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**B I O L O G I A**  
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**CENTRALI-AMERICANA.**

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**I N S E C T A.**

**COLEOPTERA.** (VOL. VI. PART 1.)

*PHYTOPHAGA* (part).

BY

MARTIN JACOBY, F.E.S.

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1880-1892.



## 2. *Monoxia guttulata*? (Tab. XXVII. fig. 25.)

*Monoxia guttulata*, Lec. Rep. Pac. Surv. 1857, p. 70<sup>1</sup>.

*Hab.* NORTH AMERICA, California<sup>1</sup>.—MEXICO, Northern Sonora (*Morrison*).

It is probable that I am rightly referring the Sonoran specimens to *M. guttulata*; these all have longitudinal depressions on the elytra, one of the characters given by the author as peculiar to that species. A specimen before me, supposed to be *M. guttulata* and kindly sent to me by Dr. Horn, is marked like *M. debilis* and *M. obtusa*, so that there seems to be doubt about these species. It will be seen from the figure given here that in the Mexican examples of what I suppose to be *M. guttulata* the elytra are closely spotted with black, and the thorax also showing several black markings, besides being very short and transverse. The underside is generally piceous, the abdomen being sometimes paler, and the claws in those specimens which I have examined seem to be simple. The femora and tibiae are generally each marked with a small piceous spot.

## 3. *Monoxia debilis*?

*Monoxia debilis*, Lec. Proc. Acad. Phil. 1865, p. 222<sup>1</sup>.

*Hab.* NORTH AMERICA, California<sup>1</sup>.—MEXICO, Tupataro (*Sallé*).

In the Munich Catalogue this insect is given as a variety of the preceding; whether this is correct or not I am unable to say. The single Mexican specimen before me agrees very nearly with the description of *M. debilis*. There is no longitudinal depression of the elytra visible as in *M. guttulata*, and the markings are confined to three or four rows of single distant spots which form a short stripe only near the suture.

## 4. *Monoxia semifasciata*.

Oblong ovate, finely pubescent, black; thorax testaceous, rugose; elytra more finely rugose, fuscous, with traces of longitudinal fulvous bands.

♂. Claws obsolete appendiculate; ♀, claws simple.

Length 2 lines.

Head closely rugose, fuscous; the distinctly raised frontal tubercles and the clypeus, testaceous, shining; antennae not extending much further than the base of the elytra, black, the third joint long, the following one slightly widened, short, and of equal length; thorax rather more than twice as broad as long, the sides slightly rounded, the anterior angles not prominent, the posterior ones slightly oblique, the posterior margin a little concave-emarginate at the middle, the surface closely and irregularly rugose, more or less distinctly depressed at the middle and at the sides, rather shining, and almost without pubescence; scutellum testaceous, pubescent, its apex broadly truncate; elytra rather flattened, very closely and finely rugose, covered with greyish and distinct but not thick pubescence, obscure fuscous, each with some obscure fulvous spots of longitudinal shape near the sutural and lateral margins; the underside and the legs black, rather shining, the abdominal segments narrowly margined with fulvous; the apex of the last abdominal segment in the male triangularly excavated at the middle, the sides rounded, that of the female slightly emarginate.

*Hab.* GUATEMALA, Champerico (*Champion*).

BIOL. CENTR.-AMER., Coleopt., Vol. VI. Pt. 1, January 1887.

In the rather long series obtained of this insect the only variation at all noticeable is the almost entirely dark fuscous colour of the elytra in some specimens. If *M. semi-fasciata* is taken as an example, it will be seen that the simple or appendiculate claws are attributable to sexual differences, and that this applies probably to those species separated by Leconte into two sections according to this structure. This insect was only met with on the Pacific coast at Champerico.

#### SCHEMATIZA.

*Schematiza* (Chevr.), Blanchard, Hist. des Ins. ii. p. 190 (1845); Clark, Trans. Ent. Soc. Lond. 1864, p. 259.

In most instances, a species of the genus *Schematiza* is easily recognized by the flattened and dilated intermediate joints of the antennæ, and the general shape of the body, which strongly resembles that of some species of "Lycidæ." Certain species, however, are now known in which the peculiar structure of the antennæ, as well as the general shape, is so modified as to create great doubt as to their proper position; these modified forms might equally well be placed in *Galerucella*, having some of the characters of that genus and of *Schematiza*. Amongst the Central-American species here described for the first time, there are some in which the shape of the thorax is partly or entirely typical of *Schematiza*, while the antennæ are formed as in *Galerucella*. I prefer placing these doubtful forms in genera with which they seem to have the greatest affinity, rather than make new and unsatisfactory ones for their reception.

#### 1. *Schematiza collaris*. (Tab. XXVIII. fig. 15.)

Elongate, black, scarcely pubescent; clypeus testaceous; thorax light fulvous, with a central black band, finely pubescent; elytra black, finely rugose.

Length 3-4 lines.

Head finely rugose, the vertex black, the clypeus testaceous; antennæ rather robust, the third joint the longest, the following joints of nearly equal length; thorax more than twice as broad as long, the sides almost evenly rounded and without angle, the posterior margin slightly sinuate at the sides, the posterior and anterior angles acute but not produced, the surface with a more or less deep longitudinal depression at each side (causing the basal portion to appear transversely raised), covered with rather long and close yellowish pubescence which nearly obscures the finely rugose punctuation, in colour pale reddish-fulvous, interrupted at the middle by a more or less black longitudinal band from the base to the apex; scutellum broad, black, finely rugose; elytra nearly parallel ( $\sigma$ ) or slightly widened ( $\varphi$ ), black, the extreme margin narrowly raised, the entire surface finely and closely rugose, sparingly clothed with very short, scarcely visible pubescence; epipleuræ rather broad, extending to the apex; tibiæ unarmed; the first joint of the posterior tarsi scarcely so long as the following two joints together; the entire underside and the legs rather shining, scarcely pubescent.

*Hab.* MEXICO, Puebla, Cordova (*Sallé*), Oaxaca (*Höge*); GUATEMALA, San Gerónimo, Senahu (*Champion*).

The antennæ in *S. collaris* are closely approached, and show only a slight dilatation

of the intermediate joints, so that this species seems almost to form a link between *Galerucella* and *Schematiza*; the thorax has, however, a lateral and central depression and is formed as in the following species, and the elytra show the same finely rugose and scarcely pubescent surface. The want of the apical fulvous spot to the elytra and the larger size separates *S. collaris* from *S. apicalis*, Clark.

## 2. *Schematiza bicolor*. (Tab. XXVIII. fig. 14.)

Oblong, slightly widened, subdepressed, fuscous; clypeus testaceous; thorax fulvous or flavous, finely pubescent; elytra dark fuscous, closely pubescent; antennæ strongly dilated.

Length 3-4 lines.

Head finely coriaceous; antennæ fuscous, the third to the eighth joints strongly dilated and compressed, the two terminal joints slender; thorax reddish or yellowish, the sides strongly rounded and narrowed towards the apex, the posterior margin perfectly straight, the surface broadly and deeply depressed at the sides, finely pubescent, the pubescence obscuring any punctuation; scutellum broad, its apex broadly rounded; elytra slightly widened posteriorly, the apices broadly rounded, dark fuscous, finely coriaceous, and closely pubescent; underside and legs more shining, nearly black.

*Hab.* PANAMA, Volcan de Chiriqui, Bugaba (*Champion*).

The strongly dilated antennæ, the slightly widened general shape, and the uniformly coloured elytra (which are destitute of any costæ) will distinguish *S. bicolor* from any of the species described by Clark.

## 3. *Schematiza chontalensis*. (Tab. XXVIII. fig. 17.)

Depressed, widened behind, fuscous; antennæ strongly dilated; thorax fulvous; elytra finely pubescent, the lateral margin narrowly testaceous.

Length 3 lines.

Head very finely rugose, fuscous, the clypeus testaceous; antennæ piceous or black, triangularly dilated and flattened from the third joint, the three apical joints slender; thorax more than twice as broad as long, the sides rounded, the anterior and posterior margins straight, the surface deeply impressed at the sides, the latter testaceous, the middle of the disc more or less stained with fulvous or rufous, very finely punctured and pubescent; elytra dilated posteriorly, closely pubescent and very finely rugosely punctured, the base and the lateral margin very narrowly testaceous; underside and legs piceous, more or less stained with testaceous.

*Hab.* NICARAGUA, Chontales (*Janson*).

This species resembles *S. bicolor* in general shape, but differs in the pale basal and lateral margins of the elytra.

## 4. *Schematiza lateralis*. (Tab. XXVIII. fig. 16.)

Obscure fuscous; antennæ black; thorax obscure fulvous, the disc black; elytra closely rugose, each with a narrow testaceous stripe near the lateral margin, and a fulvous spot at the apex.

Length 2-3 lines.

Head finely rugose, fuscous, the clypeus and the labrum testaceous; antennæ not extending to half the length of the elytra, black, the third joint the longest; thorax twice as broad as long, the sides rounded, the anterior and posterior margins straight, the surface with an irregular depression at the sides, the punctuation obscured by the close pubescence, the latter of a silvery-grey colour at the sides and more or less reddish-fulvous towards the middle, the disc being occupied by a longitudinal black or fuscous band;

elytra narrow and parallel, more distinctly punctured than the thorax, clothed with short and fine pubescence, a triangular testaceous or fulvous spot at the extreme apex of each, the sides with a narrow longitudinal pale stripe, the latter forming a distinct acute ridge owing to the perpendicularly deflexed lateral margin; legs and the abdomen more or less testaceous, the rest of the underside fuscous.

*Hab.* MEXICO, Oaxaca (*Sallé*); PANAMA, Volcan de Chiriqui, Bugaba (*Champion*).

The antennæ in this species are scarcely, if at all, dilated in the middle; *S. lateralis* agrees in this respect, as well as in general shape and colour, with *S. apicipennis*, Clark, but may be readily recognized by the pale lateral stripe to the elytra, the deflexed sides of which are invisible when the insect is viewed from above. Many specimens were obtained.

#### 5. *Schematiza sallæi*. (Tab. XXVIII. fig. 10.)

Narrowly parallel, fuscous; lower part of the face and the femora testaceous; thorax obscure rufous, the sides marked with black; elytra finely pubescent, fuscous, a spot at the apex of each fulvous.

Length 3 lines.

Head finely rugose, the vertex black or fuscous, the lower part testaceous; antennæ slender, half the length of the body, black, the third joint elongate and much longer than the following ones; thorax transverse, the sides rather rounded, the anterior and posterior margins straight, the posterior angles somewhat oblique, the surface finely pubescent (obscuring the punctuation), more or less rufous, with a piceous more or less distinct longitudinal band at each side, the sides themselves and the middle of the disc often yellowish; scutellum fuscous, broad, its apex truncate; elytra parallel, their apices produced into a small tooth, the surface finely rugose and pubescent and of a uniform dark fuscous colour, the apex of each with a round yellowish spot (tinged with rufous) generally not quite extending to the suture.

*Hab.* MEXICO, Tuxtla, Capulalpam, Playa Vicente, Toxpam (*Sallé*), Oaxaca (*Höge*); GUATEMALA, Senahu, Teleman, San Juan in Vera Paz (*Champion*).

This insect closely resembles *S. apicalis*, Clark, but on comparing the type of the latter in the British Museum with the present insect, I find several distinctive characters:—in *S. sallæi* the antennæ are much longer; the apices of the elytra are produced into a point and not rounded; and the thorax apparently never has a central dark spot or band, the latter being placed (when present) at the sides.

#### 6. *Schematiza apicalis*.

*Schematiza apicalis*, Clark, Trans. Ent. Soc. 1864, p. 268<sup>1</sup>.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).—COLOMBIA<sup>1</sup>; PERU (*coll. Jacoby*).

The differences, if any, between the specimens obtained by Mr. Champion and the type of Clark (which I have examined) are too slight to regard them as anything else but local. In *S. apicalis* the apices of the elytra are rounded, and the thorax, instead of having lateral piceous spots, has a central more or less distinct band; the general colour and the apical elytral spots agree with the preceding species, but the spots are less distinct, and extend in all the specimens to the suture. In one or two examples of what is doubtless a variety, traces of longitudinal raised lines on the elytra are visible, and the thorax has three piceous marks.

### 7. *Schematiza clarki*. (Tab. XXVIII. fig. 11.)

Black, opaque; antennæ dilated in the middle; thorax flavous at the sides; elytra flattened and widened posteriorly, the sides to the middle narrowly flavous.

*Var.* Elytra obscure fulvous.

Length 2-2½ lines.

Head black at the vertex, very finely rugose; clypeus testaceous; antennæ black, the third to the eighth joints dilated, the third joint the longest; thorax twice as broad as long, the sides straight, narrowed towards the apex, the posterior margin sinuate at each side, the surface scarcely visibly rugose and finely pubescent, the disc broadly black or dark fuscous, the sides narrowly flavous; elytra widened posteriorly, sculptured like the thorax and of the same colour, with a narrow flavous band (indented in the middle by a projecting point of the ground-colour), which commences at the shoulders and narrowing gradually becomes obsolete below the middle, the apices rounded; underside and legs black.

*Hab.* PANAMA, David in Chiriqui (*Champion*).

*S. clarki* differs from *S. antennalis*, Clark, in the elytra being more dilated in shape and wanting the posterior flavous spot, and in the entirely black legs.

### 8. *Schematiza thoracica*. (Tab. XXVIII. fig. 12.)

Dark fuscous, widened posteriorly; thorax flavous, with two black bands; elytra finely costate, fuscous, the sides at the shoulders narrowly or broadly flavous.

*Var. a.* The base of the head and the thorax fulvous, the latter with two black spots at the base.

*Var. b.* Elytra entirely flavous.

Length 2-2½ lines.

Head fuscous, with some more or less distinct small flavous spots at the sides; clypeus flavous; labrum piceous; antennæ dilated from the third to the seventh joints, the third joint scarcely (if at all) longer than the rest; thorax twice as broad as long, all the margins nearly straight, the surface longitudinally depressed at the sides, flavous, finely pubescent, the disc with two narrow or broader longitudinal black bands; scutellum dark fuscous; elytra widened posteriorly, each with three very narrow longitudinal costæ placed at equal distances but not extending to the apex, the surface minutely rugose and finely pubescent, the shoulders occupied by a flavous band of variable width which gradually narrows towards the suture and there becomes obsolete, the apices rounded and but slightly angular.

*Hab.* MEXICO, Cordova, Toxпам (*Sallé*); GUATEMALA, San Juan in Vera Paz (*Champion*); PANAMA, Peña Blanca (*Champion*).

*S. thoracica* differs from the species with costate elytra described by Clark in the elytra being different in colour and each having three costæ, and the thorax having two black bands; in some specimens the flavous portion of the elytra extends nearly to the suture anteriorly, in others the shoulders only are narrowly marked with flavous. The antennæ differ in structure from those of *S. clarki*. The varieties do not differ except in colour.

### 9. *Schematiza suturalis*. (Tab. XXVIII. fig. 13.)

Elongate, slightly widened behind, black; the thorax narrowly fulvous at the sides; elytra very finely punctured, each with three raised longitudinal lines, pale fulvous, the suture narrowly and the apical margins black.

Length 2-2½ lines.

Head black, the clypeus flavous; antennæ with the third to the seventh joints broadly dilated, the four terminal joints more elongate; thorax one half broader than long, all the margins nearly straight, the sides narrowly

fulvous, the middle of the disc with a regular broad black band; elytra rounded at the apices, each with three narrow raised lines (not extending to the base or apex) on the middle of the disc, the sutural and apical margins narrowly black, the rest fulvous; underside and the legs black.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*). A single specimen.

The thorax in *S. suturalis* is shorter than in the other species of the genus described here; this character, in connection with the very elongate general shape and the different coloration, will assist in the recognition of the present insect.

#### DIABROTICA.

*Diabrotica*, Chevrolat, D'Orbign. Dict. univ. Hist. nat. iv. p. 717 (1843).

Amongst the entire subfamily of Galerucinæ no genus contains so many species as *Diabrotica*; at least two hundred have already been described, and the undescribed forms contained in collections must also be counted by hundreds. Here, perhaps, more than in any other genus of Phytophaga, may be found species which require long series of specimens to settle their specific value; sometimes their characters of distinction are very minute, and it must, in many cases, remain a question of opinion whether certain forms must be looked upon as varieties of one and the same insect or as true species. There are plenty of instances in which certain species cannot be satisfactorily separated until their localities are considered in connection with some slight mark of distinction, requiring often a good many specimens to come to any conclusion at all, and even then it is justifiable to doubt the propriety of describing such closely allied forms as distinct and not rather as local varieties. If this latter plan were, however, adopted, the same difficulties as to where to draw the line would be encountered; nothing remains but to draw attention to those differences, even if slight, between the many species at present considered distinct. The entire New World is the true home of *Diabrotica*, the species abounding in the tropics, but diminishing gradually in point of numbers towards the more northern and southern parts. In Central America many species may be said to swarm in certain localities; they are especially abundant (according to Mr. Champion) at the commencement of the rainy season, and are found upon the fresh growth in new forest-clearings, and on the margins of the coffee and sugar-cane plantations, upon the leaves of the growing maize, &c. I have arranged our species according to the length of the joints of the antennæ and partly by the coloration of the elytra.

Section 1. *Antennæ with the second and third joints short, the third often longer than the second.*

a. *Elytra black or brown, with large fulvous or greenish spots.*

1. ***Diabrotica regalis*.** (Tab. XXVIII. fig. 18.)

*Diabrotica regalis*, Baly, Ann. & Mag. Nat. Hist. 3rd ser. iv. p. 270 (1859)<sup>1</sup>; Journ. Linn. Soc., Zool. xix. p. 213 (1885)<sup>2</sup>.

*Hab.* GUATEMALA (*coll. Baly*); PANAMA, Volcan de Chiriqui, Bugaba (*Champion*).—COLOMBIA <sup>1</sup> 2, Muzo <sup>2</sup>; GUIANA, Cayenne <sup>2</sup>.

This is one of the largest species of *Diabrotica*; it is rather variable in coloration, the large elytral spots being as frequently of a pale green as of a fulvous colour, while the narrow spaces dividing the spots vary from black to fulvous; in certain varieties the anterior spots disappear altogether. *D. regalis* has not been received by us from Guatemala, but two specimens in the collection of Mr. Baly are so labelled.

### 2. *Diabrotica morosa*. (Tab. XXVIII. fig. 19.)

*Diabrotica fraterna*, Baly, Ann. & Mag. Nat. Hist. 5th ser. iii. p. 79 (1879)<sup>1</sup>.

*Hab.* GUATEMALA <sup>1</sup> (*coll. Baly*); PANAMA, Bugaba, Volcan de Chiriqui, Caldera, David, Tolé, San Feliz, Los Remedios (*Champion*).

The name *D. fraterna* having already been used by Mr. Baly for another species of the same genus (*cf.* Ann. & Mag. Nat. Hist. 3rd ser. iv. p. 272), I am obliged to change it. The female of *D. morosa* is very much larger than the male, nearly approaching the preceding species in size, and is of a posteriorly dilated shape. There are no varieties of importance before me; in the male the antennæ are but slightly shorter than the body. *D. alboplagiata*, Jac., is exceedingly closely allied to this; it is probably only a variety of the present species, but differs in the femora being entirely flavous in colour.

### 3. *Diabrotica panamensis*.

Fulvous; head, the intermediate joints of the antennæ, the breast, the tibiæ and tarsi, black; elytra obsoletely punctured, black, each with three yellowish rounded spots placed one below the other.

Length 3 lines.

Head impunctate, with a distinct fovea, entirely black; antennæ more than half the length of the body, the third joint one half longer than the second, the basal joint fulvous, the two following ones fulvous beneath only, the intermediate joints fuscous or black, the three apical ones flavous, the extreme apex of the terminal joint black; thorax subquadrate, with two shallow foveæ below the middle, the disc impunctate, flavous, shining; scutellum black; elytra slightly dilated posteriorly, finely and irregularly punctured, black, each with a round spot below the base, a larger one immediately below the middle, and a small one at the extreme apex, yellowish-white.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

The number and position of the elytral spots separates *D. panamensis* from the preceding species. It is also allied to *D. deyrollei*, Baly, but differs in the shape of the spots and in the colour of the legs.

### 4. *Diabrotica pygidialis*. (Tab. XXIX. fig. 1, ♂.)

Fulvous; head and the intermediate joints of the antennæ piceous; thorax bifoveolate; elytra distinctly punctured, black or piceous, a transverse spot before, another below the middle, and the apices, flavous.

♂. Antennæ slightly longer than the body, the second and third joints very short.

♀. Antennæ shorter than the body, the third joint one half longer than the second.

Length 2 lines.



Head impunctate; antennæ piceous, the three apical joints yellowish-white, the apex of the terminal one piceous; thorax impunctate, with two distinct foreæ; scutellum flavous; elytra somewhat rugosely punctured, the flavous bands transverse and not quite extending to either margin; pygidium black.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

Separated from *D. morosa* and other species of this section by the long antennæ, which extend beyond the apices of the elytra in the male, the entirely flavous underside, the black pygidium, and the transversely shaped elytral spots or bands.

5. ***Diabrotica fenestralis***. (Tab. XXVIII. fig. 20.)

*Diabrotica fenestralis*, Jacoby, P. Z. S. 1879, p. 791<sup>1</sup>.

*Hab.* NICARAGUA, Chontales<sup>1</sup> (*Belt*); COSTA RICA<sup>1</sup>, Volcan de Irazu (*Rogers*).

A comparison of this insect with *D. morosa* seems to leave but little doubt that it must be looked upon as a variety of the latter in which the elytral black bands surrounding the flavous spots are reduced in width or interrupted, the shape and position of the bands being exactly similar. As I have three specimens, however, before me agreeing with each other, and the localities of *D. fenestralis* are also different (though from an intermediate region and apparently connecting) from those in which *D. morosa* was obtained, it is perhaps better to retain the two insects as distinct for the present.

6. ***Diabrotica elegantula***. (Tab. XXVIII. fig. 21.)

*Diabrotica elegantula*, Baly, Journ. Linn. Soc., Zool. xix. p. 213 (1885)<sup>1</sup>.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui, David, Tolé, San Lorenzo, San Feliz (*Champion*).—COLOMBIA, R. Magdalena, Muzo, San Carlos<sup>1</sup>.

This seems to be rather a variable species. Amongst the large number of specimens before me, there are only a few which agree very nearly with Mr. Baly's type; the others have the narrow transverse median band of the elytra replaced by a broad round flavous spot, though the other characters are as in the typical form; one of these latter is figured here. I may add that, in all the specimens before me, the third joint of the antennæ is nearly twice as long as the second; Mr. Baly gives the size as "slightly longer."

7. ***Diabrotica gratiosa***. (Tab. XXVIII. fig. 22.)

*Diabrotica gratiosa*, Baly, Journ. Linn. Soc., Zool. xix. p. 215 (1885)<sup>1</sup>.

*Hab.* MEXICO, Cordova (*Sallé*<sup>1</sup>); PANAMA, Volcan de Chiriqui, Bugaba (*Champion*).—COLOMBIA<sup>1</sup>, San Carlos<sup>1</sup>.

At first sight *D. gratiosa* seems but to represent a variety of *D. elegantula*; several constant differences seem, however, to pronounce the insect a distinct one. In *D. gratiosa* the metallic green portion of the elytra is not connected at the sides as in *D. elegantula*, where it forms a straight line, and the anterior band which includes the

round flavous spot is always indented or emarginate below the shoulder; the antennæ have the second and third joints nearly equal in length, thus differing from *D. elegantula*, the latter having the third joint distinctly longer than the second. The present insect greatly resembles certain forms of *D. adelpha*, Harold, but may be separated from that species by the nearly straight (not curved) posterior elytral band, this latter in *D. adelpha* assuming a semilunate shape. The specimens from Cordova agree with those from the State of Panama, except in the want of the thoracic foveæ, and in the rather narrower band of the elytra; it is therefore possible that the Mexican insect represents a closely allied but distinct species.

### 8. *Diabrotica duvivieri*.

*Diabrotica duvivieri*, Baly, Trans. Ent. Soc. Lond. 1886, p. 445<sup>1</sup>.

Var. *a*. Elytra yellow, narrowly margined with black.

Var. *b*. Thorax yellow, the elytra as in var. *a*, the legs black.

*Hab.* MEXICO, Teapa<sup>1</sup>, Playa Vicente (*Sallé*).

Mr. Baly's description of this species was drawn from a single specimen from Teapa, and I have not much doubt that the examples before me from Playa Vicente should be referred to the same insect; only one of the latter, however, agrees perfectly with the author's description, the others having an extra small yellow spot near the lateral margin of the elytra at the base. The varieties do not differ except in colour; in several specimens, as in the type, there is an indication of the flavous elytral spots, caused by the shape of the black margins, which seem only inclined to unite at those places where they are joined in the typical forms, thus indicating the elytral pattern of the latter. This variety cannot be mistaken for *D. limbella*, Baly, which is similarly coloured, on account of the foveolate thorax, the latter in *D. limbella* being without impressions.

### 9. *Diabrotica tessellata*. (Tab. XXIX. figg. 3, 4.)

Flavous, the head, the intermediate joints of the antennæ, the breast, tibiæ, and tarsi black; thorax without foveæ; elytra closely and finely punctured, the suture anteriorly, a spot at the shoulder, and two narrow transverse bands at and below the middle, black.

Var. The anterior portion of the elytra entirely black.

Length 2½–4 lines.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui, David (*Champion*).

