India.

45. *Oenopia luteopustulata* (Muls)

Material studied: Phuntsholing, 200–400 m, 25.IV.1972, 1 speci-

men. 87 km from Phuntsholing, 1700 m, 22.V.1972, 2 specimens. Chimakothi, 1900–2000 m, 20–24.V.1972, 4 specimens. Gidaphu, 2300 m, 2.VI.1972, 1 specimen. Thimphu, 2300–2500 m, 31.V.1972, and 27.VI.1972, 5 specimens. 13 km E of Wangdiphodrang, 7.VI.1972, 1 specimen. Sampa, 1400 m, 7.VI.1972, 1 specimen. Tongsa, 2150 m, 24.VI.1972, 1 specimen. 18 km S of Tongsa, Changra, 1900 m, 22.VI.1972, 5 specimens.

The material shows considerable variation in the elytral color pattern. The elytrae are without spots, with disconnected spots or spots connected into the pattern characteristic for this species. In some specimens the black pattern dominates so that some specimens look as if they were black with large yellow spots. More detailed discussion of this species can be found in my paper (BIELAWSKI 1972).

*O. luteopustulata* Muls. Occurs in Burma, North India, Himalayas, Nepal and Tibet.

#### 46. *Oenopia sauzeti* (Muls)

Material studied: Phuntsholing, 200–400 m, 24.IV.1972, 7 specimens. Samchi, 300 m, 7–11.V.1972, 3 specimens. Kamjee, 850 m, 13.V.1972, 1 specimen. 87 km from Phuntsholing-Thimphu road, 1680 m, 22.V.1972, 10 specimens. Chimakothi, 1900–2300 m, 22.V.1972, 3 specimens. Thimphu, 31.V.1972, 1 specimen. Wangdiphodrang, 1300 m, 7.VI.1972, 1 specimen. 13 km E of Wangdiphodrang, Tan Chu, 1300 m, 7.VI.1972, 1 specimen. Tongsa, 2150 m, 24.VI.1972, 1 specimen. Changra, 18 km S of Tongsa, 1900 m, 22.VI.1972, 7 specimens.

Judging by the material available this species shows minimal variability in the elytral color pattern. However, by comparison with the Nepalese material, the specimens from Bhutan are clearly smaller. This species is known from different places in India as well as from Nepal, Sikkim and Thailand.

#### 47. *Oenopia kirbyi* (Muls)

Material studied: Phuntsholing, 200–400 m, 25.IV.1972, 2 specimens. Kamjee, 850 m, 13.V.1972, 1 specimen.

This species has very characteristic elytral color pattern. It is quite common in the Eastern Himalayas (KAPUR 1963) and known also from Burma.

**48. *Oenopia quadripunctata* Kapur**

Material studied: Phuntsholing, 200–400 m, 6.V.1972, 1 specimen.

This species, recently described from Meghalaya and Burma (KAPUR 1963), should probably be found also north of the valley of the Brahmaputra as shown by its presence in Bhutan.

**49. *Coelophora sexareata* (Muls)**

Material studied: Phuntsholing, 200–400 m, 25.IV.1972, 10 specimens. 14 km from Phuntsholing, 25.IV.1972, 1 specimen. Kamjee, 850 m, 13.V.1972, 3 specimens. Changra, 18 km S of Tongsa, 1900 m, 22.VI.1972, 2 specimens.

Most specimens have distinct bands on the elytrae and the elytral surface divided into three pseudospots. Some specimens have these bands reduced and broken near the suture (transverse band) or near the transverse bands (vertical band). This species is known from Nepal, Sikkim, India, Burma and West Yunnan.

**50. *Coelophora bissellata* (Muls)**

Material studied: Phuntsholing, 200–400 m, 24–25.IV.1972, 4 specimens, Balu Jhura, 200 m, 28.IV.1972, 5 specimens. Samchi, 300–350 m, 7–11.V.1972, 6 specimens.

The elytral color pattern in all studied specimens is almost identical. However, on the pronotum there is variation, some specimens have 2, some 4 spots. Reduced are the lateral spots while the prescutellar spots differ in size from specimen to specimen. This species is very widely dispersed. Nearest to Bhutan it is found in: Nepal, Sikkim, Bengal and Assam. In greater detail this species is treated in my paper of 1959.