*D. tessellata* may possibly be a variety of *D. morosa*; but as the eight specimens before me all differ from that species in the same way, I must regard *D. tessellata* as specifically distinct. The antennæ are identical in coloration with those of *D. morosa*, having the two penultimate joints flavous and the terminal one black. The elytra have the extreme lateral margins and the apices broadly flavous in all the specimens; but the transverse bands vary in width and the middle one is sometimes connected at the sides with the spots on the basal margin: the figures will, however, give a better idea of their

pattern than the description. In a single small specimen, probably a male, the suture is entirely black to the apex, the pattern of the elytra therefore closely resembling that of *D. morosa*, from which, however, the flavous femora will distinguish it. The thorax is without impressions; and the antennæ in the male are distinctly longer than in any of the preceding species, extending nearly to the apex of the elytra.

b. *Elytra flavous, with transverse black or blue bands.*

10. ***Diabrotica paradoxa.*** (Tab. XXIX. fig. 13.)

Fulvous, the head, tibiae, tarsi, and breast black; thorax with two small impressions; elytra testaceous, a narrow transverse band at the base, another at the middle, and a large subquadrate or oval spot on each near the apex, black.

Length 3 lines.

Head, labrum, and palpi black, the space between the antennæ rather deeply foveolate; antennæ half the length of the body, the second and third joints short and equal, the basal joints more or less fulvous, the following joints piceous or black, the last three testaceous, with the apex of the terminal joint fuscous; thorax subquadrate (shaped as in *D. tessellata*), impunctate, the surface impressed on each side with a small (more or less distinct) fovea; scutellum fulvous or piceous; elytra very finely punctured, with a more or less distinct longitudinal depression below the shoulders, the two anterior black bands rather closely placed, the posterior margin of the basal band irregularly notched and sometimes confluent at the sides with the second band, the space between these bands and the large apical spot broader than that between the two anterior bands; femora and abdomen fulvous, the tibiae and tarsi black.

*Hab.* BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA, Teleman, Chacoj, and Panima in Vera Paz (*Champion*), Yzabal (*Sallé*).

The two bands of the elytra in this species are of rather regular shape and very slightly curved, but neither they nor the large apical spot extend quite to the lateral or posterior margins; the black (not blue) colour of these markings, in connection with the black tibiae, will separate *D. paradoxa* from any of the preceding species and their varieties. An example from Chacoj is figured.

11. ***Diabrotica albo-signata.*** (Tab. XXIX. fig. 14.)

*Diabrotica albosignata*, Baly, Trans. Ent. Soc. Lond. 1886, p. 453<sup>1</sup>.

*Hab.* GUATEMALA<sup>1</sup>, Cubilguitz, Coban, San Joaquin, Purula, Sinanja, Chacoj (*Champion*); NICARAGUA, Granada (*Sallé*).

*D. albo-signata* is separated from *D. paradoxa* by the equally divided elytral black bands, and by the black apices of the elytra forming a small triangular spot: in none of the specimens I have for examination does the posterior or last elytral black band assume the shape of an oval or square spot, but the two anterior bands are sometimes (as is occasionally the case in *D. paradoxa*) more or less connected, and the legs are occasionally entirely black; in other respects there is no difference in the two insects. As both were obtained partly in the same localities, it is doubtful whether they represent distinct forms or varieties of one only. The Nicaraguan example is figured.

**12. *Diabrotica championi*.**

Flavous, the head and breast black; thorax without impressions; elytra closely punctured, with three transverse black bands, the third band slightly concave on its posterior margin.

Length 3 lines.

Head impunctate, with a fovea between the eyes; antennæ two thirds the length of the body, fulvous, the third joint one half longer than the second; thorax one half broader than long, flavous, without foveæ; scutellum black; elytra closely punctured, with a narrow transverse black band at the base and another immediately in front of the middle, and a third behind the middle, the latter slightly curved; legs fulvous or flavous.

*Hab.* NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

Closely allied to *D. paradoxa* and *D. albo-signata*, but differing in the non-impressed thorax, the entirely fulvous antennæ and legs, and in the shape of the posterior band of the elytra (this band has its posterior margin concave, not rounded); the bands of the elytra extend to the sutural (but not to the lateral) margin and have a very slight violaceous tint, and the flavous space between the two anterior bands is slightly narrower than the space dividing the second and third bands, the third band being wider than the two others. In one specimen from Chiriqui the basal band is on each side divided into two subquadrate spots, the inner one of which is connected at the suture with the second band, so as to include a **L**-shaped flavous space; the single specimen from Nicaragua agrees with the others.

**13. *Diabrotica viridi-fasciata*. (Tab. XXIX. fig. 15.)**

Flavous, the head and the breast black; thorax obsoletely tri-foveolate; elytra testaceous, with three transverse, slightly curved, metallic blue bands placed at equal distances one from another.

Length  $2\frac{3}{4}$  lines.

Head impunctate; antennæ slender, flavous, the eighth joint slightly darker, the third joint one half longer than the second; thorax quadrate, impunctate, shining, with a small basal and two longitudinal depressions; elytra finely punctured, with a longitudinal depression below the shoulders.

*Hab.* COSTA RICA, Cache (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

In this species the three elytral bands, of which the one at the base is rather narrower than the others, do not extend to the extreme lateral margin, but are more or less connected at the suture; the apices of the elytra being broadly flavous. *D. viridi-fasciata* differs from the two preceding species by the impressed thorax, and by the bands of the elytra being metallic blue in colour and separated by spaces of equal width. A specimen from Cache is figured.

**14. *Diabrotica signifera*. (Tab. XXXI. fig. 3.)**

Flavous, the head, the intermediate and apical joints of the antennæ, the tibiae, tarsi, and breast black; thorax with two obsolete depressions; elytra finely punctured, with three narrow transverse black bands, the first band deeply indented.

Length 2 lines.

Head impunctate; antennæ as long as the body, the second and third joints very minute, the sixth to the

eighth and the apical one black; thorax flavous, impunctate, the disc obsolete flattened; elytra very finely punctured, the first band consisting of two subtriangular spots which are united at the middle, the second and third bands not quite extending to either margin, the posterior edge of the terminal fascia rather strongly concave.

*Hab.* BRITISH HONDURAS, R. Hondo, R. Sarstoon (*Blancaneaux*); GUATEMALA, San Gerónimo, Toco, El Jicaro (*Champion*); NICARAGUA, Granada (*Sallé*), Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui, David, Caldera, Tolé (*Champion*).

*D. signifera*, although closely allied to *D. albo-signata* and *D. paradoxa*, differs in the extremely short second and third joints of the antennæ, these joints being moniliform in shape in the male; and in the differently shaped elytral bands, the basal one being often interrupted by a flavous triangular spot of variable size at the middle, this spot dividing the band itself into two black triangular markings which only touch in the centre; in one or two examples the anterior band is replaced by isolated spots, and in some others from British Honduras the black bands are greatly widened, thus reducing the pale intervals of the ground-colour to very narrow spaces. The pygidium in all the specimens is black. *D. albo-signata* differs further by the black apices of the elytra and larger general size. Many specimens.

### 15. *Diabrotica dorso-vittata*.

Testaceous, the antennæ (the basal joint excepted), tibiæ, and tarsi black; thorax with a discoidal depression; elytra minutely punctured, with a transverse band before and another below the middle, and the extreme apices, black.

Length 2 lines.

Head testaceous or fulvous, the frontal tubercles very obsolete; antennæ two thirds the length of the body, black, the basal joint sometimes fulvous, the second and third joints equal and together shorter than the fourth joint; thorax one half broader than long, entirely impunctate, the disc shallowly depressed; elytra parallel, very minutely punctured, each with two transverse black bands (the first a little below the base, nearly straight, the second some distance below the middle, rather broader, and slightly curved at its posterior margin), the extreme apices also black.

*Hab.* GUATEMALA, Panzos, Teleman, Chacoj, and San Juan in Vera Paz (*Champion*).

*D. dorso-vittata* may be at once known amongst its allies by the elytra having only two (instead of three) bands, and also by the position of these latter; as well as by the uniform colour of the head, thorax, and underside, the breast not being black in this insect. In some specimens the anterior elytral band is much broader, extending upwards towards the base and connected at the sides with the second band; other differences I am not able to find.

### 16. *Diabrotica bipartita*.

Fulvous, the head black; thorax bifoveolate; elytra with the anterior half and a broad band below the middle black.

Length 2 lines.

Head black, impunctate; antennæ nearly as long as the body, the second and third joints very small, the fourth longer than the preceding three together, the three or four intermediate joints and the apical one black, the others pale flavous; thorax one half broader than long, the disc with two foveæ, impunctate; elytra

closely punctured, slightly rugose, the anterior portion to the middle, and a broad transverse band beyond, black (the black anterior portion divided from the transverse band by a narrow straight yellowish-white band), a round white spot close to (but not quite reaching) the apex of each, the apex itself black; underside and femora fulvous.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

The elytra in this species might be equally well described as black, with a narrow central whitish band and similarly coloured apices. Two specimens only were obtained.

### 17. *Diabrotica regularis*.

Testaceous, the apical joints of the antennæ and the femora pale greenish-testaceous, the head black; thorax obsoletely depressed; elytra rather strongly punctured, testaceous, a broad transverse band at the base and a narrow one below the middle, black.

Length 2-2½ lines.

Head impunctate, the vertex foveolate; palpi fulvous; antennæ half the length of the body, fulvous, the three terminal joints very pale yellowish-green, the second and third joints short, equal; thorax one half broader than long, impunctate, flavous, the disc with two obsolete depressions; scutellum black; elytra slightly widened posteriorly, longitudinally grooved on each side, closely and very distinctly punctured, with a transverse black band (not quite touching the lateral margins, and with its posterior edge very uneven or dentate) extending from the base nearly to the middle, and another narrower black band placed at a little distance below the middle; the breast black, the abdomen and femora pale greenish, the tibiæ fulvous.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

*D. regularis* differs from *D. bipartita* in the colour of the antennæ and legs, the more irregular shape of the elytral bands, the fulvous apices of the elytra, and in the less parallel and more widened general shape.

### 18. *Diabrotica rogersi*. (Tab. XXVIII. figg. 24, 25.)

Testaceous, the head, the intermediate joints of the antennæ, the breast, and the tibiæ and tarsi black; thorax fulvous, bifoveolate; elytra fulvous, the apices lighter, a broad transverse band at the base and a narrow curved transverse mark below the middle, dark metallic blue.

*Var.* Elytra metallic blue, a spot below the middle and the apices fulvous.

Length 4 lines.

Head with a distinct fovea between the eyes; antennæ two thirds the length of the body, the third joint one half longer than the second, the three lower joints fulvous, the following five black, the others pale testaceous, the extreme apex of the terminal joint fuscous; thorax dark fulvous, with two more or less distinct foveæ; scutellum piceous; elytra extremely finely and not very closely punctured.

*Hab.* COSTA RICA, Rio Sucio (*Rogers*).

*D. rogersi* differs from both *D. elegantula* and *D. gratiosa* in its larger size, and in the much more finely punctured elytra; the markings of the latter also being different—the broad dark blue anterior band extending nearly to the middle but without touching the lateral margins, the sides of this band not notched but forming a perfectly straight line; the space between the anterior and posterior blue marks of a darker fulvous than the apices, the latter being pale testaceous; and the second narrow trans-

verse band is slightly curved and does not extend to either margin. The four specimens, with the exception of the variety in which the two bands are joined at the sides and are rather broader than in the type, agreeing with each other in the above particulars, I am obliged to treat them as specifically distinct.

### 19. *Diabrotica godmani*.

Fulvous, the head and breast black; elytra finely punctured, a broad transverse band at the base, and a narrower slightly curved one below the middle, metallic blue.

♂. Thorax with two or three obsolete depressions, the antennæ two thirds the length of the body.

♀. Thorax without depressions, the elytra more widened behind, the antennæ shorter.

Length  $2\frac{1}{2}$ – $3\frac{1}{2}$  lines.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui, Tolé (*Champion*).

After a careful examination of nearly one hundred specimens I can only come to the conclusion that *D. godmani* represents a distinct species, although it is undoubtedly very closely allied to *D. pulchella*, Jacq.-Duv., and *D. lucifera*, Erichs. In the Panama insect the antennæ are entirely fulvous; in the two last-named species the intermediate and apical joints are dark, and the posterior spot of the elytra is broad and oval and also placed further back than in *D. godmani* (the corresponding band in our insect being always slightly curved, and its posterior margin concave); in general shape also *D. godmani* is more elongate and parallel, at least in the male. The specimens I look upon as the female of the same species agree perfectly with the others in the markings of the elytra, but differ in the thorax being without impressions, the antennæ shorter, and the elytra more widened behind. The foveolate or non-foveolate thorax is generally considered to indicate different species, and which in most cases no doubt holds good, but I think it cannot always be relied upon unless taken in connection with other marks of distinction. I may further add that *D. lucifera*, if I rightly refer specimens from Peru contained in my collection to Erichson's species, has much more strongly punctured elytra and black tibiæ. *D. inæqualis* and *D. haroldi*, Baly, have the tibiæ and tarsi also black.

### 20. *Diabrotica pulchella*. (Tab. XXIX. fig. 11.)

*Phyllobrotica pulchella*, Jacq.-Duv., in Sagra's Hist. física, polit. y nat. de Cuba, vii. p. 127, t. 11. fig. 8<sup>1</sup>; Dej. Cat. 3rd ed. p. 406<sup>2</sup>.

*Diabrotica pulchella*, Suffr. Archiv für Naturg. 1867, i. p. 308<sup>3</sup>.

*Hab.* MEXICO, Minas Viejas (*Dr. Palmer*), Cosamaloapam, Teapa, Tuxtla, Cordova (*Sallé*), Jalapa, San Juan Bautista, Oaxaca (*Höge*); BRITISH HONDURAS, R. Sarstoon, R. Hondo (*Blancaneaux*); GUATEMALA, Teleman (*Champion*); NICARAGUA (*Sallé*), Chontales (*Janson, Belt*).—CUBA<sup>1 2 3</sup> (*coll. Jacoby*).

*D. pulchella* has been well described by Jacquelin-Duval and Suffrian; the Central-American specimens before me show no important difference from those from Cuba. The species may be known by the elytra having a large transverse blue band at the

base and a similarly-coloured round or oval spot behind the middle; many specimens have a small yellow spot placed in the middle of the basal band; and some vary in such a way that one might feel inclined to regard *D. pulchella* as a variety of *D. biannularis* in which the rings of the elytra have been filled up. This insect is not uncommon at Chontales. We figure a specimen from Cordova.

c. *Elytra flavous, with fulvous bands and spots.*

21. *Diabrotica octo-plagiata.* (Tab. XXX. fig. 17.)

Flavous, the breast obscure piceous; thorax bifoveolate; elytra closely punctured, flavous, two spots at the base, a transverse band at the middle, and another deeply sinuate one near the apex, dark fulvous.

Length  $2\frac{3}{4}$  lines.

Head impunctate, the frontal tubercles strongly raised; labrum piceous; palpi flavous; antennæ two thirds the length of the body in the male, shorter in the female, flavous, the third joint scarcely longer than the second, the fourth not or scarcely longer than the fifth joint; thorax subquadrate, flavous, the disc with two deep depressions, impunctate; elytra longitudinally grooved on each side below the shoulders (more distinctly so in the male than in the female), with a longitudinal spot at the shoulder, another near the scutellum, a perfectly straight transverse band at the middle, and a similar band (deeply sinuate on its posterior margin) near the apex of each, dark fulvous; legs flavous.

*Hab.* GUATEMALA (*Sallé*); NICARAGUA, Chontales (*Janson*).

In this insect neither the spots nor the bands touch the margins of the elytra; the female is of more convex shape and rather larger than the male, and has the punctuation of the elytra not so distinct. I have seen but two specimens of this species, which is very distinct by the colour of the bands and the pattern of the elytra. The Guatemalan example is figured.

d. *Elytra flavous, with black or blue more or less ring-shaped anterior and posterior markings.*

22. *Diabrotica adelpha.* (Tab. XXIX. fig. 8.)

*Diabrotica adelpha*, Harold, Coleopt. Hefte, xiii. p. 92 (1875) <sup>1</sup>.

*Hab.* GUATEMALA <sup>1</sup>, near the city, Capetillo, Dueñas, Zapote, Cerro Zunil (*Champion*), Yzabal (*Sallé*); NICARAGUA, Chontales (*Janson*); COSTA RICA (*Van Patten*), Irazu, Rio Sucio, Volcan de Irazu (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

This and several of the following species are extremely closely allied, their characters of distinction being slight and variable. *D. adelpha* may be separated by the smooth, not foveolate, thorax; and by the anterior ring-shaped elytral mark, the posterior margin of which is produced laterally into a short band, which, however, does not extend to the lateral margin: this pattern resembles exactly that of *D. gratiosa*, but in that species the posterior mark of the elytra is not ring-shaped, but nearly straight or very slightly curved. Von Harold speaks of a variety in which the rings of the elytra



are not closed; it is, therefore, probable that he had several species before him which he regarded as varieties only. The colour of the legs in all the specimens before me is flavous. In regard to the anterior marks of the elytra, the species seems to be subject to great variation. I am not able to satisfactorily separate the numerous specimens from Chiriqui, some of which agree with the type, while others have the anterior ring or the subquadrate mark broken up into spots; these forms seem at first sight to represent distinct species, but the many intermediate degrees where the black marks are partly connected leave no choice but to treat all as belonging to one variable insect. A specimen from Yzabal is figured.

**23. *Diabrotica tibialis.*** (Tab. XXIX. fig. 9.)

Flavous, the head, breast, and tibiæ black; thorax without foveæ, dark rufous; elytra very closely and distinctly punctured, a ring-shaped mark at the base connected with a short transverse band, and another slightly curved posterior band, piceous or black.

Length 3 lines.

*Hab.* MEXICO, Colima city, Jalapa (*Höge*), Presidio (*Forrer*).

The fourteen specimens before me all showing the same marks of distinction, I am obliged to separate them from *D. adelpha*, to which the present species is closely allied; the differences are as follows:—In *D. tibialis* the thorax is constantly dark reddish-fulvous (not flavous); the anterior ring-shaped mark on the elytra is similar to that of *D. adelpha*, but the posterior band represents a straight line near the suture, which it touches, and the outer end of this band is only slightly curved (never assuming a semilunate shape as in *D. adelpha*); and, lastly, the tibiæ are black. The antennæ are of the same structure and colour as in *D. adelpha*. A single specimen from Presidio is only half the size, but differs in no other way from the Jalapa specimens.

**24. *Diabrotica brunneo-signata.***

Testaceous, the head fulvous, the breast and tibiæ obscure piceous; thorax with two small depressions; elytra with a transverse band at the base and another at the middle, and an angular spot (widened at the sides) near the apex, fulvous.

Length 2 lines.

Head reddish-fulvous at the vertex, nearly black at the lower portion; antennæ two thirds the length of the body, the third joint very short and not longer than the second and of triangular shape, the fourth slightly curved, the following joints rather elongate and robust, obscure piceous, the three basal joints testaceous; thorax one half broader than long, the surface rather convex, impunctate, with a very small fovea on each side, pale fulvous; scutellum fulvous; elytra finely punctured, testaceous, with three transverse fulvous bands (the basal one narrow, the other two triangularly widened at the sides but not quite extending to the lateral margin), the anterior portion of the suture also narrowly fulvous.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

A single specimen. This species strongly resembles *D. tibialis* in the pattern of the elytra; it differs from that insect, however, in being only about half the size; in the

very short and triangular-shaped third joint of the antennæ; in the differently shaped elytral bands, these bands being greatly constricted near the suture but strongly widened at the sides; and in the angular third band not quite extending to the suture.

**25. *Diabrotica circulata*.** (Tab. XXIX. fig. 5.)

*Diabrotica circulata*, Harold, Coleopt. Hefte, xiii. p. 91 (1875)<sup>1</sup>.

*Hab.* MEXICO, Tuxtla (*Sallé*); GUATEMALA<sup>1</sup>, Pantaleon, Zapote, Dueñas, Capetillo, San Gerónimo, Purula, San Joaquin, Chacoj (*Champion*).—COLOMBIA (*coll. Baly*).

This species seems to be so extremely variable in the markings of the elytra that I find it quite impossible to fix any limit or come to any certain conclusion regarding it. Von Harold has given only short diagnoses of *D. biannularis* and *D. circulata*; the last-named he separates by the bifoveolate thorax, the more oblong shape of the bluish elytral rings, and the more strongly punctured elytral surface. All these characters seem to lose their value amongst the large amount of material now before me, in which specimens from one and the same locality vary in having either an obscurely depressed, bifoveolate, or trifoveolate thorax, and the antennæ unicolorous fulvous, or with the intermediate joints darkened; and in regard to the elytral ring-shaped markings, the same amount of variation may be seen, the rings being either narrow or broad, open or closed, and it would be easy to make half a dozen new species (?) on these variable characters. I will, however, refer at present the Guatemalan specimens with thick and strongly-marked blue rings, of which the posterior one is rather angular and open, to *D. circulata*. We figure an example of this kind from Pantaleon.

**26. *Diabrotica biannularis*.** (Tab. XXIX. fig. 7.)

*Diabrotica biannularis*, Harold, Coleopt. Hefte, xiii. p. 91 (1875)<sup>1</sup>; Klug, Dej. Cat. 3rd ed. p. 404<sup>2</sup>.  
*Diabrotica oculata*, Sturm, in litt.

*Hab.* MEXICO<sup>1 2</sup>, Vera Cruz, Toxpam, Cordova, Tuxtla (*Sallé*), Jalapa, Tapachula in Chiapas (*Höge*); BRITISH HONDURAS, R. Sarstoon (*Blancaneaux*); HONDURAS (*Sallé*).

*D. biannularis* resembles greatly in the elytral pattern certain forms of *D. nummularis*, but differs in the flavous or pale fulvous thorax, this latter being less convex, and having three more or less distinct foveæ. The antennæ have the intermediate joints, and often the apical one also, fuscous, and are altogether more slender and elongate. The colour of the head seems, however, subject to variation, and the ring-shaped marks of the elytra are as often closed as open. An example from Vera Cruz is figured.

27. *Diabrotica nummularis*. (Tab. XXIX. fig. 6.)

*Diabrotica nummularis*, Harold, Mittheil. Münch. ent. Ver. p. 110 (1877)<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Ventanas, Milpas (*Forrer*), Juquila, Yolotepec, Cuernavaca, Cordova, Vera Cruz (*Sallé*), Jalapa, Chilpancingo, Colima city, Acapulco, Tapachula (*Höge*); COSTA RICA (*Van Patten*), Cache (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

It is not easy to come to a definite opinion in regard to this species and several of its closely-allied congeners; and after a great deal of careful examination I can only form the conclusion that at least two forms of *D. nummularis* must be distinguished, if indeed all the specimens before me are to be referred to that species. In the typical form the antennæ and legs are entirely fulvous, the head is black, and the elytra have a broad metallic blue ring at the base and an equally broad semilunate band below the middle; in the second form the elytral markings (although similar in shape) are much thinner and the head is either entirely or partially fulvous, but specimens with a black head also occur. In all, the thorax is of a reddish-fulvous colour, rather convex, and with two small foveæ. It is impossible to separate the two forms on account of the many intermediate degrees of colour and elytral pattern; but the constant characters peculiar to *D. nummularis* seem to be the entirely fulvous antennæ and legs, in connection with the reddish, convex, and finely bifoveolate thorax. Some examples exactly resemble in the closed elytral rings *D. biannularis*; but as the colour of the antennæ and the shape of the thorax agree with *D. nummularis* I look upon them as varieties of that species. The specimen figured, from Ventanas, belongs to the form with thin elytral pattern.

28. *Diabrotica delineata*. (Tab. XXIX. fig. 10.)

Pale testaceous, the breast and the sixth, seventh, and eighth joints of the antennæ black; thorax bifoveolate; elytra closely and distinctly punctured, a thin ring-shaped mark at the base and another half-ring below the middle, violaceous-blue.  
Length 3 lines.

*Hab.* MEXICO, Cordova, Tuxtla (*Sallé*), Jalapa (*Höge*); BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA, Volcan de Atitlan (*Champion*).

I separate *D. delineata* from *D. biannularis* on account of the flavous head, the colour of the antennæ (in which the sixth to the eighth joints only are black), and the generally paler colour. The elytra are more opaque, closely punctured, and with traces of longitudinal depressions; the ring-shaped marks are very thin, the posterior one being open behind and forming an angulate half-crescent. As these differences are constant in the nine specimens before me I must look upon them as of specific value. We figure an example from Cordova.

### 29. *Diabrotica chontalensis*.

Fulvous, the head and breast black; the second and third joints of the antennæ very short, equal; thorax subquadrate, impunctate, without foveæ; elytra finely punctured, a ring-shaped mark at the base, and a semi-lunate one below the middle, metallic blue.

Length 3 lines.

*Hab.* NICARAGUA, Chontales (*Janson*).

I am obliged to separate this insect, of which only a single example was obtained, from the many closely-allied forms with similar elytral pattern; from all of which it differs in the very short second and third joints of the antennæ, these joints being of exactly the same length, the reverse being the case in the allied species. The antennæ are entirely dark fulvous (the basal joints somewhat lighter) and are nearly as long as the body. The elytral markings are similar to those of *D. circulata*, but the thorax has no foveæ and is nearly quadrate in shape; the punctuation of the elytra is arranged in closely approached irregular lines.

*e. Elytra partly (the thorax entirely) green.*

### 30. *Diabrotica viridicollis*. (Tab. XXIX. fig. 2, var.; Tab. XXX. fig. 9.)

Pale greenish, the head, the antennæ partly, and the tibiæ and tarsi obscure fulvous; thorax green, scarcely foveolate; elytra fulvous, the sides dark green, the suture and a lateral stripe anteriorly, and a transverse band near and another below the middle, piceous.

Length 3-4 lines.

Head dark fulvous or obscure piceous, foveolate between the eyes; antennæ two thirds the length of the body, of variable colour, the second joint very short, the third one half longer, the basal joint generally pale green, the following joints obscure fulvous or fuscous, the two or three apical ones flavous; thorax subquadrate, dark green, shining, without impressions or with a minute fovea on each side, the surface impunctate; scutellum black; elytra closely punctured, with a longitudinal depression below the shoulder, pale fulvous, the sides with a narrow longitudinal green band extending to the apical margins, this colour being bounded anteriorly by a piceous stripe extending to the anterior transverse band which it joins, the basal and sutural margins also piceous in colour, a similarly-coloured band below the middle, extending as far as the lateral green band; femora and the abdomen green, the breast obscure piceous.

*Hab.* MEXICO, Oaxaca (*Salle*), Tapachula in Chiapas (*Höge*); NICARAGUA, Chontales (*Janson, Belt*); PANAMA, Bugaba (*Champion*).

In some examples the elytra are more shining, and have the markings similar to those of *D. biannularis* and *D. adelpha*, and the abdomen flavous instead of green; I believe these specimens, however, to be only a variety, as all other characters are present. *D. viridicollis* may be known from its allies by the colour of the thorax and elytra. From *D. sex-maculata* it differs in the colour of the antennæ; and in the shape of the flavous spots of the elytra, these spots being rounder and divided by black bands, and the lateral margins only of a green colour; the terminal spots occupy the entire apices of the elytra. We figure two examples: one from Chontales (Tab. XXX. fig. 9) and another, a variety, from Bugaba (Tab. XXIX. fig. 2).

*f. Elytra black or blue, with flavous markings of variable shape.*

31. ***Diabrotica militaris***. (Tab. XXVIII. fig. 23.)

Fulvous, the head, the lower joints of the antennæ, and the breast black; thorax deeply impressed; elytra finely punctured, metallic blue, with two small basal spots, a narrow transverse central band, and the apices flavous.

Length 3 lines.

Head with a deep fovea between the antennæ, black; antennæ two thirds the length of the body, the third joint longer than the second but much shorter than the fourth, the first joint more or less fulvous, the seven following joints black or piceous, the rest flavous, the extreme apex of the terminal joint piceous; thorax subquadrate, impunctate, the disc strongly depressed and with two more or less distinct foveæ; scutellum piceous; elytra scarcely widened behind, finely and closely punctured, with an obsolete longitudinal sulcation below the shoulder, dark metallic blue, the extreme lateral margins, a narrow straight band across the middle, and the apices as well as a small spot below the base of each, flavous; the breast black, the abdomen and the legs entirely fulvous or flavous.

*Hab.* GUATEMALA, Panima, Chacoj and San Juan in Vera Paz (*Champion*).

The flavous apex of each elytron may be described as of the shape of a more or less quadrate spot interrupting the metallic blue colour. The Panima example is figured.

32. ***Diabrotica quadricollis***. (Tab. XXX. fig. 20.)

Fulvous, the head, breast, tibiæ, and tarsi black; thorax quadrate, without foveæ; elytra black, a small spot below the base, a transverse spot in the centre, the suture in the middle, and a subquadrate space at the apices flavous.

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

Head black, with a deep fovea on the vertex, the carina very acute and distinct; antennæ more than two thirds the length of the body, the second and third joints very small, the three lower joints flavous, the five following ones black, the ninth and tenth joints flavous, the terminal one black; thorax perfectly quadrate, fulvous, with a slight bluish tint, the surface not visibly punctured, without depressions, and rather flat; scutellum black; elytra finely and closely punctured, with a longitudinal depression at the sides, black, a subquadrate space at the apices, a small spot below the base, a transverse spot in the centre, a lozenge-shaped spot in the middle of the suture, and the extreme lateral margins, flavous.

*Hab.* GUATEMALA, Cubilguitz in Vera Paz 1000 feet (*Champion*).

I cannot refer the single specimen obtained to a variety of any of the preceding species, on account of the quadrate thorax in connection with the black colour of the elytra; the spots on the latter are placed somewhat as in *D. militaris*, in which, however, the elytra are of a blue colour and the flavous markings at the apices differently shaped.

33. ***Diabrotica tripunctata***. (Tab. XXIX. fig. 24.)

*Crioceris tripunctata*, Fabr. Syst. Eleuth. i. p. 451<sup>1</sup>.

*Galeruca tripunctata*, Oliv. Ent. vi. p. 652, t. 4. f. 66<sup>2</sup>.

*Hab.* NICARAGUA, Chontales (*Janson*).—SOUTH AMERICA<sup>1</sup>, Cayenne<sup>2</sup>.

The only difference I am able to find between the published descriptions of this species and specimens obtained in Nicaragua is the colour of the elytra: in our insect

it is piceous or dark fulvous, while Olivier gives it as black. Some specimens agree perfectly with the figure in Olivier's work; but there are examples before me in which the elytra have the anterior portion piceous, this colour surrounding a yellow spot at the base, and a narrow transverse band below the middle dark flavous. This variety greatly resembles *D. adelpha* and several other allied species; between this form, however, and normally coloured specimens several intermediate stages are before me, thus proving the species to be, like so many of its congeners, a very variable one. Our figure differs from that given by Olivier<sup>2</sup> in having larger flavous spots on the elytra; but the name *tripunctata* is misleading, as there are only two spots on each elytron, and these spots can scarcely be said to resemble small punctures.

**Diabrotica flaviventris.** (Tab. XXIX. fig. 20.)

Head and breast black, the basal and apical joints of the antennæ flavous; thorax piceous, without foveæ; elytra closely punctured, fulvous, the anterior half and a transverse band below the middle piceous; tibiæ and abdomen flavous.

*Var.* Elytra almost entirely piceous, the apices more or less fulvous.

Length 3 lines.

Head impunctate; the second and third joints of the antennæ very short, equal in length, the three lower joints flavous, the five following ones more or less fuscous, the ninth and tenth joints flavous, the apical one fuscous; thorax dark fulvous or piceous, rather convex, the disc without depressions and with a few fine punctures; elytra with a distinct margin, slightly widened behind, closely and distinctly punctured.

*Hab.* MEXICO, Cosamaloapam, Tlacotalpam (*Sallé*), Vera Cruz, San Juan Bautista Acapulco, Tapachula (*Höge*); GUATEMALA, Panzos, Teleman, Chacoj (*Champion*).

The description is drawn from a single well-marked specimen, in which the elytra have the anterior half nearly black, the rest dark fulvous, with a transverse curved black band below the middle extending to the suture but not to the lateral margin; in all the other specimens the fulvous portion is almost entirely invisible, or only slightly indicated, owing probably to discoloration after death. The femora and the abdomen are flavous, the tibiæ and tarsi black. The specimen figured is of a more fulvous hue than the others, and was at first supposed by me to represent a distinct species. The specimen from Tlacotalpam is figured.

**35. Diabrotica fulvo-signata.** (Tab. XXIX. fig. 12.)

*Diabrotica fulvo-signata*, Baly, Ann. & Mag. Nat. Hist. 5th ser. iii. p. 77 (1879)<sup>1</sup>.

*Hab.* GUATEMALA<sup>1</sup>; NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba (*Champion*).

An example from Bugaba is figured.

**36. Diabrotica tricolor.** (Tab. XXXI. fig. 16.)

Ovate, slightly widened posteriorly; black, the antennæ obscure fulvous; thorax without foveæ; elytra minutely punctured, the base black, the middle fulvous, the apices flavous; abdomen flavous.

Length 2 lines.

Head impunctate, with the usual fovea; antennæ scarcely more than half the length of the body, fulvous, the basal joint generally black, the third joint about one half longer than the second, the latter very short; thorax subquadrate, the sides nearly straight, the surface impunctate, black, shining; scutellum black; elytra more or less transversely depressed below the base, very minutely punctured, the first third of their length occupied by a transverse black band, the space below the latter to a little distance from the apex dark fulvous, the apices themselves bright flavous; legs and the underside black; abdomen flavous.

*Hab.* GUATEMALA, Paso Antonio 250 feet (*Champion*).

This is a curiously-coloured insect not difficult to recognize. In some examples the dark basal portion of the elytra assumes a more piceous tint; others have a distinct more or less broad band placed below the base; the basilar portion is somewhat raised in all the specimens.

*g. Elytra flavous, with small black spots.*

**37. *Diabrotica duodecim-notata.*** (Tab. XXX. fig. 5.)

*Diabrotica duodecim-notata*, Harold, Coleopt. Hefte, xiii. p. 91 (1875)<sup>1</sup>.

*Diabrotica disjuncta*, Chev. Dej. Cat. 3rd ed. p. 405<sup>2</sup>.

*Galeruca seamaculata*, Sturm, in litt.

*Diabrotica 12-signata*, Sturm, in litt.

*Hab.* MEXICO<sup>1,2</sup>, San Pedro, Saltillo, Parras in Coahuila, San Luis Potosi (*Dr. Palmer*), Paso del Norte, Chihuahua city, Saltillo, Villa Lerdo in Durango, Durango city, Tula, Irapuato, San Isidro, Jalapa (*Höge*); Orizaba, Cordova, Oaxaca, Guanajuato, Puebla, Coscomatepec (*Sallé*).

Of the six small black spots or short streaks on each elytron, the one placed near the scutellum is, in all the specimens I have examined, obliquely directed outward—thus forming, with the corresponding spot on the opposite side, a  $\wedge$ -shaped mark. The antennæ have the first two or three joints rather pale, the rest black; the legs (the bases of the femora excepted) and the underside are more or less black, the abdominal segments, however, being usually mingled with testaceous.

I have only seen this species from Mexico, and chiefly from the more northern parts of that country, some of our specimens being from the United States frontier. Several other closely-allied forms are known from different parts of South America. We figure a specimen from Orizaba.

**38. *Diabrotica spilota.*** (Tab. XXX. fig. 6.)

*Diabrotica spilota*, Baly, Journ. Linn. Soc., Zool. xix. p. 216 (1886)<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>; PANAMA (*Boucard*), Bugaba, Volcan de Chiriqui, Peña Blanca (*Champion*).—COLOMBIA<sup>1</sup>.

A specimen kindly given to me by Mr. Baly differs from all others obtained by Mr. Champion in the piceous-coloured disc of the thorax, and in having a narrow transverse

fulvous-coloured stripe on the elytra between the second and third rows of spots, and the apices also fulvous. These marks are spoken of by Mr. Baly as being sometimes absent, and as I am unable to find any distinct characters of importance in the Panama specimens, I refer them to the present species; there are, however, varieties before me in which the spots of the elytra are either transversely or longitudinally connected. Mr. Baly<sup>1</sup> gives Mexico as a locality for *D. spilota*; I have never seen a specimen from that country. Other closely-allied forms are found both in North and in South America. *D. spilota* may be known principally by the non-foveolate thorax, in connection with the fulvous legs and antennæ; some specimens, however, before me show that this colour is not always constant; and others have two small foveæ visible on the thorax. *D. centralis*, Jac., is extremely closely allied to this insect, but differs in the deeply foveolate thorax, and in having an extra spot at the apices of the elytra.

A Bugaba specimen is figured.

39. **Diabrotica duplicata.** (Tab. XXX. fig. 7.)

Head and breast black, the antennæ, thorax, and legs fulvous; thorax distinctly trifoveolate, impunctate; elytra flavous, each with five black spots (1.2.2), the apices obscure fulvous. Length  $2\frac{1}{2}$ -3 lines.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui, David (*Champion*).

*D. duplicata* differs sufficiently from *D. spilota* to justify its separation therefrom. The thorax is much more broadly and distinctly foveolate, sometimes with a small additional fovea at the base; the subquadrate spot surrounding the scutellum in *D. spilota* is here wanting, the elytral suture being at this part extremely narrowly margined with black on its inner edge; the spot at the shoulders is almost always indented on its inner side; the other elytral spots are nearly round (not transverse or elongate), and black instead of blue; and, lastly, the apices of the elytra are stained with pale yellowish-fulvous. The general shape also of the insect is more elongate and much less convex.

There are more than a dozen specimens before me which agree entirely in the above particulars. The elytral spots are placed as in *D. spilota*.

h. *Elytra testaceous, with black or blue short basal stripes and small posterior spots.*

40. **Diabrotica apicicornis.** (Tab. XXX. fig. 1.)

Pale fulvous, the terminal and the intermediate joints of the antennæ, the breast, tibiae, and tarsi black thorax bifoveolate; elytra testaceous, very closely punctured, a short stripe at the shoulders and another at the suture, and two spots below the middle, black.

*Var.* The elytra with only one posterior spot; this spot sometimes obsolete.

Length  $3-3\frac{1}{2}$  lines.

Head fulvous, with a small fovea between the antennæ; the latter two thirds the length of the body, the third joint one half longer than the second, the fourth to the eighth joints and the apex of the terminal one



black; thorax impunctate, with two deep depressions; scutellum fulvous; elytra widened posteriorly, extremely closely and finely punctured, testaceous, with a short and narrow stripe at the shoulders, another of similar length (but pointed) at the base surrounding the scutellum and occupying the sutural margin, and two very small obliquely-placed spots on each below the middle, black.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

This and several of the following species are very closely allied, and seem to be separable only by slight, though evidently constant, differences. *D. dysoni*, Baly, differs in having the head black.

#### 41. *Diabrotica fulvicornis*. (Tab. XXX. fig. 2.)

Head and the breast black, the antennæ and thorax fulvous; thorax obsolete trifoveolate; elytra testaceous, very closely punctured, an elongate spot at the shoulder, a smaller one surrounding the scutellum, and a still smaller one near the middle as well as two elongate spots beyond, black.

Length 3 lines.

Head impunctate, black, the frontal tubercles distinctly raised; antennæ two thirds the length of the body, entirely fulvous, the second and third joints very short, equal, the fourth slightly longer than the fifth joint; thorax about one half broader than long, the sides slightly constricted at the base, rounded in front, the surface with some fine punctures, more or less distinctly bifoveolate on the middle of the disc, and with another smaller fovea near the base; scutellum fulvous; elytra very closely and finely punctured, the sides with a longitudinal sulcation extending from a little below the shoulders to the middle, a small triangular spot at the base surrounding the scutellum, a more elongate one at the shoulders, a very minute spot between these but lower down and near the middle, and two others of elongate shape below the middle (the outer one slightly lower and in a line with the humeral spot, the inner one below the small spot near the middle), black; abdomen and the legs fulvous, the breast black.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

The short second and third joints of the antennæ, the shape of the scutellar spot (this spot scarcely extending below the scutellum), the finely-punctured thorax, and the generally shorter and somewhat dilated shape separate *D. fulvicornis* from several similarly-marked species.

#### 42. *Diabrotica palpalis*.

Fulvous, the head and breast black; antennæ fulvous; thorax obsolete depressed; elytra minutely punctured, testaceous, a spot at the shoulders, another one near the middle, two below the middle, and the suture anteriorly, dark blue.

♂. Antennæ with short and robust joints; palpi strongly incrassate.

♀. Antennæ and palpi of normal structure.

Length  $3\frac{1}{2}$ –4 lines.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

There will be no difficulty in separating the male of *D. palpalis* from the same sex of *D. fulvicornis* and other similarly-coloured species, on account of the strongly dilated palpi and the peculiar structure of the antennæ; these latter organs having the joints stout and proportionately short, the base of each joint being, on the contrary, very thin, and the second and third joints short, equal, and stout. The specimens which I look

upon as the female of the same species do not differ in the pattern of the elytra, but have simple and more elongate palpi and antennæ.

From *D. fulvicornis* the present insect may be known by its larger and more elongate shape; and by the elytra having a narrow sutural anterior line (instead of a triangularly shaped spot), and a small (not elongate) spot at the shoulders, and the posterior spots not elongate (as in *D. fulvicornis*), but rounded.

#### 43. *Diabrotica semicirculata*.

Fulvous, the breast black; thorax depressed on the disc; elytra finely and moderately closely punctured, a humeral and a sutural narrow stripe at the base, a spot below the base, and two spots (diverging posteriorly) below the middle, blue.

Length 2-2½ lines.

*Hab.* PANAMA, Bugaba, Caldera, Tolé (*Champion*).

This insect must also be separated from *D. fulvicornis*, *D. palpalis*, and others with nearly similar elytral pattern. *D. semicirculata* is smaller than any of the allied forms, and differs in having the head and antennæ fulvous; the antennæ have the third joint one half longer than the second. The blue stripe at the shoulders of the elytra is narrow and elongate and as long as the sutural one; and the two posterior spots, although separated, would, if connected, form a semicircular band, the inner one being transversely and the outer one longitudinally directed. *D. apicicornis* has the antennæ differently coloured, the elytra without a spot near the base, and the tibiæ black. *D. brevilineata* differs in the same way, and also in the different position of the posterior spots, these spots not diverging but running parallel to each other. In *D. semicirculata* the antennæ are shorter than in any of the allied species.

#### 44. *Diabrotica brevilineata*. (Tab. XXX. fig. 3.)

Testaceous, the intermediate joints of the antennæ and the breast black; thorax obsolete punctured, with two depressions; elytra very closely punctured, a narrow streak at the shoulder, the suture anteriorly, and two small transversely placed spots below the middle, black.

Length 3-3½ lines.

*Hab.* PANAMA, Bugaba (*Champion*).

*D. brevilineata* differs from *D. apicicornis* in having the apical joints of the antennæ and the tibiæ entirely fulvous; the thorax punctured; and the elytra with extremely thin black streaks, the streaks resembling those of *D. fulvicornis*, but of more elongate shape, and in this respect approaching *D. apicicornis*. From *D. semicirculata* the present insect differs in having the intermediate joints of the antennæ black, and the elytra without a spot before the middle.

45. *Diabrotica nigro-signata*. (Tab. XXX. fig. 10.)

Flavous, the antennæ and tibiæ black; thorax bifoveolate; elytra scarcely visibly punctured, testaceous, a spot at the base, a short longitudinal stripe at the shoulders, and a triangular spot near the apex of each, black.

Length 2 lines.

Head impunctate, fulvous, the lower part flavous; the frontal tubercles indistinct, narrowly transverse; antennæ nearly as long as the body, entirely black, the second and third joints short, equal, the fourth joint very long; thorax subquadrate, narrowed at the base, the surface with two broad and rather deep depressions and an obsolete groove near the anterior margin, the disc shining, fulvous, impunctate; scutellum flavous; elytra rather flattened and parallel, only very finely punctured near the suture, with an elongate spot near the scutellum, a longer stripe (pointed at its upper end) extending from the shoulders nearly to the middle, and a subtriangular spot near the apex of each, black, the markings smooth; the underside and legs flavous, the tibiæ and tarsi black.

*Hab.* GUATEMALA, San Gerónimo, San Isidro (*Champion*).

*D. nigro-signata* differs entirely from any of the preceding species by the elytra being scarcely visibly punctured and by the markings being differently placed.

An example from San Gerónimo is figured.

46. *Diabrotica trifurcata*. (Tab. XXX. fig. 4.)

Head, the intermediate joints of the antennæ, the breast, tibiæ, and tarsi, black; thorax rufous, with three depressions; elytra testaceous, a transverse band at the base split into three branches, and an undivided one near the apex, violaceous-blue.

*Var.* Legs entirely fulvous.

Length 3 lines.

Head impunctate, bluish-black; antennæ two thirds the length of the body, the third joint nearly twice the length of the second, the three or four basal and the three apical joints fulvous, the others black; thorax slightly broader than long, reddish-fulvous, shining, the disc with an obscure basal and two deep lateral depressions, the surface impunctate; elytra closely punctured, the interstices somewhat rugose, with the blue basal band placed across the basal margin and divided into three branches (of which the lateral are the longest and placed at the shoulders, the intermediate one occupying the sutural margin anteriorly), and the transverse narrow band below the middle slightly curved and narrower towards the suture.

*Hab.* NICARAGUA, Chontales (*Janson, Belt*); COSTA RICA, Volcan de Irazu (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).

The principal distinguishing characters of this species are the subapical transverse blue band of the elytra and the reddish-fulvous thorax; and, also, the connection at the base of the three anterior elytral stripes, these stripes being pointed and in some specimens showing inclinations of again uniting at their lower ends—thus indicating a similar pattern to that found in *D. adelpha* and allied species. There are several forms before me which show slight differences in the thickness of the elytral stripes and also in the colour of the legs; but I am unable to say with certainty whether these must be looked upon as varieties or not.

We figure a specimen from the Volcan de Chiriqui.

**47. *Diabrotica semiflava*.**

Flavous, the head and breast black, the antennæ fulvous; thorax bi-impressed; elytra flavous, the sutural and lateral margins green, with three longitudinal spots at the base, and two transversely-shaped spots below the middle, black.

Length 2 lines.

Head impunctate, black; antennæ fulvous, the first joint green, the second and third joints short, the third joint one half longer than the second; thorax pale testaceous, narrowly margined with green, the disc depressed on each side; scutellum black; elytra very closely punctured, the interstices somewhat rugose, the disc flavous, the margins pale green, with three short streaks at the base (the middle one the narrowest and situated at the sutural margin, the others at the shoulders), and a short transverse spot or band (not extending to either margin) below the middle, black; femora pale green, the tibiae and tarsi fulvous.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

**48. *Diabrotica cyaneo-maculata*.** (Tab. XXX. fig. 8.)

Testaceous, the head and the breast black; thorax bifoveolate, distantly punctured; elytra closely punctured, with a spot at the shoulder, the suture, and another spot below the middle, metallic blue.

Length 2-2½ lines.

Head impunctate, the frontal tubercles well developed; antennæ entirely fulvous, the third joint one half longer than the second; thorax one half broader than long, pale flavous, the surface with some fine and remotely placed punctures, bifoveolate; scutellum black; elytra distinctly and very closely punctured.

*Hab.* COSTA RICA (*Van Patten*), Volcan de Irazu, Cache (*Rogers*).

The anterior elytral spot is of elongate, the posterior one of rounded, shape, these spots being placed in a line near the sides of each elytron. *D. cyaneo-maculata* may be known principally amongst its allies by the sutural margin being entirely bluish, which colour gradually widens out towards the base. The four specimens before me show no particular variation, except in size.

The Irazu specimen is figured.

- i. *Elytra testaceous, with longitudinal black stripes and small spots, the latter sometimes absent.*

**49. *Diabrotica nigro-lineata*.** (Tab. XXX. fig. 16.)

*Diabrotica nigrolineata*, Jac. P. Z. S. 1878, p. 149<sup>1</sup>.

*Diabrotica oberthüri*, Baly, Trans. Ent. Soc. Lond. 1886, p. 452<sup>2</sup>.

*Hab.* MEXICO, Teapa, Cordova (*Sallé*); GUATEMALA<sup>1 2</sup>, Aceytuno (*Salvin*), Capetillo, Cerro Zunil, San Gerónimo, Purula (*Champion*).

A comparison of the insect described under the above name by Mr. Baly with the type of *D. nigro-lineata* in my own collection has proved to me their identity. There are specimens of several closely allied species before me, of which the present one may be known by the black head and the submarginal black line of the elytra; this line in nearly every individual curves round near the apex and extends to the suture.

A specimen from Cerro Zunil is figured.

50. *Diabrotica curvilineata*. (Tab. XXX. fig. 15.)

Testaceous, the labrum, breast, and tibiæ black; thorax with a deep depression; elytra testaceous, with the suture anteriorly, a narrow submarginal stripe (abbreviated near the apex), and two small spots (one near, the other below the middle), black.

*Var.* The elytral spots connected and forming a discoidal narrow line.

Length 2½–3 lines.

*Hab.* MEXICO, Playa Vicente, Cordova, Tuxtla (*Sallé*); BRITISH HONDURAS, R. Sarstoon (*Blancaneaux*); GUATEMALA, Pantaleon, Zapote, Mirandilla, San Gerónimo, Chacoj, Teleman (*Champion*); PANAMA, Volcan de Chiriqui (*Champion*).

Closely allied, and almost similar in the elytral pattern, to *D. nigro-lineata*; but differing in the head being fulvous, and the elytra having narrower black lines (of which the lateral one is more or less interrupted near the apex), and two small spots placed one below the other on the disc of each. In the variety in which these spots are represented or connected by a black line, as in the preceding species, this line is shorter and does not extend so far upwards. In *D. curvilineata* the basal margin of the elytra constantly remains of the ground-colour; in the allied species it is black. The antennæ have the intermediate joints, and the apex of the terminal one, more or less infusate. Having no intermediate forms between this insect and *D. nigro-lineata* before me, I am obliged to treat them as distinct species.

51. *Diabrotica unistriata*.

Testaceous, the head, breast, tibiæ, and tarsi black; thorax fulvous, the disc foveolate; elytra very minutely punctured, testaceous, with a narrow longitudinal stripe near the lateral margin, black.

Length 3 lines.

Head black; antennæ stout, the three basal joints testaceous, the five following ones piceous, the others flavous, the third joint one half longer than the second; thorax slightly broader than long, the sides nearly straight, the surface impunctate, with three obsolete foveæ on the disc; elytra scarcely visibly punctured, testaceous, each with a narrow longitudinal black stripe placed close to the lateral margin but not extending to the apex; abdomen and femora flavous, the tibiæ and tarsi black.

*Hab.* COSTA RICA (*coll. Jacoby*).

A single specimen.

52. *Diabrotica unilineata*. (Tab. XXX. fig. 14.)

Testaceous, the antennæ, the upper margin of the femora, the tibiæ, and tarsi black; head and thorax fulvous, the latter bifoveolate and with four black spots; elytra with the suture narrowly, and a submarginal stripe, black.

*Var.* Thorax without spots.

Length 2–2½ lines.

Head with a few fine punctures on the vertex, the latter with a deep fovea; labrum fulvous; antennæ black, the last two joints stained with fulvous at their base, the third joint nearly twice the length of the second; thorax quite one half broader than long, the surface rather convex, finely and rather closely punctured, with two small but deep foveæ and four small black spots placed transversely across the disc before the middle; scutellum black; elytra very closely, distinctly, and somewhat rugosely punctured, the suture narrowly throughout its entire length, and a slightly curved and inwardly directed stripe commencing at the shoulders and extending nearly to the apex, black; beneath testaceous; the femora marked with a black line on their upper edge, the tibiæ and tarsi entirely black.