**51. *Verania inops* (Muls.) f. *vincta* Gorh.**

Material studied: Samchi, 300 m, 7–11.V.1972, 1 specimen.

This form was known previously from Nepal, Burma and Thailand.

**52. *Adonia variegata doubledayi* (Muls)**

Material studied: 87 km from Phuntsholing, 1690 m, 22.V.1972, 3 specimens. Chimakothi, 1900–2000 m, 20–24.V.1972, 1 specimen. Thimphu, 2300 m, 4.V.1972, 3 specimens. Paro, 2300 m, VI.1972, K.Nishioka, 2 specimens. Sampa-Kothoka, 1400–2600 m, 9.VI.1972, 1 specimen.

This subspecies is characterised by extremely variable elytral color

pattern. It has been reported from Nepal, Kashmir and India (BIELAWSKI 1972).

53. *Lioadalia luteopicta* (Muls)

Material studied: Dorju-la, 2800 m, 6.VI.1972 and 28.VI.1972, 5 specimens. Sampa-Kothoka, 1400–2600 m, 9.VI.1972, 1 specimen. Kothoka-Sha Gogona, 2600–3200 m, 10.VI.1972, 2 specimens. Sha Gogona, 3100 m, 10–12.VI.1972, 4 specimens, Decchi Paka, 3300 m, 19.VI.1972, 5 specimens.

Almost all specimens studied are identically colored. Only in few specimens in the posterior part of the elytrae the two spots coalesce to form an elongated spot on the suture. This species was discussed in detail by BIELAWSKI (1971).

*Lioadalia luteopicta* (Muls) occurs in Nepal, Sikkim, Northwest India, China and Tibet. As a rule it is found very high in the mountains.

54. *Coccinella septempunctata* L.

Material studied: Kamjee, 1300 m, 24.V.1972, 2 specimens. 87 km from Phuntsholing, 22.V.1972, 6 specimens. Chimakothi, 1900–2300 m, 20–24.V.1972, 8 specimens. Paro, 2300–2700 m, 4.VI.1972, 6 specimens. Thimphu, 2300–2500 m, 4.V.1972, 5 specimens. Changra, 18 km S of Tongsa, 1900 m, 22.VI.1972, 5 specimens.

Among the 32 specimens available from Bhutan, only five have spots somewhat enlarged and in only two others the spots are interconnected.

This species is found in the entire Palearctic region and in India.

55. *Coccinella repanda* (Thunb)