*Hab.* MEXICO, Guanajuato, Yolos, Juquila (*Sallé*), Jalapa, Chilpancingo (*Höge*).

A very distinct species, apparently allied to *D. interrupta*, Baly, from which it differs in the colour of the antennæ, underside, and legs, and in the spotted and punctured thorax. In general shape *D. unilineata* is somewhat flattened and widened posteriorly.

53. *Diabrotica trilineata*. (Tab. XXX. fig. 13.)

Flavous, the upper part of the head, the intermediate joints of the antennæ, the breast, the upper edge of the femora, and the tibiæ black; thorax bifoveolate; elytra closely punctured, the suture and a submarginal stripe black.

Length 3 lines.

The lower part of the face flavous, the vertex black; antennæ piceous, the lower edge of the basal joints flavous, the terminal joints obscure fulvous, the third joint nearly twice the length of the second; thorax about one half broader than long, the disc finely punctured and with two deep impressions; scutellum black; elytra rather convex and parallel, closely and distinctly punctured, the sutural and submarginal stripes broader than in *D. unilineata*; the sides of the breast black; the legs flavous beneath, black above, the tarsi black.

*Hab.* GUATEMALA, Capetillo, Dueñas (*Champion*).

*D. trilineata* is larger, and more convex and parallel, than *D. unilineata*. The head black at the base; the antennæ and the underside and legs differently coloured; and the elytral stripes are broader, but otherwise similar in shape and position. *D. interrupta*, Baly, seems closely allied; but is described as having the second and third joints of the antennæ short and equal, and the last abdominal segment black.

j. *Elytra testaceous, narrowly margined with black.*

54. *Diabrotica högei*. (Tab. XXX. fig. 12, var.)

Head, the intermediate joints of the antennæ, the breast, tibiæ, and tarsi, black; thorax bifoveolate, black, the sides and a central band flavous; elytra finely punctured, testaceous, narrowly margined with black.

*Var.* Thorax entirely testaceous.

Length 3 lines.

Head impunctate, the frontal tubercles very obsolete and divided by a deep groove, the carina acutely raised; antennæ about half the length of the body, the third joint one half longer than the second, the three lower joints fulvous\*, the five following black, the ninth and tenth joints testaceous, the apex of the terminal one black; thorax subquadrate in the male, slightly broader in the female, the surface not visibly punctured, but with a small more or less distinct fovea on each side, in colour piceous or black, with the lateral margins narrowly and a longitudinal central band flavous; scutellum black; elytra nearly parallel, very finely and moderately closely punctured, flavous or testaceous, with all the margins narrowly, and the apices a little more broadly, black; breast black, the abdomen and the femora testaceous.

*Hab.* MEXICO, Jalapa (*Höge*).

I do not think I err in treating the specimens described above with a uniformly-coloured testaceous thorax as varieties of *D. högei*, as they agree closely with the typical form; they have, however, the elytra more narrowly margined with black.

\* In one specimen the basal joint is whitish and the two following joints stained with piceous.

k. *Elytra entirely pale flavous or greenish.*

### 55. *Diabrotica obscura.*

Ovate, widened behind; obscure greenish-flavous, the head, antennæ (the basal joints excepted), breast, tibiæ, and tarsi black; thorax bifoveolate; elytra scarcely visibly punctured; abdomen flavous.

Var. *a.* The underside and legs black, the base of the femora flavous.

Var. *b.* Beneath pale flavous, above greenish.

Length  $2\frac{1}{2}$ –3 lines.

Head impunctate, black; antennæ extending to about half the length of the elytra, fuscous or black, the three basal joints flavous, the third one half longer than the second (but much shorter than the fourth) joint; thorax about one half broader than long, the disc impunctate, with a small fovea on each side; elytra rather flattened and widened posteriorly, very closely and finely punctured.

*Hab.* MEXICO, Esla, La Parada, Yolos, Totolinapan (*Sallé*), Oaxaca (*Boucard*).

*D. obscura* may be recognized by the rather ovate and flattened shape and the uniform pale flavous or greenish upper surface. If I refer rightly all the specimens to one species, the underside and legs vary in coloration: in the specimens with the underside dark the bases of the femora are always more or less flavous; in those with pale breast and abdomen the legs are greenish. *D. melanopa*, Erichs., differs in the non-foveolate thorax and the more strongly punctured elytra.

### 56. *Diabrotica olivieri.*

Flavous, the head, the intermediate joints of the antennæ, the tibiæ, and tarsi black; thorax depressed on the disc; elytra finely and very closely punctured.

Length 3 lines.

Head impunctate, with the usual fovea, black; antennæ with the three lower and the three apical joints pale testaceous, the intermediate joints and the apex of the terminal one dark, the third but slightly longer than the short second joint; thorax slightly broader than long, not visibly punctured, the surface flattened, with a more or less deep fovea on each side; elytra closely punctured.

*Hab.* MEXICO, Cordova (*Sallé*); BRITISH HONDURAS, R. Hondo (*Blancaneaux*); NICARAGUA, Chontales (*Janson*).

I cannot refer this insect to any described species, on account of the unicolorous upper- and under-sides and the black head, tibiæ, and intermediate joints of the antennæ. In the single Mexican specimen the thorax is of a more fulvous colour and its disc is more deeply foveolate; in the one from British Honduras the apices of the elytra have an obscure piceous spot. Other differences I am unable to find.

l. *Elytra green, with flavous or fulvous markings.*

### 57. *Diabrotica porracea.* (Tab. XXIX. figg. 17, 18.)

*Diabrotica porracea*, Harold, Coleopt. Hefte, xiii. p. 93 (1875)<sup>1</sup>; Dej. Cat. 3rd ed. p. 404<sup>2</sup>.

*Diabrotica costatipennis*, Jac. P. Z. S. 1878, p. 996<sup>3</sup>.

*Hab.* MEXICO<sup>1 2</sup>, Monclova in Coahuila, Ciudad in Durango, Ventanas (*Forrer*),

Hacienda de Bledos, San Luis Potosi (*Dr. Palmer*), Colima city, Irapuato, Tacambaro, Matamoros Izucar, Jalapa, Tapachula (*Höge*), Cordova, Oaxaca, Puebla, Cuernavaca, Guanajuato (*Sallé*); BRITISH HONDURAS, R. Sarstoon (*Blancaneaux*); GUATEMALA (*Sallé*), near the city (*Salvin*), Cerro Zunil, Panajachel, Volcan de Agua, Capetillo, Dueñas Santa Rosa, San Gerónimo (*Champion*); NICARAGUA, Chontales (*Janson*); COSTA RICA<sup>3</sup> (*Van Patten*), Volcan de Irazu, Rio Sucio, Cache (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

*D. porracea* seems to be one of the commonest and most widely distributed species of the genus in Central America; it is also a very variable one. The absence of intermediately marked specimens induced me to describe *D. costatipennis* as a distinct species: our additional material, however, proves *D. costatipennis* to be a pale unicolorous flavous variety of *D. porracea*. In the typical form the elytra are green, and have a broad longitudinal band of flavous throughout their entire length; this band is often interrupted in the middle (thus forming two elongate spots), and frequently disappears altogether (*D. costatipennis*). In all the forms, however, there are three or four feeble, closely placed, subcarinate costæ on each elytron; and a more distinct and straight costa commencing at the shoulder and extending nearly to the apex. The legs and antennæ are sometimes nearly black; in the normal forms the legs are green and the tibiæ fulvous.

We figure a typical specimen (Tab. XXIX. fig. 17) from Cordova, and a variety (Tab. XXIX. fig. 18) from Santa Rosa.

#### 58. *Diabrotica sex-maculata*. (Tab. XXIX. fig. 16.)

*Diabrotica sexmaculata*, Baly, Ann. & Mag. Nat. Hist. 5th ser. iii. p. 81 (1878)<sup>1</sup>.

*Hab.* MEXICO, Tuxtla, Yolotepec (*Sallé*), Jalapa, Cordova, Zacualtipan (*Höge*); GUATEMALA<sup>1</sup>, Tamahu, Chiacam (*Champion*).

In this species the disc of each elytron is occupied by three large patches of pale fulvous (the intermediate one being of the shape of a slightly curved transverse band) separated by narrow bands of green. The head in all the specimens before me is green, the labrum fulvous.

#### 59. *Diabrotica variegata*. (Tab. XXXI. fig. 2.)

Flavous, the head, breast, tibiæ, and tarsi black; thorax dark fulvous, without foveæ; elytra green, the shoulders and the suture anteriorly, a transverse band near the middle (connected with the basal markings), and a curved transverse band below the middle, piceous.

Length 2 lines.

Head black, impunctate; antennæ nearly as long as the body, the second and third joints very short, the three basal joints green, the following joints fuscous, the apical ones obscure fulvous; thorax dark fulvous, subquadrate, without any depressions or punctures; scutellum piceous; elytra finely and closely punctured, pale green, with a ring-shaped basal mark connected posteriorly with a transverse band (not extending to the lateral margin), and another transverse dentate band before the apices, piceous; abdomen pale flavous; femora green, the tibiæ, tarsi, and breast black.



*Hab.* MEXICO, Presidio (*Forrer*).

The design of the elytra in this species greatly resembles that of *D. adelpha* and *D. tibialis*, except that the transverse bands in *D. variegata* are of more angular or dentate shape; the green colour of the elytra will further assist in the recognition of the species.

60. *Diabrotica selecta*. (Tab. XXIX. fig. 21, var.)

Piceous, the first joint of the antennæ green; thorax green, bifoveolate; elytra minutely punctured, green, each with an elongate oblique spot at the base, a short transverse band below the middle, and the apex, flavous; femora green; abdomen flavous.

*Var.* Head flavous; elytra green, with a small spot at the shoulder, and a narrow obsolete band below the middle, flavous.

Length 3 lines.

*Hab.* GUATEMALA, Cerro Zunil, Panajachel, Volcan de Agua (*Champion*).

*D. selecta* differs from *D. sex-maculata* principally in the shape and position of the fulvous spots on the elytra: the basal spot is of a narrow elongate shape and extends in an oblique direction nearly to the middle; the second one does not extend to either margin, and is followed by a large ovate spot occupying the entire apex. In the variety the head is nearly flavous, and the elytra are entirely green and have the basal and postmedian spots only indicated; in other respects this form does not differ from the type. The antennæ have the second and third joints very short and equal; the basal joint is green, the others piceous or dark fulvous. The thorax is shining, and has two deep foveæ. In the female the elytra show traces of longitudinal costæ.

61. *Diabrotica fusco-maculata*. (Tab. XXIX. fig. 25, var.)

*Diabrotica fuscomaculata*, Jac. P. Z. S. 1878, p. 994<sup>1</sup>.

*Diabrotica ornata*, Baly, Journ. Linn. Soc., Zool. xix. p. 224<sup>2</sup>.

*Var. a.* *Diabrotica inconstans*, Baly, l. c. p. 224<sup>3</sup>.

*Var. b.* Elytra pale fulvous or greenish, with a reddish-fulvous transverse band at the base.

*Var. c.* Entirely of a whitish-testaceous colour.

*Hab.* MEXICO<sup>2 3</sup>, Monclova in Coahuila, San Luis Potosi (*Dr. Palmer*), Cordova, Jalapa, Playa Vicente, Tapachula (*Höge*), Oaxaca, Orizaba, Puebla, La Parada, Cordova, Toxpan (*Sallé*); BRITISH HONDURAS, Belize, R. Hondo (*Blancaneaux*); GUATEMALA<sup>1</sup>, near the city, Dueñas (*Salvin*), Quezaltenango, Totonicapam, Cerro Zunil, Aceytuno, San Gerónimo, San Joaquín, Cahabon, Chacoj (*Champion*); NICARAGUA<sup>1 3</sup>, Chontales (*Belt*); COSTA RICA (*Van Patten*); PANAMA, Bugaba, Volcan de Chiriqui, David (*Champion*).—COLOMBIA<sup>2 3</sup>, Bogota; AMAZONS<sup>2 3</sup>; CHILI (*coll. Jacoby*).

This is such a variable insect that it has been described under three different names; but the very large amount of material before me enables me to say without doubt that the above forms merely represent varieties of *D. fusco-maculata*. In the type the elytra are of a bright green, with three piceous or reddish-fulvous spots or bands; these spots

or bands either become gradually obsolete or disappear altogether; and the two pale flavous spots surrounding the darker bands (*D. ornacula*, Baly) also gradually disappear till the entire insect is of a pale testaceous colour; specimens of this latter form have been obtained at Playa Vicente only. All possible intermediate degrees are before me, while the sculpture of the elytra and other structural differences remain the same. *D. fusco-maculata* cannot, I believe, be a variety of *D. porracea*, the latter never having a transverse fulvous band across the base of the elytra, and is, moreover, about double the size of the present insect. Discoloration after death seems to be the principal cause of the change of colour from green to pale flavous.

This species is apparently abundant throughout Central America. A variety from Cerro Zunil is figured.

### 62. *Diabrotica scutellata*.

Piceous; thorax pale green, bifoveolate; elytra finely rugose and costate, green, the sides anteriorly and a spot near the apex flavous, the scutellum surrounded by a triangular piceous spot. Length 2 lines.

*Hab.* MEXICO, Cordova (*Sallé*); GUATEMALA, San Gerónimo, Senahu, San Juan in Vera Paz (*Champion*).

At first sight *D. scutellata* seems only to be one of the many varieties of *D. fusco-maculata*, with which it agrees in having the thorax and the elytra similarly sculptured. The head, however, is piceous or black; and the piceous spot surrounding the scutellum and pointed at the suture behind is never present in any of the numerous specimens I have examined of *D. fusco-maculata*; in this latter the dark basal band is, on the contrary, narrowed near the sutural margin.

### 63. *Diabrotica rufo-maculata*. (Tab. XXIX. fig. 22.)

Green, the head and breast rufous, the antennæ (the first joint excepted) and tibiæ obscure fulvous; thorax deeply bifoveolate; elytra finely punctured and obsoletely grooved, green, the base and a spot before and a transverse band below the middle rufous, the apex flavous.

Length 3 lines.

Head not longer than broad, the vertex impunctate, the carina acutely raised, the labrum testaceous; antennæ not much shorter than the body, the first joint green, the second and third joints very short and equal; thorax subquadrate, the disc with two deep depressions, impunctate; scutellum fulvous; elytra obsoletely longitudinally grooved, very finely punctured, green, a transverse band at the base not quite extending to the lateral margin, a spot near the suture before the middle, and a narrow slightly curved transverse band below the middle, rufous, the apex pale flavous; the breast fulvous, the abdomen testaceous, the femora green.

*Hab.* MEXICO, Yolotepec (*Sallé*).

A single specimen, differing from the allied green-coloured species in the markings of the elytra.

64. *Diabrotica balteata*. (Tab. XXIX. fig. 23.)

*Diabrotica balteata*, Lec. Proc. Acad. Phil. 1865, p. 213<sup>1</sup>.

*Diabrotica sallæi*, Baly, Journ. Linn. Soc., Zool. xix. p. 227<sup>2</sup>.

*Hab.* NORTH AMERICA<sup>1</sup>.—MEXICO, Minas Viejas, Monclova in Coahuila (*Dr. Palmer*), Presidio, Ventanas, Mazatlan (*Forrer*), Guanajuato, Cordova, Oaxaca, Vera Cruz, Tuxtla, Orizaba, Puebla (*Sallé*), Jalapa, Huetamo, Sayula, Chilpancingo, Acapulco, Tapachula (*Höge*); BRITISH HONDURAS, R. Sarstoon, R. Hondo (*Blancaneaux*); GUATEMALA (*coll. Baly*<sup>1</sup>), near the city (*Salvin, Champion*), Capetillo, Dueñas, Zapote, Volcan de Atitlan, Purula (*Champion*); HONDURAS (*Sallé*); NICARAGUA, San Juan, Granada (*Sallé*), Chontales (*Janson, Belt*); COSTA RICA (*Van Patten*), Volcan de Irazu, Cache (*Rogers*).—COLOMBIA<sup>2</sup>.

Leconte's short description can only apply to the present insect. *D. balteata* is a widely distributed and common species in our region; *D. sallæi*, Baly, is identical with it. I have more than two hundred examples before me: these prove that the colour of the insect is subject to great variation, no doubt attributable to immaturity or to discoloration after death; the green bands of the elytra in such specimens frequently becoming more or less indistinct or disappearing altogether. In the typical form the elytra are flavous, with three narrow bright green transverse bands, the basal band dividing the flavous portion into two spots.

An example from Oaxaca is figured.

65. *Diabrotica tortuosa*. (Tab. XXX. fig. 18.)

Dark fulvous or piceous; thorax green, bifoveolate; elytra flavous, finely and closely punctured, each with a narrow transverse band before and another at the middle, and a ring-shaped mark near the apex, green; abdomen greenish.

Length 3 lines.

Head reddish-fulvous, shining, impunctate; the frontal tubercles indistinct, the carina acutely raised; antennæ reddish-piceous, the first joint green, the second and third joints short, the latter one half longer than the second; thorax about one half broader than long, green, shining, the surface impunctate, with two deep foveæ; scutellum obscure fulvous; elytra very closely and finely punctured, with some obsolete longitudinal costæ, flavous, a transverse narrow band (obliquely directed from the suture to the lateral margin) before the middle, another similar (but straight) band at the middle, and a ring-shaped mark near the apex of each, green; breast obscure piceous, the abdomen and the femora green, the tibiæ dark fulvous.

*Hab.* MEXICO, Las Peras (*Sallé*), Jalapa (*Höge*).

The two specimens before me show no difference whatever in the elytral markings; these markings differ from those of all the allied species in this section, with the exception of those of *D. rufo-maculata*. This latter closely approaches *D. tortuosa*, although the spots are red instead of flavous (if the green portion is taken for the ground-colour); it is quite possible, however, that *D. tortuosa* represents but a variety of *D. rufo-maculata*.

m. *Elytra entirely green or flavous.*

66. **Diabrotica dissimilis.** (Tab. XXIX. fig. 19.)

*Diabrotica tenella*, Baly, Trans. Ent. Soc. Lond. 3rd ser. ii. p. 348 (1865) (nec Lec.)<sup>1</sup>.

Var. a. Elytra flavous, narrowly margined with green.

Var. b. Entirely flavous, the four apical joints of the antennæ fuscous.

*Hab.* MEXICO<sup>1</sup>, Toxpam, Oaxaca, Playa Vicente, Capulalpam (*Sallé*), Cordova, Jalapa (*Höge*); GUATEMALA, Paraiso, Las Mercedes, Cerro Zunil, Zapote (*Champion*), Dueñas (*Salvin*); NICARAGUA, Chontales (*Belt*); PANAMA, Caldera in Chiriqui, Tolé, San Feliz (*Champion*), near the city (*Boucard*).

I have examined the type of this insect, and find that many of our specimens agree with it in having the upper surface uniformly green. The above-mentioned varieties only differ in colour. These latter have three or four of the apical joints of the antennæ fuscous, and the elytral punctuation, as well as everything else, agreeing with the type. Some examples also are intermediate in colour between green and fulvous or flavous.

The name *tenella* having already been used by Leconte for another species of the genus, I am obliged to change it.

67. **Diabrotica impressipennis.** (Tab. XXXI. fig. 17.)

Head and the intermediate joints of the antennæ dark fulvous; thorax green, deeply bifoveolate; elytra with a deep impression before and another below the middle, bright green, very shining; femora green; beneath (including the abdomen) flavous or fulvous.

Var. Thorax rufo-piceous, the elytra and legs obscure flavous.

Length 3 lines.

Head impunctate, the frontal tubercles distinct; antennæ with the first joint green, the sixth, seventh, and eighth joints obscure piceous, the terminal one fuscous, the second and third joints very short and nearly equal; thorax subquadrate, impunctate, deeply bifoveolate; scutellum piceous; elytra very finely and closely punctured, transversely depressed before and below the middle, the intervening space at the sides with a semilunate depression.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

Although the two specimens obtained differ totally in coloration, they agree entirely in the elytral sculpture and other particulars. The elytra have, in addition to the above-described depressions, some obscure and very short costæ on the anterior portion, and are also very shining in appearance. By this latter character alone the species may be at once separated from unicolorous specimens of *D. dissimilis*.

n. *Elytra green, with piceous markings.*

68. **Diabrotica piceo-notata.** (Tab. XXXI. fig. 1.)

Fulvo-piceous, the antennæ (the apical joint excepted) flavous; thorax green, with piceous markings, without foveæ; elytra closely punctured, dark green, obsoletely spotted with piceous at the base and also on the disc; tibiæ and tarsi pale green.

Length 4 lines.

Head longer than broad; frontal tubercles strongly raised; vertex impunctate, foveolate; eyes very large; carina distinct; clypeus transversely thickened; labrum black; antennæ two thirds the length of the body, flavous, the seventh and eighth joints slightly, the terminal one distinctly, marked with fuscous, the second and third joints very short, nearly equal; thorax subquadrate, the sides nearly straight, the surface without foveæ, rather convex, with a few minute and scattered punctures, dark green, with an obsolete longitudinal lateral and a central piceous band; scutellum piceous; elytra convex, widened posteriorly, with a short longitudinal sulcation below the shoulder, dark green, a spot at the middle of the base, a longitudinal stripe from the shoulder to the middle connected posteriorly with an obscure transverse band, and a spot below the middle, piceous; femora and the claws piceous, the tibiæ and tarsi pale green.

*Hab.* PANAMA, Bugaba (*Champion*). A single specimen.

The piceous spots of the elytra are probably subject to variation, or may disappear altogether. The large size and non-foveolate thorax, as well as the fine punctuation of the elytra, will separate *D. piceo-notata* from any of the green-coloured species.

Section 2. *Antennæ with the third joint distinctly longer (often much longer) than the second.*

In this section I include all those species which have a distinctly longer, sometimes very much longer, third joint to the antennæ, this joint here being at least twice the length of the second. The division of the genus into two sections is rather an arbitrary one, but it is adopted for the convenience of determining the very numerous species; and it is necessary to observe that cases occur in which the intermediate length of the joint in question leaves it often doubtful in which section to look for the species: this could not be avoided, and is, as a rule, rare. In addition to the numerous species included in this section of *Diabrotica*, there are many others with the antennæ thus formed which closely resemble similarly-coloured species of this genus, but yet will be found to possess appendiculate (not bifid) claws, and generally in connection with a deep thoracic transverse groove (instead of two foveæ); these I have been obliged to separate from *Diabrotica*, and an examination of the claws will in all cases be necessary to determine the true position of any species. Two species, *D. tripunctata* and *D. foveipennis*, described by me, really belong to *Malacosoma*, and are here referred to that genus. In regard to colour, it seems that in *Diabrotica*, as well as in other genera, a number of very closely-allied species exist which can only be separated by attaching importance to small but evidently constant differences; and such differences, if not observed or regarded as specific, would gradually link together a great number of forms which in the end would diverge into species totally distinct from a given type.

a. *Elytra* dark-coloured, with longitudinal testaceous vittæ; the interspaces generally costate.

### 69. *Diabrotica corusca*.

*Diabrotica corusca*, Harold, Coleopt. Hefte, xiii. p. 92 (1875)<sup>1</sup>; Baly, Journ. Linn. Soc., Zool. xix. p. 230<sup>2</sup>.

*Diabrotica alternans*, Sturm, in litt.

*Hab.* MEXICO, Presidio (*Forrer*), Teapa, La Parada, Oaxaca<sup>2</sup> (*Sallé*), Jalapa, Cordova, Chilpancingo, Colima city, Acapulco (*Höge*); BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA (*Sallé*), El Reposo, Las Mercedes, Cerro Zunil, Rio Maria Linda, Capetillo, San Gerónimo, Teleman, Chacoj (*Champion*); HONDURAS (*Sallé*); NICARAGUA, Chontales (*Janson, Belt*); COSTA RICA (*Van Patten*), Cache (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).—COLOMBIA<sup>1 2</sup>.

The typical form of *D. corusca* may be known by the two metallic blue stripes (sutural and sublateral) of the elytra, these stripes being separated by a subsutural flavous longitudinal band occupying two costæ which are wider than those placed on the rest of the surface. In respect of colour and size the insect varies greatly, many specimens obtained in Chiriqui having the elytral stripes of a pale fuscous colour, and the head varying from black to fuscous or obscure fulvous; intermediate degrees in shade of colour are also before me, but structural differences of importance I cannot detect. According to Mr. Champion this and several closely allied species principally affect Cucurbitaceous plants, both wild and cultivated.

### 70. *Diabrotica fairmairei*.

*Diabrotica fairmairei*, Baly, Trans. Ent. Soc. Lond. 1886, p. 447<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Juquila, Cordova, Orizaba (*Sallé*), Mexico city, Jalapa, Cordova, Chilpancingo (*Höge*); BRITISH HONDURAS, R. Sarstoon (*Blancaneaux*); GUATEMALA (*Sallé*), near the city (*Salvin*), Cerro Zunil, Panajachel, Zapote, Capetillo, Dueñas, San Gerónimo, Purula, Sabo, San Juan in Vera Paz, Cahabon (*Champion*); NICARAGUA, Chontales (*Belt*); COSTA RICA (*Van Patten*), Irazu, Cache (*Rogers*).