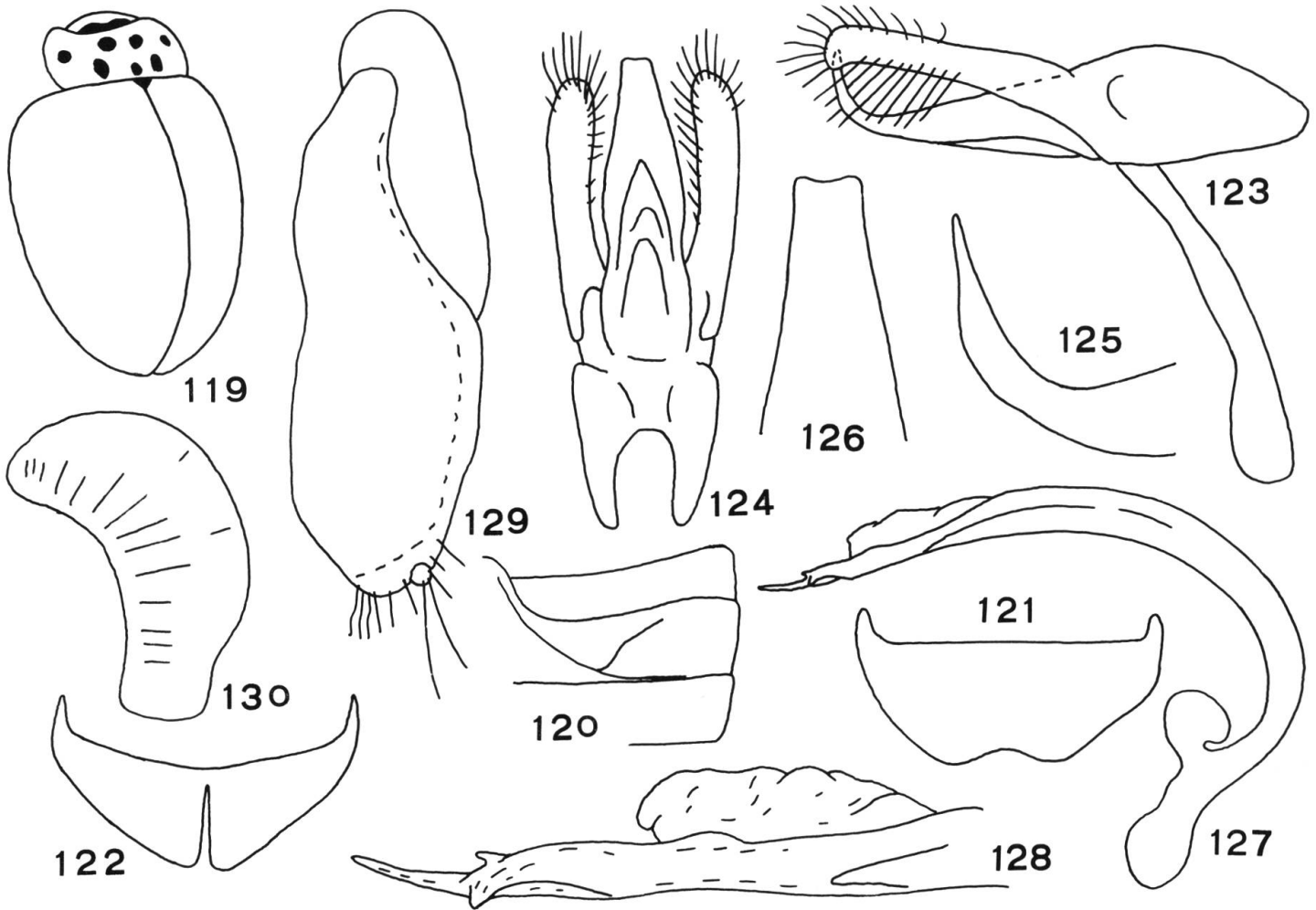
Material studied: Khala, 200 m, 25.IV.1972, 1 specimen.

*C.repanda* Thunb. occurs over a wide area from Central China through India, Indonesia through New Guinea, Australia and Tasmania. Nearest to Bhutan it was reported from Nepal (KAPUR 1958).

56. *Synharmonia signatella* (Muls)

Material studied: Thimphu, 2300–2500 m, 31.V.1972, 1 specimen. Dorju-la, 3100 m, 26.VI.1972, 2 specimens.

This species was described from Northern India by MULSANT (1866) as *Harmonia signatella* but assigned by CROTCH (1874) to the genus *Coccinella* and transferred by MADER (1931) to the genus *Synharmonia*. KORSHEFSKY (1932) cited it from Himalaya, while KAPUR (1963) from Darjeeling, Sikkim and Burma. Since Mulsant's description



Figs. 119–130: *Synharmonia signatella* (Muls.). 119, body outline. 120, femoral line. 121, last sternite of male. 122, last sternite of female. 123 and 124, copulatory apparatus of male. 125, end of penis, lateral view. 126, end of penis, ventral view. 127, syphon. 128, apex of syphon, lateral view. 129, genital plate. 130, receptaculum seminis.

is very brief a new description is given below.

Body very moderately convex and widely oval. Upper surface cream colored, the legs pale brown. At the base of the head a narrow, black band, emarginate in the middle. On the pronotum 7 small, black spots. Scutellum black, elytrae without spots (fig. 119).

Punctures on the head small, sparsely distributed, interspaces with distinct netlike microsculpture. Punctures on the pronotum small, shallow, very sparsely distributed, interspaces also with netlike microsculpture. Punctures on the elytrae, medium sized, sparse, shallow. On the flattened lateral margins of the elytrae the punctures are large, shallow and dense, interspaces with numerous small impressions. Lateral margins of the pronotum feebly but regularly curved and flattened. Lateral margins of the elytrae broad. Humeral tubercles large but feebly projecting, located nearer the anterior than to the lateral margin. Claws with short, triangular tooth at the base. Ventral side black except mesoepisternum and metepisternum which are pale. Abdominal line divided it reaches the posterior margin of the segment (fig. 120). Last sternite in the male (fig. 121), very long, with very short tips, its posterior margin emarginate. Last sternite in the female (fig. 122), with somewhat elongated, narrow and sharp tips, split almost in two in the middle. Spiculum gastrale almost along its entire length parallel, its length is 1.15 mm. Body length: 5.0–5.5 mm.

Male copulatory apparatus as on figs. 124 and 123. Penis as long as the parameres. Viewed from the lateral side it tapers off from the base toward the end; its end strongly bent toward the paramere (fig. 125). Seen from the ventral side narrowed at about  $\frac{1}{3}$  from the base, the tip truncate (fig. 126). The parameres at the ends hook-like, straight, setae numerous but moderately long, the basal part strongly elongated. Trabes rather wide, but shorter than the penis and the base together. Siphon (fig. 127) massive, strongly curved with large siphonal sack. The tip of the siphon as on fig. 128. Length of penis 0.8 mm, width from lateral view 0.25 mm, from ventral view 0.25 mm. Female copulatory apparatus: genital plates (fig. 129), rather elongated with the margin irregularly curved, setae short and few. Length of the genital plate 0.44 mm, width 0.15 mm. Receptaculum seminis (fig. 130), with strongly developed cornu and very small nodulus almost not separated from the cornu.

This species can be distinguished from other species by its uniformly cream-colored elytra, black scutellum and 7 black spots on the pronotum.

**57. Propylaea japonica** (Thunb)

Material studied: Samchi, 300 m, 7–11.V.1972, 1 specimen.

Elytrae pale brownish-yellow with large pale marking near the scutellum, suture black, this pattern near and below the scutellum is  $\frac{1}{4}$  wider than on the rest of the suture. One small spot on each humerus.

*P. japonica* (Thunb) occurs in the Ussuri, Japan, Korea, China, Taiwan and Northern India.

**58. Calvia lewisi** (Cr.)

Material studied: Samchi 350 m, 7–11.V.1972, 1 specimen.

Body strongly convex, almost oval in shape. Body surface yellow. On the elytra pale brown stripes arranged in a characteristic pattern. So far this species was known only from China.