*D. fairmairei* has been separated by Mr. Baly from *D. corusca* and *D. innuba* on account of the third elytral costa being the widest, while in the two last-named species the second and third costæ are wide and equal; I may add to this that in *D. fairmairei* it is the third costa which is flavous in colour, the others, with the exception of the lateral margin, being either fuscous, violaceous, or bluish. I do not think that much reliance can be placed on the colour of the head; it is, however, usually dark or reddish-fulvous with a more or less violaceous hue, but in many specimens much darker and nearly black. *D. fairmairei* does not seem to extend further south than Costa Rica, but is replaced by several closely allied forms in the State of

Panama. Mr. Baly<sup>1</sup> says nothing about the elytra having the apices produced into a small tooth as in *D. corusca*, this character being constant in more than fifty specimens before me. In a few, however, obtained with the normal form at Cerro Zunil the elytra are rounded at the apices and of a more shining metallic colour; but, in the absence of other marks of distinction, I have thought it best not to separate these examples from the present insect. Another closely-allied form, *D. consimilis*, has been described by Mr. Baly; this differs in the narrower third elytral costa.

I should refer many specimens from Guatemala to this last-named insect had I not numerous examples before me which, on account of the intermediate width of the costa in question, prove that not too much dependence can be placed on this character by itself.

### 71. *Diabrotica consimilis*.

*Diabrotica consimilis*, Baly, Trans. Ent. Soc. Lond. 1886, p. 449<sup>1</sup>.

*Hab.* GUATEMALA, Quezaltenango, Volcan de Agua (*Champion*).—ECUADOR<sup>1</sup>; PERU<sup>1</sup>.

I must refer the ten specimens obtained by Mr. Champion in Guatemala to this species, with the description of which they entirely agree. In *D. consimilis* the elytra are entirely black, with the exception of the margins and the flavous vitta, this latter being confined to a single costa which is not broader than the others; the antennæ have the three basal joints flavous below (the description gives the colour as piceous); and the legs are black, the femora broadly flavous at the base.

### 72. *Diabrotica longicollis*.

Black; thorax flavous, with two impressions, scarcely broader than long; elytra piceous, with a subsutural broad vitta and the lateral margin flavous, the interstices strongly punctured and longitudinally costate, sparingly covered with white pubescence.

Length  $1\frac{1}{2}$ –2 lines.

Head black, impunctate; antennæ somewhat thickened towards the apex, the lower three and sometimes the apical two joints fulvous, the rest black, the third joint rather more than twice the length of the second; thorax subquadrate, narrowed towards the base, the surface impunctate, with two distinct foveæ near the base; elytra strongly and closely punctured, the punctures forming single rows and interrupted at the dark portion by narrow longitudinal costa, the flavous subsutural costa much broader and smooth, and connected at the apex with the similarly coloured lateral margin.

*Hab.* GUATEMALA, Volcan de Atitlan, Zapote (*Champion*).

The comparatively long thorax, in connection with the sculpture and pubescence (sometimes abraded) of the elytra, will help to separate *D. longicollis* from its several allies; the deep elytral punctuation arranged in single rows is another character of distinction.

### 73. *Diabrotica theimei*.

*Diabrotica theimei*, Baly, Journ. Linn. Soc., Zool. xix. p. 231<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Presidio (*Forrer*), Cordova, Vera Cruz (*Sallé*), Jalapa, Matamoros

Izucar, Cerro de Plumas, Acapulco (*Höge*); BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA, El Tumbador, Zapote, San Gerónimo, Purula, Tamahu, Chacoj, Cubilguitz, Chiacam (*Champion*); NICARAGUA, Chontales (*Janson*); COSTA RICA (*Van Patten*), Irazu (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui, Caldera (*Champion*).—COLOMBIA<sup>1</sup>; GUIANA, Cayenne<sup>1</sup>; ECUADOR<sup>1</sup>; BRAZIL, Bahia<sup>1</sup>; WEST INDIAN ISLANDS<sup>1</sup>.

A comparison of specimens of *D. theimei*, kindly given to me by Mr. Baly, with the Central-American insect proves the identity of the latter with this species. The broad raised yellow costa (this costa alone being broader than the others) principally separates *D. theimei* from *D. kirschi*; but the head is as frequently black as testaceous, and its colour cannot be used as a distinctive character. In most specimens the antennæ have the eighth and ninth joints, as well as the three or five basal ones, pale. A certain number of examples show the following differences from the type: the flavous subsutural elytral vitta broader and narrowly costate at its outer edge only, and the sides of the elytra either entirely without costæ and strongly punctured only, or furnished with curved (not straight) costæ; between this and the typical form some intermediate degrees of sculpturing occur, although it is possible that these specimens may represent another closely allied species.

#### 74. *Diabrotica obsкуро-fasciata*.

Pale testaceous; thorax deeply bifoveolate; elytra each with eight narrow longitudinal costæ, the first, fifth, and seventh of these obscure fuscous.

Length 3 lines.

Head impunctate, the vertex sometimes with an obscure fuscous spot; antennæ about two thirds the length of the body, pale testaceous, the third joint twice the length of the second; thorax subquadrate, one half broader than long, the surface impunctate but with two deep foveæ; elytra with single rows of deep punctures between the costæ, the latter of equal width and placed at regular intervals, the first or subsutural and the fifth and seventh fuscous, the two latter abbreviated before the apex.

*Hab.* MEXICO, Yolos, La Parada (*Sallé*).

It will not be difficult to separate *D. obsкуро-fasciata* from *D. fairmairei* and the allied species, on account of the colour and equal width of the costæ. This insect is entirely pale testaceous, with the exception of the three darker costæ on each elytron.

#### 75. *Diabrotica vittata*. (Tab. XXXI. fig. 5.)

*Crioceris vittata*, Fabr. Syst. Ent. p. 122 (1775)<sup>1</sup>.

*Galeruca vittata*, Oliv. Ent. vi. p. 633, t. 3. fig. 38<sup>2</sup>.

*Diabrotica vittata*, Lec. Proc. Ac. Phil. 1865, p. 213<sup>3</sup>.

*Hab.* NORTH AMERICA<sup>1 2 3</sup>.—MEXICO, Northern Sonora (*Morrison*), San Luis Potosi, Monclova in Coahuila (*Dr. Palmer*), Cordova, Vera Cruz, Yolos, Guanajuato, La Parada (*Sallé*), Aguas Calientes city, Villa Lerdo in Durango, Irapuato, Matamoros Izucar, Chilpancingo, Jalapa, Acapulco (*Höge*); GUATEMALA, near the city, Capetillo, Dueñas,



San Gerónimo (*Champion*); NICARAGUA, Chontales (*Janson*); COSTA RICA (*Van Patten*), Volcan de Irazu (*Rogers*).

I am not quite certain whether I rightly refer the specimens from the above localities to this insect, the description of Fabricius being too short to recognize with certainty a species so closely allied to several others. It is very likely that *D. trivittata*, Mannerh., is a variety of *D. vittata*, in which (according to Leconte) the thoracic depressions are not confluent and the legs differently coloured; specimens marked in this way, and intermediately, are before me, and *D. vittata* is probably subject to a good deal of variation. In the Central-American specimens the subsutural flavous vitta of the elytra extends to three costæ, these costæ being broader than the others (Mr. Baly, in speaking of *D. vittata*, cf. Journ. Linn. Soc., Zool. xix. p. 231, says that the second and third elytral costæ are broader and equal); the legs black, with the base of the femora flavous; the head entirely black; and the antennæ have the basal joint generally testaceous.

An example from the Volcan de Irazu is figured.

76. *Diabrotica porosa*. (Tab. XXXI. fig. 9.)

Black; thorax testaceous, obsoletely impressed; elytra deeply subfoveolate-punctate, the interstices costate, piceous, each with a narrow flavous subsutural and lateral vitta joined at the apex; legs piceous, the base of the femora and the posterior tibiæ flavous.

Length  $1\frac{1}{2}$ –2 lines.

*Hab.* MEXICO, Jalapa (*Höge*); GUATEMALA, Pantaleon (*Champion*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

Amongst the small species of this section having flavous elytral vittæ, *D. porosa* may be recognized by the deep punctures of the elytra, these punctures being arranged in single rows at the sides, while those near the suture are smaller and irregularly geminate. The subsutural flavous costa is broader than the other costæ and separated by a row of punctures, and the interstices between the large lateral punctures are slightly longitudinally raised. The antennæ are generally fuscous towards the apex, the other joints being entirely flavous; sometimes, however, the intermediate joints are darkened.

Only a single specimen was obtained at Jalapa; this differs from the others in having the flavous elytral vitta rather broader towards the base, where another short flavous band is attached to it on its inner side, the latter not quite extending to the middle. We figure a specimen from the Volcan de Chiriqui.

77. *Diabrotica difformis*. (Tab. XXXII. fig. 9.)

Flavous, the upper part of the head black, the intermediate and apical joints of the antennæ piceous; thorax bifoveolate; elytra black, finely costate, a triangular spot at the apices and the lateral margin flavous.

♂. The fifth, sixth, and seventh joints of the antennæ widened and produced into a hooked point, the eighth joint thickened; elytra excavate near the apices.

Length 2 lines.

Head black, the frontal tubercles and the entire lower portion flavous; clypeus flattened, with a short rather indistinct central ridge; antennæ two thirds the length of the body, the three lower joints and the eighth joint also flavous, the other joints piceous, the third joint twice as long as the second; thorax transverse, flavous, the surface impunctate, with a rather deep transverse, medially interrupted, depression; scutellum piceous; elytra black, each with about six more or less distinct longitudinal costæ, the interspaces transversely reticulate and impressed with double rows of punctures, a triangular space at the apices flavous in colour, excavate, and produced outwardly into a tubercle, the inner angle of this excavation being black, the lateral margin flavous; underside and legs flavous.

*Hab.* GUATEMALA, San Gerónimo (*Champion*).

Only a single male specimen was obtained; the female doubtless has, like several other allied forms, simple antennæ and elytra. *D. difformis* agrees almost entirely in coloration and sculpture with *D. longitarsis*, but differs in the flavous face, the structure and colour of the antennæ, and the colour of the elytra. *D. curtisi*, Baly, and *D. coryphæa*, Baly, have simple antennæ in both sexes.

### 78. *Diabrotica flavo-vittata*.

*Diabrotica flavo-vittata*, Baly, Trans. Ent. Soc. Lond. 1886, p. 446<sup>1</sup>.

*Hab.* MEXICO, Yucatan<sup>1</sup>.

### 79. *Diabrotica cornuta*. (Tab. XXXI. fig. 8.)

*Diabrotica cornuta*, Baly, Trans. Ent. Soc. Lond. 1886, p. 448<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Vera Cruz (*coll. Baly*), Cordova, Tuxtla (*Sallé*), Acapulco (*Höge*); GUATEMALA<sup>1</sup>.—PERU<sup>1</sup>.

In one specimen before me the labrum is black; and in another the sixth and seventh joints of the antennæ only are black. *D. cornuta* may be recognized by the black thorax, and the male by the curious protuberances of the clypeus.

A specimen from Cordova is figured.

### 80. *Diabrotica setosa*. (Tab. XXXII. fig. 19.)

*Diabrotica setosa*, Baly, Trans. Ent. Soc. Lond. 1886, p. 454<sup>1</sup>.

*Hab.* MEXICO, Teapa<sup>1</sup>; GUATEMALA, Cerro Zunil (*Champion*).

A single specimen only was obtained by Mr. Champion in Guatemala; this agrees entirely with the author's description, though the hairs are only just visible on the elytra. In the Guatemalan specimen the antennæ are black, with the three basal joints testaceous below, and the sixth and seventh joints flavous.

The Mexican locality, Teapa, requires confirmation.

81. *Diabrotica medio-vittata*.

*Diabrotica mediovittata*, Baly, Journ. Linn. Soc., Zool. xix. p. 237<sup>1</sup>.

*Hab.* HONDURAS (*Sallé*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).—EASTERN COLOMBIA<sup>1</sup>.

The type of *D. medio-vittata*, kindly lent to me by its describer, agrees in all respects with specimens from Nicaragua and also with others from the State of Panama. There are, however, other examples before me undoubtedly belonging to *D. medio-vittata* which differ in the sculpture of the elytra, a character perhaps peculiar to the female sex; in these specimens each elytron has about six thin, raised, slightly curved costæ which disappear entirely before the apex. In the normal form the elytra are simply punctured, but more strongly so towards the sides; both forms were obtained at the same time and place and differ in no other way. *D. medio-vittata* has black elytra, a narrow flavous outer margin, interrupted behind, and a discoidal subsutural vitta which does not extend to the apex but is slightly curved in shape and widened at its posterior portion. The antennæ are black, with the two penultimate joints obscure flavous; and the femora generally have a piceous stripe on their upper edge. *D. similata*, Baly, seems to me to be identical with *D. medio-vittata*, according to the description, and to represent the form in which the elytra are costate; the variety of the former with less distinctly costate elytra noticed by Mr. Baly showing the intermediate stage.

82. *Diabrotica horni*.

Ovate, dilated posteriorly, black; antennæ long and slender, black, the apical three joints obscure flavous; thorax fulvous or flavous, deeply bifoveolate; elytra with a subsutural and lateral flavous vitta, strongly punctured at the sides, more finely on the disc; femora flavous at the base.

♂. Lower part of the face flavous; antennæ as long as the body.

♀. Head entirely black; antennæ shorter.

*Var.* Antennæ, the intermediate joints excepted, and legs fulvous.

Length  $1\frac{1}{2}$ –2 lines.

*Hab.* MEXICO, Playa Vicente, Tuxtla (*Sallé*), Jalapa, Teapa, Tapachula (*Höge*); BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA, El Tumbador, El Reposo, Cerro Zunil, Zapote (*Champion*); NICARAGUA, Chontales (*Janson*).

Closely allied in shape and coloration to *D. separata*, Baly, but differing in the much longer and thinner antennæ, these organs in the male extending to the end of the elytra. *D. horni* may, however, be principally separated from its allies by the elytra having no costæ, and consequently the flavous subsutural band, although as broad as in *D. separata*, is not raised and smooth but flattened like the rest of the disc and punctured; the lateral portion of the elytra is coarsely punctured, the interstices being somewhat rugose with traces of narrow longitudinal costæ. In several specimens the sixth, seventh, and eighth joints of the antennæ are black, the other joints and the legs fulvous; other differences I am not able to find; I therefore treat these as a variety of *D. horni*.

b. *Elytra light-coloured, with longitudinal black or blue stripes.*

83. **Diabrotica cava.** (Tab. XXXI. fig. 7.)

*Galleruca cava*, Say, Bost. Journ. Nat. Hist. i. 1835, p. 198<sup>1</sup>; Complete Writings, ii. p. 668.

*Var.* Head partially or entirely black; thorax with or without two small black spots.

*Hab.* MEXICO<sup>1</sup>, Monclova and Saltillo in Coahuila (*Dr. Palmer*), Yolos, Etna, Tuxtla, Cordova, Toxpam, Oaxaca, Guanajuato (*Sallé*), Durango city, San Juan del Rio, Villa Lerdo, Cordova, Jalapa (*Höge*); GUATEMALA, Quezaltenango, Dueñas, Capetillo, San Gerónimo (*Champion*); COSTA RICA, Volcan de Irazu (*Rogers*).

Say's description<sup>1</sup> of *D. cava* is sufficient for the recognition of the species; the author, however, makes no mention of a shorter or longer black stripe on the upper edge of the femora and on the outer side of the tibiæ and tarsi, a character constant in all the specimens before me. The head and thorax are of a reddish-fulvous colour in the typical form; the thorax is closely punctured and has two deep foveæ, one on each side; the elytra are strongly and closely punctured, with a sutural and a lateral blue stripe, the latter not extending to the apex. The specimens from Saltillo and Guatemala have an entirely or partly black head and two thoracic spots, and seem, at first sight, to represent another species; I am unable, however, to look upon them as such, as so many intermediate degrees of colour and marking are before me. Examples were also obtained having the vertex only black, the lower part of the face being testaceous; some of these forms have the thoracic spots, in others they are absent. The punctuation of the thorax, as well as the depth of the foveæ, is equally variable. An example from Cordova is figured.

84. **Diabrotica vicina.**

Black, the lower part of the face flavous; thorax closely and distinctly punctured, bifoveolate, with two small black spots (sometimes absent); elytra closely and distinctly punctured, flavous, a narrow sutural and a broader lateral stripe, black; legs flavous, striped with black, the posterior pair black.

Length 2-3 lines.

*Hab.* MEXICO, Saltillo in Coahuila (*Dr. Palmer*), Ventanas (*Forrer*), La Parada, Guanajuato (*Sallé*), Salazar (*Höge*).

*D. vicina* differs from *D. cava* in the elytra being much more finely punctured, and with black (instead of blue) bands; in the typical form of *D. cava* the thorax is much more coarsely punctured. In spite of these differences, which I look upon at present as specific, I have grave doubts about their value as such. The characters, however, I have pointed out as distinguishing *D. vicina* from *D. cava* are constant in six specimens before me.

85. **Diabrotica decorata.** (Tab. XXXI. fig. 6.)

Oblong, dilated posteriorly, black, above testaceous, the vertex with two, the thorax with four, black spots;

elytra closely and distinctly punctured, the suture and a broad longitudinal band on the disc of each, black.

Length  $2\frac{1}{2}$ -3 lines.

Head impunctate, flavous, the vertex with two black spots; labrum more or less black; antennæ black, the basal joint fulvous below, the third joint twice as long as the second; thorax twice as broad as long, the disc finely and closely punctured, with an obsolete fovea on each side, testaceous or flavous, with four small black spots placed transversely across the disc; scutellum black; elytra widened posteriorly, somewhat rugosely and closely punctured, the suture narrowly black, the entire middle portion of the disc occupied by a longitudinal black band not extending to the apex and gradually widened from the base to the posterior portion; femora flavous, the two anterior pairs with a black line above, the tibiæ and tarsi black.

*Hab.* MEXICO, Juquila, La Parada, Yolos, Coscomatepec (*Sallé*), Cordova (*Höge*).

Easily distinguished from *D. separata*, Baly, by the colour of the head, the spotted thorax, and the entirely different sculpture of the elytra. A specimen from Cordova is figured.

### 86. *Diabrotica granulata*. (Tab. XXXI. fig. 4.)

Piceous; thorax flavous, impunctate, bifoveolate; elytra minutely and subremotely punctured, without costæ, yellowish-white, a narrow sutural and a broad discoidal longitudinal vitta, black; legs flavous, marked with black.

Length 2 lines.

Head black, with a few fine punctures on the vertex, the latter deeply foveolate; clypeus entirely or partly flavous, with a distinct central ridge; antennæ black, the three basal joints flavous below, the third joint scarcely twice the length of the second; thorax twice as broad as long, the sides nearly straight at the base and slightly rounded and narrowed in front, the disc impunctate, with an oblique fovea on each side; scutellum black; elytra rather broad and flattened, very finely and not very closely punctured, the interstices very minutely granulate, the suture narrowly black throughout its entire length, the lateral vitta twice as wide as the sutural one and not quite extending to the apex; legs flavous, the anterior femora with a black line above, the knees, the outer side of the tibiæ, and the tarsi, black.

*Hab.* MEXICO, Cordova, Guanajuato (*Sallé*), Jalapa (*Höge*); GUATEMALA, Capetillo (*Champion*).

In general shape and in the elytral pattern this species resembles *D. decorata*, from which the fine punctuation of the elytra and their minutely granulate surface, as well as the absence of the thoracic spots, separate it. A similar difference in the punctuation of the elytra and the shape of the thorax distinguishes *D. granulata* from *D. maculicollis*, with which it agrees in the broad discoidal elytral vittæ. The flavous colour of the lower part of the face varies greatly in extent and is sometimes restricted to a small spot at the base of the antennæ. We figure an example from Guanajuato.

### 87. *Diabrotica maculicollis*.

Oblong ovate, widened behind, black; head and thorax fulvous, the disc of the latter deeply bifoveolate, and with four black spots; elytra closely semirugose-punctate, a sutural band, narrowed posteriorly, and a longitudinal discoidal vitta, narrowed at the base, black.

Length 3 lines.

*Hab.* Panama, Volcan de Chiriqui (*Champion*).

Closely allied to *D. decorata*, but differing as follows:—the head is without black spots; the thorax has only a few fine punctures, and is very deeply bifoveolate, and the black spots are much larger (though placed as in *D. decorata*); and the black sutural band of the elytra is gradually narrowed from the base to the apex.

### 88. *Diabrotica cerea*.

Black, the seventh and eighth joints of the antennæ pale; thorax flavous, bifoveolate; elytra very finely and rather closely punctured, flavous, each with a narrow sutural and a broad discoidal black vitta; legs pale flavous.

Length  $1\frac{1}{2}$ –2 lines.

*Hab.* GUATEMALA, Coatepeque, San Isidro, Zapote (*Champion*).

Amongst the small-banded species of this section *D. cerea* may be known by the colour of the antennæ, the three basal and the seventh and eighth joints being pale testaceous, the same colour prevailing on the legs. The elytra are without costæ, and resemble those of *D. granulata* in their punctuation and in the width of the black bands; but in the last-named species the antennæ are without pale joints and the legs are strongly marked with black, while the general size is larger and broader; in *D. cerea* the entire head is black and the frontal tubercles are distinct. *D. medio-vittata* differs in the colour of the antennæ and legs, and in the abbreviated pale flavous subsutural vitta. The seven specimens before me show no differences of importance.

### 89. *Diabrotica nymphæa*.

Narrowly elongate, testaceous; antennæ, tibiæ, and tarsi, black; thorax fulvous, with two black bands; elytra finely punctured, testaceous, each with a broad longitudinal black band not quite extending to the apex.

Length 2 lines.

Head impunctate; the frontal tubercles transverse, narrow; antennæ long and slender, obscure fuscous, the basal joint more or less testaceous, the third joint very long; thorax slightly broader than long, bifoveolate, fulvous, with a longitudinal black band on each side; elytra with the shoulders acute and ridge-like, finely punctured, the black band occupying nearly the entire disc (slightly widened at the base, leaving the sutural and lateral margins testaceous) but not quite extending to the apex; legs black, the femora testaceous at the base.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui, Boquete, Caldera (*Champion*).

The long and slender antennæ (these organs being very nearly as long as the body), the two black bands on the thorax, the shining upper surface, and the broad elytral black bands are the chief characters of *D. nymphæa*.

### 90. *Diabrotica sex-lineata*. (Tab. XXX. fig. 11.)

Broadly ovate, piceous; head and thorax fulvous, the latter bifoveolate and strongly punctured; elytra rugose-punctate, flavous, the suture, and three narrow longitudinal stripes on each, black; femora flavous.

Length 3 lines.

Head deeply foveolate, impunctate, the frontal tubercles small and rounded; antennæ more than half the length of the body, the third joint rather more than twice the length of the second, the three basal and

the three apical joints obscure fulvous, the rest fuscous; thorax twice as broad as long, strongly punctured, bifoveolate; scutellum black; elytra more strongly punctured than the thorax, each with three longitudinal black stripes (the outer one near the lateral margin the longest, the others placed at equal distances and gradually shortened), between which indications of other short stripes are here and there visible, the suture also narrowly margined with black, the interstices rugose; underside piceous; femora flavous, the anterior pair marked with a black streak above, the tibiæ and tarsi black.

*Hab.* MEXICO, Juquila (*Sallé*).

A single specimen. The rugosely and strongly punctured elytra separate this very distinct species from any of the preceding.

### 91. *Diabrotica dejeani*.

Black, the head and thorax fulvous, the latter obsolete depressed; elytra testaceous, remotely punctured, the anterior half of the sutural margin, and a longitudinal posteriorly greatly dilated band on the disc of each, black; femora testaceous.

Length  $1\frac{3}{4}$ –2 lines.

Head fulvous, the labrum piceous; antennæ nearly as long as the body, black, the basal joint fulvous below, the third joint twice the length of the second and shorter than the fourth joint; thorax nearly twice as broad as long, impunctate, the disc with a more or less distinct oblique depression on each side; scutellum fulvous or black; elytra remotely but distinctly punctured, the sides below the shoulder with an obsolete slightly curved costa, the sutural black stripe, extending to the middle, where it is sharply pointed, the discoidal stripe occupying nearly the entire disc (being surrounded by a narrow testaceous margin of the ground-colour), the apical angles each with a minute black spot.

*Hab.* PANAMA, Bugaba (*Champion*).

Separated from the allied species with longitudinal black elytral bands by the fulvous head and the longer and more slender antennæ, and by the sutural stripe of the elytra only extending to the middle.

*c. Elytra black, with flavous spots or transverse bands.*

### 92. *Diabrotica lepida*.

*Galleruca lepida*, Say, Bost. Journ. Nat. Hist. i. p. 198 (1835)<sup>1</sup>; Complete Writings, ii. p. 667.

*Cerotoma quadripustulata*, Baly, Trans. Ent. Soc. Lond. 3rd ser. ii. p. 477<sup>2</sup>.

*Diabrotica signata*, Sturm, Cat. p. 279 (1843)<sup>3</sup>.

*Hab.* MEXICO<sup>1 2 3</sup>, Toxpam, Vera Cruz, Cordova, Orizaba, Puebla, Oaxaca, Teapa (*Sallé*), Jalapa (*Höge*); BRITISH HONDURAS, R. Sarstoon, R. Hondo (*Blancaneaux*); GUATEMALA<sup>2</sup>, Yzabal (*Sallé*), Senahu, Teleman, Tamahu, Panima, and Purula in Vera Paz (*Champion*); NICARAGUA, Chontales (*Janson, Belt*); COSTA RICA, Cache (*Rogers*).

This insect, on account of the open coxal cavities, must find its place in *Diabrotica*; it is very variable in size, and may be known by the elytra being black, with a transverse flavous central band and similarly-coloured apical spot; the head and thorax are rufous; the antennæ and legs flavous, the apical joints of the former fuscous; and the male has the deep frontal excavation of the head peculiar to several other species of the genus *Diabrotica*.

All the known localities for *D. lepida* are upon the Atlantic slope; it is apparently quite a common insect in Mexico and Guatemala.