**59. Calvia vishnu** (Cr.)

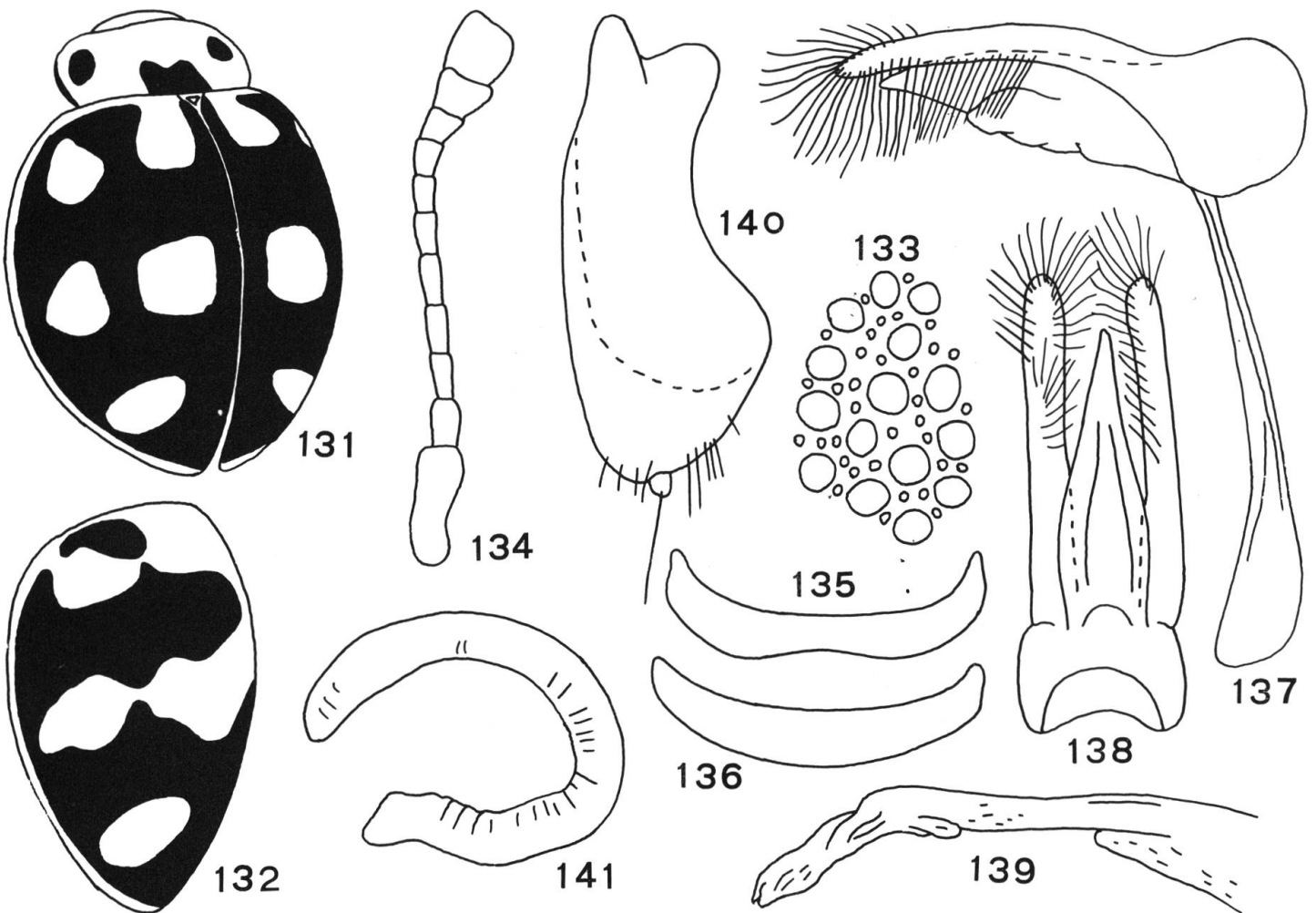
Material studied: Paro, Taktsang, 2500 m, 2.V.1972, 1 specimen.

Sha Gogona, 3100 m, 10–12.VI.1972, 1 specimen. 21 km E of Wangdiphodrang, 1700–2000 m, 14.–16.VI.1972, 1 specimen.

Head pale yellow. Pronotum yellow-orange with 2 small, black spots. Scutellum pale with darkish margins. Elytrae cream-colored with a total of 11 spots. Three of these spots are common to both elytrae and located on the suture. Prescutellar spot elongated, the second spot on the suture located at  $\frac{2}{3}$  of its length, the third at the apex. Legs pale. Punctures on the elytrae large and small; their bottom dark so that the elytrae appear to be ornamented with tiny, dark dots. Species described by CROTCH (1874) from Northern India. Superficially it is similar to *C. pinaki* Kapur and *C. pasupati* Kapur from which it is easily distinguished by the pattern and number of spots on the elytrae.

**60. Calvia monosha** n.sp.

Body very moderately widely oval in shape. Head, antennae and mouth appendages pale testaceous except the last antennal segment which is somewhat darkened at the tip. Pronotum dark yellow with three black spots and also black margin of the posterior angle. The prescutellar spot on the pronotum reaches from the base to  $\frac{1}{3}$  of the pronotal length and in an outline resembles somewhat the letter M. Lateral spots feebly elongated. Scutellum dark yellow. The elytrae black with the lateral margins and 5 large, yellow spots on each (fig. 131), arranged in pattern 2,2,1. Prescutellar spot always reaching the anterior margin joining with the yellow lateral fringe. The preapical spot in two



Figs. 131-141: *Calvia monosban* sp. 131, body outline. 132, elytra. 133, puncturation on elytra. 134, antenna. 135, last sternite of male. 136, last sternite of female. 137 and 138, copulatory apparatus of male. 139, apex of siphon, lateral view. 140, genital plate. 141, receptaculum seminis.

specimens does not connect with the pale margin but in one specimen it does. In another specimen the anterior and median spots coalesce (fig. 132). Legs yellow. Abdomen yellow, only the middle of the three segments and the anterior margin of the fourth segment are darkened.