### 93. *Diabrotica variabilis*.

Ovate, convex, dilated posteriorly, black; antennæ (the apical joints excepted) and legs flavous; head and thorax rufous, the latter bifoveolate; elytra greenish- or bluish-black, a deeply dentate spot at the base, a narrow transverse band at the middle, and an oblique band near the apex, fulvous or reddish-fulvous.

Var. *a*. The fulvous portion of the elytra predominating, the darker colour reduced to spots.

Var. *b*. Elytra black, the extreme lateral margins fulvous.

Var. *c*. Elytra testaceous, with a small scutellar dark spot.

♂. The space between the eyes deeply excavate.

Length  $2\frac{1}{2}$ –3 lines.

Head rufous, shining, deeply excavated in the male; antennæ flavous, the apical four joints more or less stained with fuscous, the first joint (in the male) very long, the second one extremely short, the third and fourth joints nearly equal, the following joints gradually diminishing in length; thorax twice as broad as long, shining, impunctate, with a more or less deep transverse depression on each side; scutellum black; elytra widened posteriorly, rather strongly punctured, the punctuation arranged in closely approached lines, of a greenish-black colour, the extreme lateral margins, the epipleuræ, a deeply dentate triangular spot at the base extending to the shoulders and there joining the lateral margin, a narrow band extending completely across the middle, and an oblique shorter band near the apex of each, fulvous; legs flavous.

*Hab.* MEXICO, Cordova, Tapachula (*Höge*), Juquila (*Sallé*); GUATEMALA, El Reposo, San Isidro, Volcan de Atitlan, Pantaleon, Zapote, San Gerónimo, La Tinta, Chacoj, Teleman, Cahabon, San Juan in Vera Paz (*Champion*); NICARAGUA, Granada, San Juan (*Sallé*), Chontales (*Janson*); COSTA RICA (*Van Patten*); PANAMA, Bugabá, Volcan de Chiriqui, David, Tolé (*Champion*). 6 Transverse

*D. variabilis* is closely allied in general shape and colour to *D. lata*, Fabr., *D. stevensi*, Baly, *D. beata*, Baly, and several other species; but may be known by the posterior fulvous oblique band of the elytra, this band being absent in the allied forms. The Mexican specimens nearly all differ from the numerous examples obtained in the State of Panama in having the elytra fulvous, with a deeply dentate basal band (sometimes divided into two spots), and a large transverse spot below the middle, as well as the apex, greenish-black; if the dark portion or bands predominate, the coloration is that of the type in which the fulvous colour assumes the shape of bands; between this form and the varieties several intermediate degrees are before me. The open coxal cavities prove this species to belong to *Diabrotica*. *D. clypeata*, Baly, is another allied insect, in which the male has the head excavated.

### 94. *Diabrotica ventricosa*. (Tab. XXXII. fig. 25.)

*Diabrotica ventricosa*, Jac. P. Z. S. 1878, p. 148<sup>1</sup>.

Ovate, dilated, black; antennæ and legs flavous; head and thorax rufous, the latter obsoletely bifoveolate; elytra obsoletely costate, black, two spots at the base, a transverse band at the middle, and the apical margin, flavous.

♂. Head deeply excavate in the middle.

Length  $2\frac{1}{2}$  lines.

*Hab.* PANAMA<sup>1</sup>, Bugaba, Volcan de Chiriqui (*Champion*).



*D. beata*, Baly, exactly resembles this species in coloration and shape and also very nearly in the sculpture of the elytra; but in *D. beata* the male is devoid of the frontal excavation, and the second joint of the antennæ is described as "compressed." In the male of *D. ventricosa* the basal joint of the antennæ is elongate but widened towards the apex; the second joint is short, but not globose or thickened; and the third joint is twice the length of the preceding one, and much shorter than the fourth. The elytra are more deeply sulcate and costate than in *D. beata*, and have the flavous bands somewhat thickened or raised; of the two basal spots the outer one is small, but the spot near the scutellum is nearly round and large; the narrow flavous apical margin does not extend upwards from the apex, and in this respect, as in all others regarding the coloration, *D. ventricosa* agrees entirely with *D. beata*.

Found in abundance at Bugaba.

### 95. *Diabrotica bifasciata*. (Tab. XXXII. fig. 23.)

Ovate, widened posteriorly, black, the head, antennæ, thorax, and legs, pale flavous; thorax obsolete bifoveolate; elytra closely punctured, black, a transverse band at the middle and another near the apex, flavous.

♂. Head deeply excavated in front; the first joint of the antennæ slightly dilated at the apex, the third joint curved.

Length 3 lines.

Head impunctate, deeply excavated in front; antennæ two thirds the length of the body, flavous or testaceous, the eighth and ninth joints slightly darker, the third joint four times as long as the second and curved at the base, the fourth and following joints gradually shorter; thorax twice as broad as long, the sides narrowed near the base, the surface with an obscure fovea on each side, impunctate; scutellum black; elytra rather convex, widened posteriorly, closely and distinctly punctured, black, a transverse band at the middle (of half the width of the black portion), and another band near the apex (neither band extending to the extreme lateral margin), flavous.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui 3000 feet (*Champion*).

*D. bifasciata* is larger than *D. lepida*; the elytral bands are straight and more regular, and wider; the thorax is less distinctly impressed; and the antennæ are differently formed. The female has no frontal excavation, and the antennæ in this sex have simple joints.

Found in abundance on the slope of the Volcan de Chiriqui, more rarely at Bugaba.

### 96. *Diabrotica funesta*.

Black, the apical four joints of the antennæ, the thorax, the anterior femora, and the posterior legs, testaceous; elytra black, scarcely punctured, a transverse band at the middle, and the apices, yellowish-white.

Length 3 lines.

Head black, impunctate, the clypeus with a strongly raised central ridge; antennæ two thirds the length of the body, the third joint more than twice the length of the second and as long as the fourth, the apical four joints pale testaceous, the extreme apex of the terminal one black; thorax rather more than one half broader than long, yellowish-white, shining, impunctate, the disc obsolete transversely depressed; scutellum black; elytra with some very fine double rows of punctures, obsolete sulcate and costate, a narrow whitish transverse band not quite touching either margin on the middle of each, the apex occupied by a triangular transverse band of the same colour; underside black; the anterior legs black,

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their femora sometimes testaceous below; the intermediate legs testaceous, their tibiae black; the posterior legs entirely yellowish-white, their tarsi sometimes black.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

In this somewhat parallel-shaped insect the central transverse band of the elytra is very regular and straight, and the apex of each elytron is of the same colour as the band. The obsolete sulcation of the elytra and their semi-geminate punctuation are further peculiar to *D. funesta*.

### 97. *Diabrotica nigrina*.

Black, the apical joints of the antennæ flavous; thorax testaceous, very obsoletely depressed; elytra black, distinctly punctured, a transverse band at the middle and the apices, flavous.

Length  $2\frac{1}{2}$  lines.

Head impunctate, the clypeus with a narrow distinctly raised central ridge; antennæ two thirds the length of the body, black, the apical three joints flavous, the extreme apex of the terminal one black, the third joint twice the length of the second; thorax twice as broad as long, the sides nearly straight, the surface impunctate, with a scarcely visible depression at the sides; elytra finely and not very closely punctured, with an obsolete depression below the scutellum and another near the sides, the transverse flavous central band very narrow and extending completely across and slightly widened at the lateral margins, the apices also narrowly flavous; underside and legs black.

*Hab.* PANAMA, Bugaba (*Champion*).

Shorter, and more convex and dilated, than *D. funesta*; the elytra closely and more distinctly punctured, and without sulci; the legs entirely black.

### 98. *Diabrotica bisignata*.

Black, the apical joints of the antennæ, the thorax, abdomen, and femora flavous; thorax bifoveolate; elytra black, minutely punctured, a transverse band at the middle, and an oblique band at the apex of each, flavous.

Length  $1\frac{1}{2}$ -2 lines.

Head black, the clypeus with a distinctly raised central ridge; antennæ two thirds the length of the body, black, the third joint twice as long as the second, the basal joints obscurely stained with fulvous, the apical three flavous, the extreme apex of the terminal joint black; thorax twice as broad as long, flavous, the disc impunctate, with a distinct transverse depression not extending to the sides; scutellum black; elytra rather widened towards the middle, finely punctured (the punctuation a little more distinct at the sides, where it is arranged in nearly regular and slightly curved lines), the transverse flavous band at the middle widening a little inwardly and not extending to the suture but reaching the lateral margins, the latter also flavous nearly to the base, the apical band oblique in shape (but otherwise exactly resembling the central one); femora and abdomen flavous or fulvous, the tibiae and tarsi black.

*Hab.* PANAMA, Bugaba (*Champion*).

Many specimens.

### 99. *Diabrotica dohrni*.

Black, the apical joints of the antennæ, the thorax, and abdomen testaceous; elytra black, sparingly punctured, a large transverse spot at the middle, and another spot of more rounded shape near the apex of each, flavous.

Length  $2\frac{1}{2}$  lines.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

BIOL. CENTR.-AMER., Coleopt., Vol. VI. Pt. 1, October 1887.

Closely allied to, but larger than, *D. bisignata* and possibly only a variety or the female sex of that insect; it differs as follow:—the thorax is less distinctly impressed; the spots of the elytra do not extend to either margin, and the posterior one is of more rounded shape; and the legs are black, with the exception of the base of the posterior femora, this part being flavous. In all other respects the present insect agrees with the preceding.

#### 100. *Diabrotica subsignata*. (Tab. XXXII. fig. 10.)

Black; thorax and abdomen flavous, the former without depressions; the apical three joints of the antennæ testaceous; elytra finely punctured, two spots at the base, a transverse band at the middle, and the apex of each, yellowish.

Length  $2\frac{1}{2}$  lines.

Head black; the clypeus with a strongly raised central ridge; antennæ rather more than half the length of the body, the third joint three times as long as the second, the three lower joints testaceous, the basal one stained with piceous above, the following five joints black, the rest flavous, the extreme apex of the terminal joint black; thorax one half broader than long, dark flavous, the surface rather convex, impunctate and without depressions; elytra finely and closely punctured, black, a small spot below the shoulder, a larger oval one near the scutellum, a transverse band at the middle, and an irregular-shaped spot at the apex, pale yellowish; the breast and legs black, the extreme base of the femora fulvous, the abdomen flavous.

*Hab.* PANAMA, David in Chiriqui (*Champion*). A single specimen.

*D. subsignata* resembles *D. morosa*, Jac., in the design of the elytra, but differs in the structure of the antennæ, and in the smooth, convex thorax. The black bands of the elytra which divide and surround the flavous spots are narrow; the posterior band is widened laterally, and extends along the sides nearly to the apical black spot.

#### 101. *Diabrotica cinctella*.

*Diabrotica cinctella*, Harold, Mittheil. Münch. ent. Ver. 1877, p. 110<sup>1</sup>.

Var. *Diabrotica puella*, Baly, Journ. Linn. Soc., Zool. xix. p. 238<sup>2</sup>.

Var. Thorax with a black central longitudinal band or spot.

*Hab.* NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui, David, La Caldera, San Feliz, Peña Blanca (*Champion*).—COLOMBIA<sup>1 2</sup>.

I can only look upon *D. puella* as a variety of *D. cinctella*, although it perhaps represents the normal form; I have before me a great number of specimens of both forms from numerous localities which show no other marks of distinction but that of colour. In Von Harold's species the elytra are simply blackish, with a narrow lateral and apical flavous margin; in the variety there is a discoidal flavous spot on the middle of each elytron and also an oblique short band near the apex. The elytra are either finely or rather strongly punctured on the disc, the more or less distinct lateral longitudinal groove very strongly so; and the thorax is either entirely flavous, or has a more or less distinct central black spot. Both forms agree entirely in structural details. I have been enabled through the kindness of Mr. Baly to examine the type of *D. puella*;

it agrees in every way with the specimens from Nicaragua and the State of Panama. *D. cinctella* varies in size from 1 to  $1\frac{1}{2}$  line.

102. *Diabrotica hirta*. (Tab. XXXII. fig. 16.)

Testaceous, the head black, the antennæ, tibiae, and tarsi, fuscous; thorax quadrate, bifoveolate; elytra black, closely punctured, sparingly clothed with whitish hairs, the lateral and apical margins, and a spot at the middle of each, testaceous.

Length  $2\frac{1}{2}$  lines.

Head impunctate, with a central fovea, the frontal tubercles nearly obsolete; clypeus with a distinct central ridge; labrum black, impressed with four punctures; antennæ more than half the length of the body, the basal joint testaceous, the following seven joints fuscous or piceous, the terminal three joints obscure fulvous; thorax quadrate, not broader than long, testaceous, the sides nearly straight, the surface very minutely punctured, with two small foveæ; scutellum piceous; elytra rather flattened and parallel, very closely and finely punctured, with rather long and scattered stiff pubescence, the disc black and with a central small transverse pale yellowish spot, the lateral margins narrowly, and the apices more broadly, flavous; underside and femora testaceous, the breast obscure piceous.

*Hab.* COSTA RICA, Volcan de Irazu (*Rogers*).

A single specimen, resembling in its coloration *D. cinctella*, but larger and with the elytra distinctly pubescent; the third joint of the antennæ is more than twice the length of the second.

d. *Elytra metallic or black, the lateral margins and a transverse central band flavous.*

103. *Diabrotica cruciata*. (Tab. XXXII. fig. 2.)

Black, the apical joints of the antennæ, and the thorax testaceous; thorax transversely depressed; elytra testaceous, finely punctured, an elongate subquadrate band extending to the middle, and a transverse patch below the middle, dark metallic blue; legs testaceous.

Length  $3\frac{1}{2}$ – $4\frac{1}{2}$  lines.

Of elongate, parallel shape; the head impunctate, black; the antennæ rather more than half the length of the body, the third joint twice as long as the second, the four lower joints more or less stained with fulvous, the four or five following ones piceous, the apical joints testaceous; thorax rather more than twice as broad as long, the sides distinctly constricted at the base, the surface impunctate, flavous or testaceous, with a rather deep depression extending nearly across the entire disc; scutellum flavous or piceous; elytra very closely and finely punctured, the dark bluish portion interrupted below the middle by a transverse flavous band and by the very narrow flavous sutural and slightly broader lateral margins (the flavous pattern in the shape of a reversed cross).

*Hab.* GUATEMALA, San Isidro, Zapote, Teleman (*Champion*); SALVADOR (*mus. Stuttgart*).

Allied to *D. adonis*, Baly, and several other species in regard to the elytral pattern; but differing in the darker portion being interrupted on all sides, forming an elongate subquadrate band anteriorly and a large oval spot below the middle.

A specimen from San Isidro is figured.

104. *Diabrotica adonis*. (Tab. XXXI. fig. 21.)

*Diabrotica adonis*, Baly, Ann. & Mag. Nat. Hist. 3rd ser. iv. p. 272 (1859)<sup>1</sup>.

Var. *Diabrotica zonata*, Harold, Coleopt. Hefte, xiii. 1875, p. 91<sup>2</sup>.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).—COLOMBIA<sup>2</sup>; VENEZUELA<sup>1</sup>; AMAZONS (*coll. Jacoby*).

Found in abundance by Mr. Champion in Chiriqui. Central-American specimens differ from the typical form in having entirely yellow legs and tarsi, and the elytra either metallic purplish or green in colour, interrupted by a transverse narrow central flavous band and the similarly coloured lateral margin. I scarcely think the Panama insect differs sufficiently to be treated as distinct.

105. *Diabrotica festiva*.

Black, joints 6-8 of the antennæ testaceous; thorax transverse, obsoletely transversely grooved, testaceous; elytra bluish-black, scarcely punctured, the lateral and apical margins, and a narrow transverse band in the middle, testaceous.

Length  $2\frac{1}{2}$ -3 lines.

Head impunctate, black, the frontal tubercles but little raised, the space between the antennæ scarcely carinate; antennæ nearly as long as the body, the five lower joints obscure fuscous partly stained with testaceous, the following three joints pale testaceous, the rest fuscous or black, the third joint more than twice the length of the second; thorax rather more than twice as broad as long, the sides straight at the base, slightly rounded and widened in front, the anterior angles tuberculiform and each with a single seta, the surface impunctate, with a distinct but not deep transverse depression on each side; scutellum black; elytra distinctly punctured on the paler portion only, with an obsolete costa below the shoulder, very dark bluish-black, this colour interrupted at the middle by a narrow transverse testaceous band which joins the similarly-coloured lateral margin; legs fulvous, the tarsi obscure fuscous.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

Much smaller than *D. adonis* or *D. pulchella*, Baly, and more finely punctured; the underside in one specimen is obscure testaceous.

106. *Diabrotica nicaraguensis*.

Below piceous; head black; thorax flavous, transverse, deeply sulcate; elytra nearly impunctate, flavous, a broad band extending to the middle, and another band below the middle, black; femora flavous.

Length 4 lines.

*Hab.* NICARAGUA, Chontales (*Belt*).

*D. nicaraguensis* resembles in the pattern of the elytra *D. adonis*, Baly, *D. peruana*, Jac., and *D. cruciata*; but may be known by the black, not metallic, bands of the elytra, and the smooth impunctate elytral surface. The head is longer than broad; the palpi are flavous; the antennæ are black (the last three joints are wanting), and have the third joint twice as long as the second; the thorax is deeply transversely depressed and impunctate; and the elytral bands extend to the sutural (but not to the lateral or apical) margins, and are divided in the middle by a narrow transverse flavous band.

e. *Elytra testaceous, fulvous, or red, with darker (sometimes blue) transverse bands or spots.*

107. ***Diabrotica nigro-fasciata.*** (Tab. XXXI. figg. 24; 25, var.)

*Cerotoma nigrofasciata*, Jac. P. Z. S. 1878, p. 996<sup>1</sup>.

♂. Lower part of the face very deeply excavated; the fifth joint of the antennæ strongly emarginate or concave at its upper margin.

Var. Lower part of the head flavous; elytra reddish-fulvous, the black transverse bands reduced to spots or entirely absent.

*Hab.* MEXICO, Cordova, Teapa, Jalapa, Acapulco, Tapachula (*Höge*), Juquila, Toxpam, Vera Cruz (*Sallé*); BRITISH HONDURAS, R. Sarstoon, R. Hondo (*Blancaneaux*); GUATEMALA<sup>1</sup> (*Sallé*), Aceytuno (*Salvin*), Capetillo, Zapote, Volcan de Atitlan, El Tumbador, Cerro Zunil, Sabo, Lanquin (*Champion*); NICARAGUA, Granada (*Sallé*); COSTA RICA<sup>1</sup> (*Van Patten*); PANAMA, Bugaba, Volcan de Chiriqui, David (*Champion*).

An abundant species in our region. The anterior coxal cavities prove, on a closer inspection, to be really open, and the insect must therefore find its place in *Diabrotica*. The male, like several of the allied species, has a deep frontal excavation and abnormal antennæ; in the female the front is not excavate, and somewhat rugose. The three transverse black elytral bands differ in width, and are sometimes only indicated or altogether absent; the elytra are thus in this latter form (principally from Mexico) entirely fulvous. The elytra are very strongly punctured and almost rugose, and in the female show traces of longitudinal raised ridges. The elytral sculpture is a distinguishing character of *D. nigro-fasciata*.

We figure a typical specimen from Toxpam, and a variety from Juquila.

108. ***Diabrotica connexa.*** (Tab. XXXII. fig. 20.)

*Diabrotica connexa*, Lec. Proc. Acad. Phil. 1865, p. 212<sup>1</sup>.

*Hab.* NORTH AMERICA, Texas<sup>1</sup>.—MEXICO, Tuxtla (*Sallé*).

Two specimens in the collection of M. Sallé are named as above; they agree perfectly with the description of *D. connexa*. The elytral design is not unlike that of *D. adelpha* and several allied species. The elytra (as well as the thorax) are flavous, and have the anterior portion occupied by a transverse fulvous band, this band being emarginate at the sides and including a small flavous spot near the base; below the middle are two small fulvous spots placed transversely. The long third joint of the antennæ places *D. connexa* in the present division.

109. ***Diabrotica rufo-fasciata.*** (Tab. XXX. fig. 21.)

Oblong ovate, dilated posteriorly, flavous, the apical joints of the antennæ fuscous, the head rufous; thorax transversely grooved, impunctate; elytra closely punctured, flavous, a broad transverse band at the base, and another below the middle, rufous.

Length 3-4 lines.

Head with a few fine punctures on the vertex, the sides of the clypeus more strongly punctured, rufous; labrum flavous; antennæ flavous, the three or four apical joints obscure fuscous, the third joint twice the length of the second; thorax one half broader than long, flavous, the disc with a transverse depression (in the shape of a curved groove), impunctate; scutellum piceous; elytra strongly dilated posteriorly, rather convex, very closely punctured, the anterior rufous band extending nearly to the middle, the posterior band of equal width (both bands interrupted at the extreme lateral margin); breast piceous, the abdomen and legs flavous.

*Hab.* PANAMA, Bugaba (*Champion*).

In the specimen figured the thorax is slightly stained with greenish. The broad rufous elytral bands principally distinguish *D. rufo-fasciata*.

### 110. *Diabrotica dorso-plagiata*. (Tab. XXXII. fig. 24, var.)

Flavous, the tibiæ and tarsi piceous; thorax very finely punctured, without depressions; elytra very closely punctured, more or less obsoletely longitudinally sulcate, the suture, the base narrowly, a narrow transverse band before the middle, and a second band beyond the middle (the bands connected at the sides with a lateral stripe starting from the base), dark fulvous.

*Var.* The lateral elytral stripe extending to the suture near the apex; the tibiæ flavous.

Length 3-3½ lines.

Antennæ more than half the length of the body in the male, the apical joints sometimes fuscous, the third joint twice the length of the second; thorax subquadrate, slightly narrowed near the base, the surface without depressions, very finely and closely punctured; elytra extremely closely punctured, with some obsolete longitudinal sulcations, the sides below the shoulder marked by a more or less distinct short costa, the surface of each divided into three large flavous spaces by the narrow transverse dark fulvous bands, the fulvous lateral stripe extending from the base to the second transverse band, the apices remaining of the ground-colour.

*Hab.* GUATEMALA, Capetillo, Cerro Zunil, Panajachel (*Champion*); COSTA RICA, Volcan de Irazu (*Rogers*).

In the variety (a single specimen from Costa Rica) the three testaceous spaces of the elytra are closed at the sides by the lateral longitudinal stripe curving round to the sutural margin near the apex; in the Guatemalan examples the corresponding lateral stripe ends at the second transverse band. In all the specimens the two elytral bands are slightly oblique. The subquadrate and finely punctured thorax is another character peculiar to *D. dorso-plagiata*.

An example of the variety from Irazu is figured.

### 111. *Diabrotica lævicollis*. (Tab. XXXII. fig. 4, var.)

Broadly ovate, subdepressed, black, the head rufous; thorax rufous, with two black spots, trifoveolate; elytra fulvous, finely rugose, each with two spots at the base, two near the apex, and a transverse band at the middle, black; legs testaceous.

*Var.* The elytral spots more or less confluent.

Length 3½-4 lines.

Head impunctate, rufous or fulvous; antennæ obscure fulvous, the basal joints sometimes stained with piceous, the third joint more than twice the length of the second; thorax one half broader than long, rather flattened, with three foveæ and a central longitudinal groove (the groove sometimes obsolete), the disc impunctate, a black spot on each side above the lateral foveæ; scutellum black; elytra broad, subdepressed, widened posteriorly, finely rugose throughout, each with two elongate spots (placed transversely)

at the base, two similarly-shaped spots near the apex, and a transverse band at the middle (neither of these marks touching the sutural or the lateral margins), black; legs testaceous.

*Hab.* MEXICO, Cordova, Orizaba (*Sallé*), Jalapa (*Höge*).

This species is of a very broad, flattened shape, and the abdomen in the female is greatly inflated; all the structural characters peculiar to the genus are present. In the variety the anterior black elytral spots are confluent with the band, leaving only a small fulvous spot between them.

We figure a specimen of the variety from Jalapa.

112. *Diabrotica suffriani*. (Tab. XXXII. fig. 3.)

Black; thorax fulvous, without depressions; elytra testaceous, a transverse band at the base, another at and a third below the middle, as well as the apex of each, black; femora fulvous.

Length 3 lines.

Head without punctures, the clypeus with a distinctly raised central ridge; antennæ black, half the length of the body, the basal joint sometimes testaceous at the apex, the third joint twice the length of the second; thorax but slightly broader than long, fulvous or flavous, entirely impunctate, and without depressions; scutellum black; elytra scarcely visibly punctured (even under a strong lens), testaceous, a narrow transverse band at the base extending downwards a little distance along the suture, a transversely subquadrate band at the middle, a similar band of less regular shape near the apex, and the apex itself, black; underside black; femora fulvous, the knees, tibiæ, and tarsi black.

*Hab.* MEXICO, San Isidro (*Höge*).

In the elytral pattern and colour this insect resembles *D. albo-signata* of the first section; but differs in the want of thoracic depressions, the longer third joint of the antennæ, and the entirely black under surface. The elytral bands do not extend quite to the lateral or sutural margins, with the exception of the one at the base, which is common to both elytra, but also abbreviated at the sides; the third band is of a dentate shape as if composed of two spots joined together.

113. *Diabrotica figurata*. (Tab. XXXII. figg. 14; 15, var. *β*.)

Subdepressed, slightly widened, black, the antennæ fulvous; thorax testaceous, bifoveolate; elytra finely and sparingly punctured, testaceous, each with a spot at the base, another at the middle, and a third near the apex, black; legs testaceous.

Var. *α*. The elytral spots more or less connected laterally; the abdomen testaceous.

Var. *β*. The elytra black, the sutural and lateral margins narrowly testaceous.

Length 2-2½ lines.

Head black; antennæ fulvous, the basal joint piceous, the third joint twice as long as the second, the other joints rather short and robust in the female, more elongate in the male; thorax twice as broad as long, the sides nearly straight, the surface impunctate, with a small fovea on each side, fulvous or testaceous; scutellum black; elytra rather flattened, remotely and indistinctly punctured, testaceous, with variable black markings—sometimes with a spot at the base, another at the middle, and a third near the apex, sometimes with an elongate stripe at the sides from the base to the middle, the stripe deeply hollowed or emarginate on its inner side, and a transverse spot near the apex, and sometimes black, with the margins narrowly testaceous; legs testaceous.

*Hab.* GUATEMALA, San Isidro, Pantaleon, Volcan de Atitlan, Zapote (*Champion*).

None of the elytral black bands extend to the sutural or lateral margins; in some



specimens the bands are more or less connected and occupy nearly the entire disc, in others they are only indicated by small spots.

We figure a typical example from the Volcan de Atitlan, and the var. *b* from San Isidro.

#### 114. *Diabrotica hirsuta*.

Piceous, the head black; thorax obscure piceous, obsoletely bifoveolate; elytra flavous, closely pubescent, the suture, a lateral spot at the middle, and a transverse band near the apex, black.

Length  $1\frac{1}{2}$  line.

Head not longer than broad, black, the frontal tubercles distinct, the vertex with a few minute punctures; antennæ two thirds the length of the body, the third joint twice the length of the second, the four lower and the three apical joints obscure testaceous, the intermediate ones nearly black; thorax subquadrate, constricted near the base, the surface impunctate, with a small fovea on each side, of a pale piceous colour; scutellum black; elytra closely punctured, the punctuation arranged in nearly regular rows (more distinct below the shoulders) and consisting of small and larger impressions, the disc closely covered with whitish pubescence, an elongate spot at the sides extending from below the shoulders to the middle, a narrow transverse band extending across the suture near the apex, and the suture narrowly, black; the base of the femora yellowish-white, the rest of the underside and the legs piceous.

*Hab.* MEXICO, Colima city (*Höge*).

A single specimen.

#### 115. *Diabrotica depressa*.

Broadly ovate, depressed, testaceous, the antennæ stained with piceous above; thorax transverse, obsoletely bifoveolate; elytra irregularly punctured, testaceous, with a transverse band at and another below the middle (connected at the suture), and a small spot at the base, black.

*Var.* Elytra almost entirely black, the base and the sides with testaceous spots.

Length  $2\frac{1}{3}$ – $3\frac{1}{2}$  lines.

Head with a more or less distinct fovea on the vertex, the latter impunctate, sometimes stained with piceous at the base; the frontal tubercles elongate, nearly contiguous, and joined to the clypeus; antennæ but little shorter than the body, the apex of each joint testaceous, the first joint entirely of that colour, the others piceous above, the third joint twice the length of the second but distinctly shorter than the fourth; thorax strongly transverse, more than twice as broad as long, the margins nearly straight, the surface flattened, impunctate, and with a small obsolete fovea on each side; scutellum broad, testaceous; elytra flattened, finely punctured anteriorly, the posterior portion nearly impunctate, the black pattern of variable shape (somewhat resembling the letter *x*), the apical and basal portions testaceous, the latter with one or two small black spots; the underside and femora testaceous, the tibiæ and tarsi more or less piceous; the first joint of the posterior tarsi longer than the following two joints together.

*Hab.* MEXICO, Cordova (*Sallé*).

This is a species of a peculiarly broad and flattened appearance, possessing, however, all the structural characters of *Diabrotica*. The thorax is broader than in most of the allied forms, being nearly as wide at the base as the elytra. The elytral markings are somewhat in the form of the letter *x*, and of variable thickness, the anterior hook being sometimes connected with another black stripe extending upwards to the shoulders, the small black spot at the base in some specimens nearly obsolete, in others well-marked; in the variety the black colour predominates to such an extent as only

to indicate by testaceous spots those places where in the normal form the ground-colour interrupts the black portion.

### 116. *Diabrotica allardi*.

Testaceous, the head black; thorax transverse, without depressions; elytra testaceous, finely punctured, a broad transverse band at the base, a much narrower band below the middle, and a still smaller one near the apex, black.

Length  $2\frac{3}{4}$  lines.

Head impunctate, black, the frontal tubercles very narrow; the clypeus perfectly straight in front, and with a central ridge; labrum flavous; antennæ nearly as long as the body, fuscous, the sixth, seventh, and eighth joints whitish, the third joint three times as long as the second; thorax transverse, the sides nearly straight, the anterior angles obliquely shaped and somewhat produced outwardly, the surface impunctate, without foveæ, but with a short oblique groove near the posterior angles; scutellum testaceous; elytra finely and closely punctured, with traces of longitudinal grooves, a broad transverse band at the base extending to the first third of their length, a narrower band below the middle and a still narrower one near the apex, black; underside testaceous, the tibiæ and tarsi fuscous.

*Hab.* PANAMA, Bugaba, Peña Blanca (*Champion*).

*D. allardi* possesses all the structural characters of the genus; but is distinguished from most of the species yet referred to it by its rather transversely-shaped thorax. The first elytral band is narrower at the suture than at the sides, and does not quite extend to the basal margin, where a narrow stripe of the ground-colour remains, and its posterior margin is obliquely cut; the second band is of half the width of the first, and is slightly rounded and narrowed at the suture; and the third band is placed near the apex, and is very narrow and slightly curved downwards at the outer ends; neither of the bands extend quite to the lateral margin.

### 117. *Diabrotica sex-plagiata*. (Tab. XXXI. figg. 14; 15, var.)

*Diabrotica sexplagiata*, Jac. P. Z. S. 1878, p. 151<sup>1</sup>.

*Var.* Thorax without longitudinal lateral stripes; elytra yellowish-white, margined with black.

*Hab.* MEXICO, Teapa, Tuxtla (*Sallé*), Jalapa, Tapachula in Chiapas (*Höge*); BRITISH HONDURAS, R. Hondo, Belize (*Blancaneaux*); GUATEMALA, Zapote, San Gerónimo, Chacoj (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA<sup>1</sup>, Bugaba, Volcan de Chiriqui, David (*Champion*).—COLOMBIA (*coll. Baly*).

In the type the whitish colour of the elytra is divided by narrow transverse black bands into six spots or patches (three on each); these spots or patches become more or less confluent in the varieties till the dividing dark transverse bands disappear altogether, and produce a uniformly coloured form in which the elytra are simply margined with black; the elytra themselves are closely rugose-punctate. The four anterior femora are generally striped with black above, and the apex of the posterior femora, and the posterior tibiæ entirely, of that colour. The locality "Peru" given by me<sup>1</sup> refers to a closely allied but distinct species, as I found upon a closer examination. Many examples.

We figure a typical specimen from Belize, and a variety from Tapachula.

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118. *Diabrotica tetraspilota*.

*Diabrotica tetraspilota*, Baly, Trans. Ent. Soc. Lond. 3rd ser. ii. p. 351<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Misantla, Cerro de Plumas, Jalapa (*Höge*), Oaxaca, Cordova, Sante-comapan (*Sallé*); BRITISH HONDURAS, R. Hondo, R. Sarstoon (*Blancaneaux*); GUATEMALA, Tamahu, Chacoj, Teleman, Panima in Vera Paz (*Champion*); NICARAGUA, Chontales (*Janson*); COSTA RICA, Volcan de Irazu (*Rogers*).

The fifty specimens of this large and easily recognizable species before me only differ amongst themselves in the ground-colour of the elytra being either reddish-fulvous or testaceous; each elytron being furnished with two large black spots. I am, however, unable to detect any transverse sulcation below the base of which Mr. Baly speaks in his diagnosis. The black colour of the terminal four joints of the antennæ seems to be a constant character.

119. *Diabrotica irregularis*. (Tab. XXXII. fig. 21.)

Fulvous, the head, the intermediate joints of the antennæ, and the breast black; thorax without depressions; elytra finely and closely punctured, a transverse band at the base, another at and a third below the middle, partly connected, as well as a lateral longitudinal stripe, black.

Length 3-3½ lines.

Head black; clypeus with a strongly raised, rather broad, central ridge; antennæ with the basal joint fulvous, the following seven joints obscure fuscous or piceous, the others fulvous, the extreme apex of the terminal joint fuscous; thorax scarcely one half broader than long, somewhat convex, the surface entirely impunctate, without depressions; scutellum black; elytra with a narrow transverse black band (widened at the sides) at the base, and a smaller black band at and another below the middle, the two latter joined in the centre of the disc by a narrow stripe and at the sides connected with a longitudinal black stripe which commences at the second band and is abbreviated at a little distance before the apex; abdomen and legs fulvous, the tibiæ and tarsi black.

*Hab.* GUATEMALA, Purula (*Champion*).

In two specimens the elytral pattern is precisely similar, except that the markings in one instead of being black are fulvo-piceous; but it is probable that this insect is subject to variation in the shape of the elytral bands.

120. *Diabrotica bohemani*. (Tab. XXXII. fig. 13.)

Black, the apical joints of the antennæ white; thorax testaceous, obsolete bi-impressed; elytra subremotely punctured, testaceous, a narrow transverse band at the base, the lateral and apical margins, and a transverse spot below the middle, black.

Length 3 lines.

*Hab.* PANAMA (*Boucard*).

Whether the single specimen before me represents the normally-coloured form of the present species or only a variety I am unable to say; but it is very probable that the design of the elytra is subject to variation. The antennæ have the third joint twice as long as the second; the apical four joints are yellowish-white, the apex of the terminal one black. The thorax is one half broader than long, and has two obsolete

depressions. The elytra have a longitudinal depression below the shoulders, and are rather distantly and strongly punctured; the transverse band at the basal margin has three short black longitudinal stripes attached to it (one at the shoulder, another at the suture, and a third between the others); the black marginal stripe is widened below the middle into a triangular spot, which nearly joins the smaller spot on the disc; and the black colour also extends rather broadly inwards at the apex. The abdomen is testaceous, the rest of the underside and legs black.

### 121. *Diabrotica inclusa*.

Flavous, the head and the breast black; the third joint of the antennæ elongate; thorax without impressions, impunctate; elytra extremely closely punctured, flavous, a transverse band at the base enclosing a small flavous spot, and another curved band near the apex, dark blue.  
Length 3 lines.

*Hab.* MEXICO, Jalapa (*Höge*).

The only species with which *D. inclusa* can be satisfactorily compared is *D. pulchella* of the first section; in *D. inclusa* the second joint of the antennæ (instead of being short as in *D. pulchella*) is nearly three times as long as the second, and the antennæ themselves are entirely flavous or fulvous. The thorax is about one half broader than long, rather constricted at the base; the surface somewhat convex, and entirely without depressions or punctures. The blue basal band of the elytra does not quite reach the lateral margin and encloses a small flavous spot (probably this spot is sometimes absent); the posterior band is narrower, slightly curved and pointed at its outer end, and does not extend to either the sutural or lateral margins. The palpi are flavous.

### 122. *Diabrotica bicolor*. (Tab. XXXII. fig. 6.)

Black, the apical four joints of the antennæ white; thorax flavous, obsoletely bi-impressed; elytra finely punctured, the anterior half black, the posterior half yellowish-white.  
Length 4 lines.

Head black; antennæ slender, the third joint nearly three times as long as the second, the terminal four joints almost white, the apex of the apical one black; thorax twice as broad as long, bright yellow, obsoletely impressed on either side, impunctate; scutellum black; elytra very finely punctured, with some traces of longitudinal raised lines, the anterior half deep black, this colour divided from the white posterior portion by a straight line; underside and legs black, the coxæ flavous.

*Hab.* NICARAGUA, Chontales (*Belt*).

The curious coloration of *D. bicolor*, of which only a single specimen was obtained, distinguishes it at first sight from any other species of the genus.

### 123. *Diabrotica interrupto-fasciata*. (Tab. XXXI. fig. 13.)

*Diabrotica interrupto-fasciata*, Baly, Ann. & Mag. Nat. Hist. 5th ser. iii. p. 75 (1879').

*Hab.* MEXICO, Oaxaca<sup>1</sup>, La Parada (*Sallé*).

The elytra are of a reddish-fulvous colour, finely rugose, and have three narrow

transverse black bands; the thorax is testaceous, with two small black spots. An example from La Parada is figured.

**124. *Diabrotica jansoni*.** (Tab. XXXI. fig. 20.)

*Diabrotica jansoni*, Jac. P. Z. S. 1878, p. 994<sup>1</sup>.

*Hab.* NICARAGUA, Chontales (*Janson*<sup>1</sup>, *Belt*).

This species probably ought to find its place in some other genus, as, on further examination, the tibiæ prove to be without spines. The insect is of large and robust shape; the elytra are fulvous, with the posterior portion dark blue, this colour sometimes not extending quite to the apex.

*f. Elytra testaceous, with small black spots.*

**125. *Diabrotica femorata*.** (Tab. XXXII. fig. 8.)

Black; thorax fulvous, without depressions; elytra finely punctured, fulvous, the suture below the base, and six spots (2 . 2 . 2) on each, black; abdomen and the base of all the femora fulvous.

Length 3 lines.

Head black, impunctate; antennæ nearly as long as the body, black, the three basal joints fulvous below, the third joint more than twice the length of the second; thorax subquadrate, scarcely broader than long, narrowly margined at the sides, the latter slightly rounded at the middle, the surface smooth, impunctate, and without depressions, bright fulvous; scutellum black; elytra finely and not very closely punctured, rather convex and a little widened posteriorly, slightly stained with reddish-fulvous, darker than the thorax, the anterior third of the sutural margin, a subquadrate spot at the shoulder, a small spot near the scutellum, two spots at the middle, placed transversely, and two others below the middle, black.

*Hab.* MEXICO, Las Peras (*Sallé*). A single specimen.

**126. *Diabrotica v-nigrum*.** (Tab. XXXII. fig. 18.)

Pale flavous, the head black, the antennæ fulvous; thorax without depressions; scutellum black; elytra very strongly and closely punctured, the suture narrowly, a  $\Lambda$ -shaped mark at the shoulder, and a somewhat similar mark below the middle, black.

Length 3 lines.

Head black, the labrum piceous, the mandibles obscure testaceous; antennæ fulvous, the third joint twice as long as the second, but distinctly shorter than the fourth; thorax twice as broad as long, pale flavous, impunctate, and without depressions; scutellum black; elytra very strongly punctured throughout, pale testaceous, the suture narrowly, a short stripe connected with a transverse spot near the shoulder, and another somewhat similar mark below the middle, black; under surface and the legs flavous.

*Hab.* MEXICO, Jalapa (*Höge*).

A single specimen. *D. v-nigrum* will be known amongst its allies by the strong punctation, and the rather peculiar markings, of the elytra.

**127. *Diabrotica septem-punctata*.** (Tab. XXXI. fig. 23.)

Greenish-testaceous, the scutellum and the breast black; thorax with two foveæ, rugosely punctured; elytra closely rugose-punctate, each with seven small black spots (1 . 1 . 2 . 3).

Length 3-3½ lines.

Head with a deep fovea, the vertex with a few fine punctures; antennæ half the length of the body, entirely

pale fulvous, the third joint twice the length of the second; thorax about one half broader than long, closely and strongly rugose and punctured, with two deep foveæ on the disc, and an obsolete depression near the anterior and posterior margins; scutellum black; elytra rather convex and broadly ovate, sculptured like the thorax, each with a small spot at the shoulder, another near the scutellum, two about midway near the lateral margin (placed transversely), and three below the middle (two of which are situated near the suture and placed transversely, and the third a little lower down near the lateral margin); black; legs testaceous, the breast black.

*Hab.* MEXICO, Las Peras (*Sallé*).

The rugose upper surface of the thorax and elytra and the position of the elytral spots will readily distinguish this species.

### 128. *Diabrotica mexicana*. (Tab. XXXI. fig. 22.)

*Diabrotica mexicana*, Harold, Coleopt. Hefte, xiii. p. 91 (1875)<sup>1</sup>.

*Diabrotica bisseptem-punctata*, Sturm, Cat. 1843, p. 279<sup>2</sup>.

*Hab.* MEXICO<sup>1,2</sup>, Cuernavaca, Orizaba, Tlatingo (*Sallé*), Cordova (*Höge*); GUATEMALA, Sabo, Cerro Zunil, Volcan de Atitlan, Dueñas (*Champion*); COSTA RICA (*Van Patten*).

The thorax of *D. mexicana* should be described as having three, not two, foveæ, as stated in the diagnosis<sup>1</sup>; the third fovea being placed between the larger discoidal depressions, but nearer to the base. The elytra are rugosely punctured, slightly shining, and each with seven (sometimes only six) small black spots (2 . 3 . 2). The thorax has always two spots placed in front of the foveæ. A specimen from Orizaba is figured.

### 129. *Diabrotica multipunctata*.

*Diabrotica multipunctata*, Jac. P. Z. S. 1878, p. 149<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Tepansacualco, Puebla, Guanajuato (*Sallé*), San Juan del Rio, Tupatario (*Höge*), Michoacan (*Flohr*).

In the elytral pattern this insect exactly resembles *D. mexicana*; the elytra, however, are less distinctly punctured and more shining, and have their sutural and lateral margins rufous; and an extra dark fulvous spot is generally placed near the lateral margin between the rows of spots. The thorax is of a darker fulvous tint than in *D. mexicana*; and the tibiæ and tarsi, as well as the upper edge of the femora, are black.

### 130. *Diabrotica quinque-punctata*.

Testaceous; thorax deeply transversely foveolate; scutellum black; elytra finely rugose-punctate, each with five black spots (1 . 2 . 2).

Length  $2\frac{1}{2}$ -3 lines.

Head impunctate; antennæ more than half the length of the body, the third joint more than twice the length of the second; thorax one half broader than long, with a deep transverse depression on each side confluent at the middle, impunctate; scutellum black; elytra finely rugose, with a small spot at the shoulder, two similar

spots placed transversely below the base, and two others below the middle, black; the first joint of the posterior tarsi as long as the following three joints united; claws bifid, the inner division rather short.

*Hab.* GUATEMALA, Capetillo, Dueñas (*Champion*).

131. ***Diabrotica sexpunctata***. (Tab. XXX. fig. 19.)

*Diabrotica sexpunctata*, Jac. P. Z. S. 1878, p. 148<sup>1</sup>.

*Hab.* COSTA RICA (*Van Patten*), Río Sucio, Cache, Volcan de Irazu<sup>1</sup> (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).

This species may be recognized by its large size; and by the elytra being reddish-fulvous in colour, and each with three small black spots; the antennæ and legs are flavous, and the underside black. In the original description<sup>1</sup> *D. sexpunctata* was compared with *D. tripunctata*, Oliv., by mistake; it should have been with *Aulacophora tripunctata*, an insect somewhat resembling *D. sexpunctata* in coloration.

132. ***Diabrotica octo-signata***. (Tab. XXX. fig. 23, var.)

*Diabrotica octosignata*, Baly, Ann. & Mag. Nat. Hist. 5th ser. iii. p. 76 (1879<sup>1</sup>).

*Var.* Elytra with the suture, two spots at the base, and a transverse band below the middle, black.

*Hab.* MEXICO, Oaxaca<sup>1</sup>, Cordova, Juquila, Guanajuato (*Sallé*); GUATEMALA (*Sallé*), Dueñas, Cerro Zunil, Panima, Sinanja (*Champion*).

Although at first sight the variety seems to represent another species, I am unable to find sufficient differences to treat it as such. In the type, the elytra are fulvous, with four small black spots placed transversely before and below the middle on each. In the variety these spots are larger, sometimes connected and with the posterior ones united into a more or less broad transverse band, the position of these spots and of the band being as in the type, and the suture from below the base to the apex also narrowly black; a specimen marked in this way, but otherwise agreeing with the typical form, is also before me, thus proving the variability of the species. The thorax and the elytra in the variety are rather more strongly punctured; but other differences seem to be absent.

A specimen in the Sallé collection is labelled *D. 8-punctata*, Sturm. We figure a specimen of the variety from Cerro Zunil.

*g. Elytra fulvous or testaceous.*

133. ***Diabrotica subimpressa***.

Ovate, dilated, black; thorax fulvous, deeply bifoveolate; scutellum piceous; elytra flavous, finely punctured, transversely impressed at and below the middle, each with an elongate elevation near the apex; legs flavous.

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

Head longer than broad, black, the vertex with a deep triangular depression, the clypeus with a central ridge; palpi flavous; antennæ fulvous (the terminal five joints wanting), the third joint more than twice the

length of the second; thorax twice as broad as long, reddish-fulvous, the surface with two deep impressions and a few fine punctures; elytra convex and dilated posteriorly, pale flavous, with a short transverse depression before and another immediately below the middle, each with an elongate elevation near the suture placed at a little distance from the apex, the entire disc covered with small piceous punctures; underside black, the legs flavous.

*Hab.* COSTA RICA (*Van Patten*), Volcan de Irazu (*Rogers*).

In one specimen there is an elongate piceous spot placed at the side of the elytral elevation; the female is probably devoid of the latter. When seen with the naked eye the elytra seem to be furnished with a narrow transverse raised band, on account of the depression in front and below the middle.

#### 134. *Diabrotica sobrina*.

Ovate, dilated posteriorly, black, the head and the apical four joints of the antennæ fulvous; thorax transverse, bifoveolate, fulvous; elytra rather remotely punctured, fulvous, the apical margin black.

Length  $3\frac{1}{2}$ –4 lines.

Head impunctate, rather broad, the labrum, mandibles, and palpi black; antennæ not more than half the length of the body, the third joint twice the length of the second and equal to the fourth joint, the apical four joints fulvous, the others black, covered with yellow pubescence; thorax twice as broad as long, the surface nearly impunctate, with a small fovea on each side and a very indistinct one near the base; elytra strongly dilated posteriorly, broad, finely but not closely punctured, uniformly fulvous, shining, the extreme apical margin black; underside and legs black.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

#### 135. *Diabrotica dilatata*.

Broadly ovate, dilated, black; thorax transverse, obsoletely depressed on each side; elytra widened posteriorly, fulvous or testaceous, finely and closely punctured.

Length  $2\frac{1}{2}$  lines.

Head impunctate; the frontal elevations broadly trigonate, distinctly raised; clypeus with a distinct central ridge; antennæ about two thirds the length of the body, black, the intermediate joints slightly widened in the male, the third joint twice the length of the second but shorter than the fourth joint; thorax more than twice as broad as long, the sides very little rounded, the anterior angles somewhat thickened, the surface obsoletely depressed on each side and across the disc, impunctate; scutellum black; elytra convex and widened posteriorly, flavous or fulvous, their epipleuræ rather broad anteriorly; underside and the legs black; the posterior tibiæ with a very small spine; the first joint of the posterior tarsi as long as the following three joints together; claws fulvous, bifid.

*Hab.* MEXICO, Cordova, Teapa, Jalapa (*Höge*), Toxpam, Tuxtla (*Sallé*); GUATEMALA, Purula, Sabo, Senahu, San Juan in Vera Paz (*Champion*); COSTA RICA, Cache, Volcan de Irazu (*Rogers*); PANAMA, Volcan de Chiriqui, Peña Blanca (*Champion*).

The short, posteriorly dilated shape, the transverse thorax, and the slightly dilated antennæ in the male, scarcely agree with *Diabrotica*; nevertheless *D. dilatata* possesses all the essential characters of that genus, and may be recognized by its shape and coloration. Many specimens were obtained in Guatemala, two only in the State of Panama.



### 136. *Diabrotica uniformis*.

Broadly ovate, dilated, black; thorax transverse, obsoletely depressed, flavous; elytra finely punctured, testaceous or flavous.

Length 2 lines.

*Hab.* NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

It will not be necessary to give a detailed description of *D. uniformis*, as it agrees in everything, except as regards coloration, with *D. dilatata*. In shape it exactly resembles the last-named species; and the thorax also agrees in every particular, but is flavous instead of black. The large number of specimens (upwards of fifty) before me agreeing perfectly with one another, I am obliged to treat *D. uniformis* as a distinct species. With one exception, all the examples were obtained in the State of Panama; the insect, therefore, is of more southern distribution than *D. dilatata*. In some individuals the antennæ and legs are more or less stained with piceous or testaceous. *D. uniformis* is on the average smaller and less convex and dilated than the preceding species.

### 137. *Diabrotica corallina*. (Tab. XXXII. fig. 17.)

Black; thorax narrowly margined with fulvous, bifoveolate; elytra reddish-fulvous, closely punctured, and obsoletely rugose.

Length  $2\frac{1}{2}$  lines.

Head black; antennæ black, fulvous at the base, the third joint twice the length of the second, the fourth joint longer than the fifth; thorax twice as broad as long, the sides straight, narrowly margined with fulvous, the disc black, shining, with a few punctures, and a deep fovea on each side; scutellum black; elytra slightly widened towards the middle, narrowly margined, dark reddish-fulvous, closely punctured, the interstices slightly rugose on the anterior portion and nearly smooth towards the apex; underside and legs black.

*Hab.* MEXICO, Chiapas (*Sallé*). A single specimen.

Narrower and more parallel than the preceding species; the thorax black, narrowly margined with testaceous, and the elytra reddish in colour and closely punctured.

### 138. *Diabrotica luteola*.

Ovate, convex, widened posteriorly, black; head, antennæ (the apical joints excepted), femora, and thorax, pale fulvous; thorax without depressions; elytra fulvous, distinctly and subremotely punctured.

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

Head impunctate, entirely fulvous; antennæ scarcely half the length of the body, the apical three joints obscure fuscous, the rest fulvous, the third joint twice the length of the second; thorax nearly twice as broad as long, narrowed near the base, the surface impunctate, without depressions; scutellum fulvous; elytra rather strongly widened posteriorly, the apical portion deflexed, the sides narrowly margined, the surface not very closely but distinctly punctured; underside and the tibiæ and tarsi black, the femora fulvous.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

Only a single specimen, evidently a female, was obtained. *D. luteola* differs from *D. sobrina* in the colour of the antennæ and legs, and in the want of the thoracic impressions and the dark apical margin to the elytra.

h. *Elytra testaceous, with longitudinal black or blue stripes or posterior spots.*

139. **Diabrotica novem-maculata.**

*Diabrotica novem-maculata*, Jac. P. Z. S. 1878, p. 995<sup>1</sup>.