Head punctures of median size, sparsely distributed; interspaces with distinct net-like microsculpture. Punctures on the pronotum as on the head but more densely distributed. Interspaces between them glabrous. Punctuation of the elytrae very characteristic. Large punctures very deep and so dense that the interspaces between them form a sort of ridges on which the small punctures are located (fig. 133). These small punctures are also rather deep. Interspaces strongly shining.

Antennae moderately long, with tightly connected joints. The joints more or less equal in size (fig. 134). Antennal joint equally long as wide. Lateral margins of the pronotum feebly, arcuately emarginate. Anterior angles strongly projecting toward the front, feebly rounded, posterior angles clearly rounded. Lateral margins of the elytrae rather clearly flattened and raised. Humeral tubercles large, located near the humeral angle. On the tibiae two small, distinct spines. Claws with triangular tooth at the base. Abdominal line incomplete its arch almost reaching the posterior margin of the segment and parallel to it for a short distance. Last sternite of the male (fig. 135) very short, feebly curved with short tips and posterior margin widely and rather deeply emarginate. Last sternite in the female (fig. 136), short, very feebly curved. Body length: 7.3–7.6 mm.

Male copulatory apparatus as on figs. 137 and 138. Penis somewhat shorter than the parameres. Viewed laterally slightly curved, gradually narrowing from the base to the end. Viewed ventrally from half of its length rather strongly narrowing toward the tip. Parameres somewhat curved with very numerous, quite long setae. Trabes narrow, at the end strongly widened, its length equal to the length of the parameres and the basal part together. Siphon strongly curved, wide and massive. Tip of the siphon as on fig. 139. Female copulatory apparatus: Genital plates somewhat elongated (fig. 140), their outer margin distinctly emarginate, the base wide and split at the end. Setae few and short. Length of the genital plate 0.74 mm, width 0.32 mm. Receptaculum seminis (fig. 141), narrow, strongly, almost circularly curved; nodulus small, on the cornu sparse, delicate impressions.

Holotype: 21 km E of Wangdiphodrang, 1700–2000 m, 15. VI. 1972, male; 2 paratypes same locality and date as the type.

In the pattern arrangement of the elytral spots this species very

much resembles *C. durgae* Kapur described from Sikkim (KAPUR 1963). In *C. durgae* Kapur, the basic color of the elytrae is orange-brownish while in *C. monosha* n.sp. it is black. In body size too these species differ. *C. durgae* Kapur is 5.0 mm, *C. monosha* n.sp. 7.5 mm. These two species differ also in the shape of the genital plates and the shape of receptaculum seminis. The punctuation of the elytrae in these two species is also different. On the other hand, *C. monosha* n.sp. is close to the recently described species from Sikkim and India, *C. shiva* Kapur in its black basic color of the elytrae and yellow spots. They differ however in the body size, the number of elytral spots and the male copulatory apparatus.

The newly described species at the first glance resembles the species of the genus *Halyzia* in the shape of the body, in convexity and lateral margin of the elytra which is slightly flattened and finely raised.

#### 61. *Halyzia sanscrita* (Muls)

Material studied: Paro, 2300 m, VIII.1972, K.Nishioka. 3 specimens.

All specimens are identically colored and none has coalescent spots. This species is known from different parts of India, Sikkim and Tibet. *Halyzia straminea* (Hope)

Elytrae pale yellow with brown design. The suture brown, the sutural coloration spreads out in three places. On each of the elytrae also 4 large spots. The first diagonal to the humeral tubercle in direction of the suture, the second strongly elongated near the lateral margin, the third somewhat triangular, located near the suture at 2/3 distance from the base of the elytrae, and the fourth somewhat elongated in the posterior part of the elytrae. It is nearer to the lateral margin than to the suture. This species is known from Northwest India, Nepal and Sikkim.

#### 62. *Halyzia hauseri* (Mader)

Material studied: 125 km from Phuntsholing in direction of Thimphu, 2300 m, 24.V.1972, 1 specimen. 20 km S of Thimphu, 12. V. 1972, 1 specimen.

On the pale yellow elytrae there are three darker, vertical stripes. This species is known from China and Yunnan.

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