*Hab.* COSTA RICA<sup>1</sup>, Volcan de Irazu, Rio Sucio (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).

In the elytral design and general coloration *D. novem-maculata* closely resembles several species of the first section with short third joint to the antennæ, notably *D. fulvicornis* and *D. hybrida*. In *D. novem-maculata* the corresponding antennal joint is, however, nearly twice the length of the second; the elytral spots are thicker, the anterior sutural streak forming an elongate pointed triangle, and the outer spot below the middle, as well as the one placed at the shoulder, is elongate and of equal length.

140. **Diabrotica lateritia.** (Tab. XXXII. fig. 12.)

Flavous, the head, breast, and tibiæ black; thorax without depressions; elytra closely punctured, flavous, the suture, a discoidal and a lateral longitudinal stripe, and a spot at the shoulder, black.

Length 3 lines.

Head entirely black; the frontal tubercles very distinct; the vertex with a longitudinal groove; antennæ piceous, the basal three and the apical three joints fulvous; thorax subquadrate, slightly broader than long, the surface rather convex, without any traces of depressions, impunctate, flavous; scutellum black; elytra rather convex, very closely and distinctly punctured, a large subquadrate spot at the shoulder connected with the similarly-coloured narrow basal margin, a narrow lateral stripe from the middle to the apex, a shorter discoidal stripe, and the suture very narrowly, black.

*Hab.* GUATEMALA, Purula (*Champion*). A single specimen.

The short black stripe on the disc of each elytron commences in a line with the lateral stripe, but is only about half the length of the latter; the third joint of the antennæ is nearly three times as long as the second.

i. *Elytra metallic, unicolorous or margined with flavous.*

141. **Diabrotica flavifrons.** (Tab. XXXII. fig. 22.)

Black, the clypeus and the base of the femora flavous; thorax finely punctured, with two depressions; elytra metallic blue or purplish, closely punctured, the interstices obsoletely rugose.

Length 2 lines.

Of narrow elongate shape; the head bluish-black, opaque, with a narrow lightly-impressed central groove; the frontal tubercles and the clypeus flavous, the labrum black; antennæ slender, black, the third joint nearly three times as long as the second; thorax about one half broader than long, opaque, the surface finely and obsoletely punctured, black, with two closely approached depressions on the middle of the disc; scutellum black; elytra purplish-blue, finely and closely punctured, the interstices here and there obsoletely rugose; legs slender, the femora flavous at the base, the knees, tibiæ, and tarsi black.

*Hab.* MEXICO, Cordova (*Sallé*). A single specimen.

142. *Diabrotica lætabilis*.

*Diabrotica lætabilis*, Baly, Journ. Linn. Soc., Zool. xix. p. 257<sup>1</sup>.

Testaceous, the apical joints of the antennæ and the abdomen black; vertex of the head greenish-æneous; thorax bi-impressed, the sides with a black band; elytra metallic green, finely punctured, the sides with two costæ.

Length 1-1½ line.

Head impunctate, the vertex metallic green; the frontal tubercles strongly raised, trigonate, testaceous like the lower part of the face; labrum piceous; antennæ two thirds the length of the body, the basal joints more or less testaceous beneath, the others black, the third joint twice the length of the second; thorax transverse, distinctly narrowed at the base, the surface with two deep depressions, impunctate, the sides with a narrow longitudinal black or piceous band; scutellum broad, black; elytra metallic green, minutely granulate (when seen under a strong lens), finely but distinctly punctured towards the suture and much more deeply and strongly so at the sides, a slightly curved costa extending along the sides from the shoulder to below the middle, preceded within by a more indistinct one, the interspaces finely transversely rugose; legs testaceous, the abdomen black.

*Hab.* GUATEMALA, Cerro Zunil (*Champion*); PANAMA, Volcan de Chiriqui (*Champion*).—COLOMBIA<sup>1</sup>.

I have given a fresh description of *D. lætabilis*, as there are several closely allied species before me which are not easy to separate. The description given by the author<sup>1</sup> in regard to the shape of the thorax, 'more than half again as long as broad,' should read the reverse.

143. *Diabrotica mystica*.

Black, the base of the antennæ and the legs testaceous, the vertex metallic green, the lower part of the head and the thorax testaceous; thorax with two depressions; elytra metallic green, the base swollen, the disc minutely punctured, the sides with two short costæ, the disc with some stiff hairs.

Length 1½ line.

*Hab.* MEXICO, Cordova, Tuxtla (*Sallé*); GUATEMALA, Sinanja, Chiacam, Cubilguitz (*Champion*).

Closely allied to *D. lætabilis*, but differing in the following particulars:—The thorax is devoid of the lateral piceous bands, and the elytra are more distinctly raised at the base, the punctuation is finer (especially between the costæ) and much more scattered, and the interspaces are not transversely wrinkled. As all the specimens before me agree with each other in the above particulars, I have no doubt they represent a distinct species.

144. *Diabrotica semicærulea*.

Fulvous, the base of the head, the antennæ, tibiæ, tarsi, and abdomen piceous or black; thorax with two deep depressions; elytra dark blue, finely punctured, the sides with two curved costæ, the disc with some stiff hairs.

Length 1-1½ line.

*Hab.* GUATEMALA, Paraiso, San Isidro, Zapote (*Champion*).

This insect is closely allied to *D. mystica* and *D. lætabilis*. From the former it differs

in the want of the black thoracic bands, and in the elytra being dark blue (not bright metallic green) in colour; from the latter it is separated by the colour, by the flat (not raised) basal portion of the elytra, and by the interspaces of the latter not being transversely wrinkled. The base of the head in all the specimens is piceous, not metallic green. The localities for *D. semicærulea* are all upon the Pacific, those for *D. mystica* upon the Atlantic, slope; *D. lætabilis* is more widely distributed.

#### 145. *Diabrotica satellitia*.

Black; thorax testaceous, transversely impressed; elytra dark blue, finely punctured on the disc, more strongly so at the sides, the latter with a single straight costa from the shoulder to the middle, the basal portion flat.

*Var.* Thorax entirely black; femora testaceous at the base.

Length  $1\frac{1}{2}$ -2 lines.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

This species resembles *D. semicærulea* in coloration; but the head and antennæ are entirely black, the elytra have but a single straight (not curved) costa on each side, and the legs are black. These differences will be sufficient to distinguish *D. satellitia* from the three preceding species, from all of which it differs in its larger size and in the entirely black head and antennæ. Most of the specimens belong to the variety with an entirely black thorax, only two having the latter of a testaceous colour; as in the allied species, the surface of the thorax has two deep transverse depressions and is impunctate. The straight lateral costa of the elytra further separates the present insect from its congeners.

#### 146. *Diabrotica nitidula*.

Ovate, widened posteriorly, black; thorax impunctate, with transverse depressions; elytra metallic blue, the base slightly convex, the disc finely semipunctate-striate.

*Var.* The head and thorax fulvous.

Length  $1\frac{1}{2}$  line.

Head longer than broad, impunctate, the vertex minutely granulate; antennæ more than half the length of the body, rather robust, the third joint twice as long as the second; thorax twice as broad as long, the sides nearly straight, the surface extremely finely granulate, without punctures, transversely and rather strongly depressed on each side; scutellum black; elytra distinctly widened posteriorly, the base swollen and bounded by a distinct depression below, the punctuation fine and not very closely but rather regularly arranged in lines; the underside and legs black; the first joint of the posterior tarsi as long as the following three joints together.

*Hab.* GUATEMALA, Purula, Senahu (*Champion*); PANAMA, Volcan de Chiriqui (*Champion*).

Amongst the small species with metallic blue elytra *D. nitidula* may be known by the ovate and dilated general shape, and the raised basal portion of the elytra and their semipunctate-striate punctuation; the thorax is strongly transverse and distinctly transversely depressed. The variety was collected with the type at Purula; it does not differ in any way, except in the colour of the head and thorax.

147. *Diabrotica opacicollis*.

Black, the lower part of the head, thorax, and femora flavous; thorax finely punctured, with two impressions; elytra metallic green, very closely and distinctly punctured.

*Var.* Thorax blackish; elytra dark violet-blue.

Length 2-2½ lines.

Head æneous or greenish-black at the vertex, the lower part flavous; labrum black; antennæ black, the third joint twice as long as the second; thorax one half broader than long, the surface opaque, finely punctured, and impressed with two broad foveæ; scutellum piceous; elytra metallic green, very distinctly and closely punctured; underside of the thorax, the breast, and the femora, flavous; abdomen, tibiæ, and tarsi, black.

*Hab.* MEXICO, Toxpan, Cordova (*Sallé*).

The punctured and opaque thorax and the very closely and rather strongly punctured elytra separate this species from *D. latabilis*; the variety does not differ in any way, except in colour.

148. *Diabrotica lineato-punctata*.

Head, the intermediate joints of the antennæ, and the breast, black; thorax transverse, flavous, bifoveolate; elytra metallic blue, strongly semipunctate-striate; legs flavous.

*Var.* Antennæ with the basal joints black; underside entirely flavous.

Length 2½ lines.

Head impunctate, with a deep longitudinal fovea between the eyes; palpi flavous; antennæ black, the three basal and the three apical joints flavous, the third joint twice as long as the second; thorax more than twice as broad as long, flavous, impunctate, deeply bifoveolate; scutellum black; elytra rather broadly ovate, slightly dilated posteriorly, the base somewhat swollen, the punctuation strong and arranged in rather regular closely approached rows, but becoming finer and more irregular towards the apex; legs and abdomen flavous, the breast black.

*Hab.* MEXICO, Tuxtla (*Sallé*); GUATEMALA, Zapote (*Champion*). Three specimens.

Of rather convex and posteriorly dilated shape, and principally distinguished by the punctuation of the elytra being arranged in nearly regular rows. The variety was collected at Tuxtla.

149. *Diabrotica distinguenda*. (Tab. XXXII. fig. 5.)

Ovate, subdepressed, flavous, the antennæ piceous, the head rufous; thorax rufous, margined with flavous, deeply bifoveolate; elytra dark greenish, rugosely punctured, the lateral and apical margins flavous.

Length 3 lines.

Head not longer than broad, with the usual fovea on the vertex, impunctate, rufous; antennæ piceous, the basal joint fulvous, the third joint more than twice the length of the second; thorax transverse, more than twice as broad as long, the anterior angles slightly produced and thickened, the posterior angles somewhat distinctly pointed outwards, the disc impunctate, rufous, foveolate on each side, the anterior and posterior margins narrowly flavous; scutellum black; elytra rather flattened, closely rugose-punctate, greenish-black, margined at the sides and apices with flavous; tibiæ and tarsi and the upper edge of the femora black, the femora beneath and the underside flavous.

*Hab.* MEXICO (*Sallé*). A single specimen.

The colour of the thorax in connection with the rugosely-punctured elytra separates *D. distinguenda* from the preceding species.

150. *Diabrotica subænea*.

Flavous, the head æneous at the vertex; thorax finely granulate, depressed at the sides, the disc spotted with æneous; elytra bronze-coloured, closely punctured, and obsoletely rugose.

*Var.* Elytra testaceous, each with a longitudinal æneous discoidal band.

Length  $1\frac{1}{2}$ -2 lines.

Head finely granulate, with a few fine punctures, greenish-æneous at the vertex, testaceous at the lower portion; antennæ nearly as long as the body, obscure fulvous or fuscous, the basal joints more or less testaceous, the third joint more than twice the length of the second; thorax one half broader than long in the male, twice as broad in the female, the sides with a more or less distinct fovea, the surface finely granulate and punctured (more distinctly so in the female), testaceous, with a longitudinal central brownish or greenish-æneous band not quite extending to either margin; scutellum black; elytra slightly widened posteriorly, entirely bronze-coloured, closely punctured, the surface with some obscure and irregular depressions and here and there transversely wrinkled; legs and the underside testaceous.

*Hab.* COSTA RICA, Volcan de Irazu (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).

*D. subænea* differs from *D. mystica* and *D. semicærulea* principally in the thorax being finely granulate and with a central longitudinal band. Costa Rican specimens only differ from those from Chiriqui in the colour of the elytra; in the former the elytra may be described as greenish-æneous, margined with testaceous.

151. *Diabrotica smaragdina*. (Tab. XXXII. fig. 1.)

Black, the antennæ (the intermediate joints excepted), thorax, and legs flavous; elytra bright metallic green, with several deep impressions, the lateral and apical margins and the shoulders flavous.

Length  $2-2\frac{1}{2}$  lines.

Head black, impunctate; antennæ long and slender, flavous, joints 6-8 black, the third joint twice as long as the second; thorax narrowly transverse, more than twice as broad as long, the disc deeply transversely depressed; scutellum black; elytra with a deep depression below the base and another (divided by a short longitudinal costa) behind the middle, the disc finely and irregularly punctured, the apices impunctate, the surface of a bright emerald-green colour and very shining, the lateral margins narrowly and the apices more broadly flavous, the flavous colour interrupted towards the base by a short green streak extending upwards from the sides; underside black, the legs flavous.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

*D. smaragdina* may be known by the bright metallic green colour of the elytra, and by the deep depressions on the latter being distinctly visible to the naked eye; it is a species of narrow and parallel shape.

152. *Diabrotica gemmula*. (Tab. XXXII. fig. 7.)

Ovate, convex, strongly dilated, metallic green; head and thorax fulvous, the latter bi-impressed; elytra closely punctured, with two impressions, metallic green; antennæ and legs flavous.

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

Head impunctate; antennæ more than half the length of the body, entirely flavous, the third joint twice the length of the second; thorax about one half broader than long, impunctate, reddish-fulvous, the disc with a transverse depression on each side, the sides straight at the base, rounded in front; scutellum fulvous; elytra strongly dilated and convex, greatly deflexed at the posterior portion, with a depression below the base and another at the sides below the shoulders, very closely and distinctly punctured, dark metallic green; underside dark metallic green, the legs flavous.

*Hab.* COSTA RICA (*Van Patten*).

A species of very robust and dilated shape; the specimens before me are evidently all females.

153. ***Diabrotica semipurpurea*.**

Ovate, slightly widened, black; head and thorax testaceous, the latter deeply transversely grooved; elytra purplish-blue, finely punctured; legs fulvous or piceous.

Length  $2\frac{1}{2}$  lines.

Head rather deeply foveolate at the vertex, impunctate, fulvous; the frontal tubercles small but distinct; antennæ black, two thirds the length of the body, the third joint twice the length of the second; thorax transverse, rather more than twice as broad as long, the disc with a deep transverse groove (slightly interrupted in the middle) on each side; scutellum fulvous or piceous; elytra slightly widened posteriorly, finely and rather closely punctured, metallic purplish-blue; breast and abdomen black, the legs fulvous or piceous.

*Hab.* GUATEMALA, Las Mercedes, Zapote (*Champion*).

Several examples. The peculiar tint of the elytra can only be compared to the bloom on a fresh plum or blue grape, and as it is present in all the specimens I have no doubt that this colour is the normal one.

154. ***Diabrotica nigriceps*.** (Tab. XXXI. fig. 18.)

*Diabrotica nigriceps*, Baly, Ann. & Mag. Nat. Hist. 5th ser. iii. p. 75 (1879)<sup>1</sup>.

*Hab.* ? GUATEMALA<sup>1</sup>; PANAMA, Bugaba, Volcan de Chiriqui, David, Caldera, Tolé (*Champion*).

This handsome species is of a reddish-purple colour (with the exception of the extreme apices of the elytra, which are flavous) when fresh; it is also distinguished by the transverse depressions of the elytra, one of these depressions being placed below the base, the other below the middle, and the latter bounded laterally by a strongly developed and curved elevated ridge which extends upwards to the humeral callus. A very large number of specimens were obtained by Mr. Champion in various parts of the State of Panama; the insect is found in the virgin forest. This is one of several species described by Mr. Baly of which the locality seems very doubtful; we have not found *D. nigriceps* in any of the very large collections sent to us from Guatemala. An example from the Volcan de Chiriqui is figured.

j. *Elytra flavous, with longitudinal metallic bands.*

155. ***Diabrotica marginella*.** (Tab. XXXI. fig. 12.)

*Diabrotica marginella*, Jac. P. Z. S. 1879, p. 789<sup>1</sup>.

*Hab.* COSTA RICA (*Van Patten*), Volcan de Irazu, Rio Sucio (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).

The metallic green bands of the elytra occupy in some specimens almost the entire disc, leaving only the sutural and lateral margins together with the apices whitish-testaceous; the two black thoracic spots are constant in the numerous specimens before me.

A common insect on the slope of the Volcan de Chiriqui, and found chiefly on the margins of the forest at an elevation of about 3000 feet; a Chiriqui specimen is figured.

k. *Elytra green, the apices sometimes flavous.*

156. **Diabrotica curtisi.** (Tab. XXXI. fig. 10.)

*Diabrotica curtisii*, Baly, Trans. Ent. Soc. Lond. 1886, p. 449<sup>1</sup>.

*Hab.* MEXICO<sup>1</sup>, Cordova (*Sallé*), Jalapa (*Höge*).

In the males before me the head is only black at the vertex, the entire lower portion being flavous; in the female it is entirely black. The female is devoid of the subapical elytral tubercle and excavation.

157. **Diabrotica longitarsis.** (Tab. XXXI. fig. 11.)

Flavous, the head black; thorax trifoveolate, flavous; elytra rugose, black, each with seven or eight longitudinal costæ.

*Var.* Elytra with the lateral margin narrowly flavous.

Length 2½–3 lines.

Head impunctate, deeply foveolate between the antennæ, very shining, black; clypeus with a distinct central ridge, its lower portion opaque and rugose; antennæ flavous, the sixth, seventh, and eighth joints, and also the apical one, more or less fuscous, the third joint twice the length of the second, the terminal joints thickened and much stouter in the male than in the female; thorax very short and transverse, more than twice as broad as long, the sides rather strongly narrowed at the base, the disc impunctate, flavous, very shining, with a small basal and two larger central foveæ; scutellum black; elytra closely rugose, each with seven or eight narrow longitudinal costæ commencing at the base but not quite extending to the apex, the male with a longitudinal subsutural tubercle near the apex; underside and legs flavous; the first joint of the posterior tarsi longer than the following three joints together.

*Hab.* GUATEMALA, San Isidro, Zapote, Cahabon (*Champion*).

Closely allied to the preceding species, and also to *D. coryphæa*, Baly, and *D. viridipennis*, Jac. From *D. curtisi* it is separated by the elytra being black and differently sculptured in the male; from *D. coryphæa* by the entirely flavous colour of the under-surface and the much longer first joint of the posterior tarsi, and also by the tubercle near the apex of the elytra in the male. *D. viridipennis* has green elytra and the first joint of the posterior tarsi shorter. *D. flavo-limbata*, Erichs. (= *D. balyi*, Jac.), may be known from *D. longitarsis* by the black thorax and the less numerous elytral costæ. The single specimen of the variety before me only differs from the type in having the elytral margin flavous. An example from San Isidro is figured.



1. *Elytra fulvous or testaceous, with lateral or apical piceous markings.*

158. **Diabrotica fusco-marginata.** (Tab. XXXI. fig. 19.)

*Diabrotica fusco-marginata*, Jac. P. Z. S. 1878, p. 149<sup>1</sup>.

*Hab.* COSTA RICA<sup>1</sup>, Rio Sucio, Volcan de Irazu (*Rogers*).

Easily known by the thorax being piceous, margined with testaceous, and the elytra dark fulvous, with a lateral longitudinal piceous stripe.

159. **Diabrotica waterhousei.** (Tab. XXX. fig. 24.)

*Diabrotica waterhousei*, Jac. P. Z. S. 1878, p. 993<sup>1</sup>.

*Hab.* COSTA RICA, Cache<sup>1</sup> (*Rogers*).

The elytra are testaceous, with a distinct narrow black basal margin and a broader piceous band (sometimes indistinct) at the apex. In general shape and colour this insect greatly resembles certain varieties of *Cerotoma denticornis*, Oliv., from which the open anterior coxal cavities distinguish it.

160. **Diabrotica maculata.** (Tab. XXXII. fig. 11.)

Head and the breast black; thorax rufous, trifoveolate, finely punctured; elytra fulvous, a broad lateral stripe, the suture (widened at and beyond the middle), and a spot below the centre of each, black; abdomen and the femora fulvous.

Length 4 lines.

Head black, impunctate; palpi flavous; antennæ black, the basal joint piceous, the ninth joint flavous (the rest broken off), the third joint twice as long as the second; thorax twice as broad as long, dark reddish, shining, the disc remotely and finely punctured and with three small foveæ placed triangularly; scutellum rufous; elytra widened towards the middle, strongly but not very closely punctured, flavous, opaque, the suture narrowly black, the black widening below the base into an oblique spot extending upwards and below the middle into a lozenge-shaped mark, a broad black band of irregular shape extending from the shoulder to beyond the middle, and a small spot below the middle between this band and the suture; tibiae and tarsi piceous.

*Hab.* COSTA RICA (*Van Patten*). A single specimen.

The following species belonging to Sect. 2 have been accidentally omitted:—

161. **Diabrotica nigropicta.**

Testaceous, the antennæ, tibiae, and tarsi black; thorax deeply bifoveolate; elytra strongly semipunctate-striate, the sides with two costæ, a spot at the shoulder, another below the middle, and a sutural spot below the base, black.

Length 2 lines.

Head impunctate, the extreme base black, the rest pale fulvous; antennæ two thirds the length of the body, black, the basal and the apical two joints fulvous below, the third joint twice as long as the second; thorax twice as broad as long, impunctate, the disc with two deep oblique depressions; scutellum black; elytra flavous, the sides with two slightly curved costæ from the shoulder to the middle, the rest of the

surface distinctly and semiregularly punctured, each with a black spot at the shoulder, a slightly larger one below the middle, and another spot common to both placed at the suture below the scutellum; underside and legs testaceous, the tibiæ and tarsi black.

*Hab.* NICARAGUA, Chontales (*Janson*).

A single example. *D. nigropicta* should follow *D. figurata* in the arrangement here adopted; it is distinguished from its allies by the five elytral spots and their position.

### 162. *Diabrotica complicata*.

Ovate, subdepressed, black below; head and antennæ obscure piceous; thorax testaceous, bi-impressed; elytra very finely punctured, testaceous, a broad longitudinal band of irregular shape from the base to the middle, and a broad transverse band near the apex, black; legs fulvous, spotted with black.

*Var.* The anterior band of the elytra reduced to a spot.

Length 2-2½ lines.

Head black at the vertex, the sides of the clypeus more or less testaceous; antennæ half the length of the body, obscure fulvous or pale piceous, the third joint twice as long as the second; thorax transverse, impunctate, the disc with two foveæ; scutellum piceous, its apex broadly rounded; elytra depressed, rather widened posteriorly, very minutely and not closely punctured, the posterior portion nearly impunctate, testaceous, with a broad longitudinal black band (narrowed at its middle and irregularly shaped) extending from the base to the middle of the disc and followed at a short distance by a broader and more regular transverse band not quite extending to the lateral margin; the femora have a piceous spot at the middle, and the tibiæ a spot at the base, the latter also being stained with piceous to a greater extent near their apex.

*Hab.* MEXICO, Jalapa (*Höge*).

Allied to *D. figurata* and *D. dorso-signata*, but differing in the pattern of the elytra and other particulars; the anterior elytral spot is very variable in shape and size and occupies in some specimens the greater part of the disc.

### 163. *Diabrotica apicalis*.

*Diabrotica apicalis*, Baly, Trans. Ent. Soc. Lond. 1886, p. 444<sup>1</sup>.

*Hab.* GUATEMALA<sup>1</sup>.

### 164. *Diabrotica nigrocincta*.

*Diabrotica nigrocincta*, Baly, Trans. Ent. Soc. Lond. 1886, p. 451<sup>1</sup>.

*Hab.* MEXICO, Teapa (*Pilate*<sup>1</sup>).

In speaking of the antennæ, Mr. Baly describes the second joint as "more than half the length of the third": this is evidently a mistake and should be reversed, as the third joint is never shorter than the second in *Diabrotica*.

## MICROBROTICA.

Body oblong; antennæ slender, filiform, the first joint elongate and the longest, the second not very short; thorax not broader than long, strongly narrowed at the base; elytral epipleuræ continued below the middle; tibiæ unarmed; the first joint of the posterior tarsi as long as the following two joints together; claws bifid; the anterior coxal cavities open.

*Microbrotica* is principally distinguished from *Diabrotica*, which it resembles in

general shape, by the unusually long basal joint of the antennæ, and the long and strongly narrowed thorax; moreover, the tibiæ do not appear to be armed with a spine at the apex as in *Diabrotica*. Although there is only a single specimen before me, the characters pointed out are so different from those of the other known forms inhabiting our region that I have no hesitation in establishing a genus for its reception.

1. ***Microbrotica subglabrata***. (Tab. XXXIII. fig. 25.)

Testaceous, the antennæ (the first joint excepted), the intermediate and posterior tibiæ and tarsi black; thorax impunctate; elytra scarcely visibly punctured, the sides obsolete costate below the shoulders.

Length  $1\frac{1}{2}$  line.

Head rather broader than long, impunctate; the eyes prominent and rounded; the frontal tubercles distinct, trigonate; the clypeus broad, triangular, its apex extending upwards between the antennæ, its anterior margin slightly concave; antennæ as long as the body, the basal joint testaceous, its apex black, the third joint one half longer than the second, the apical two joints obscure fulvous, the rest black; thorax long, the sides greatly narrowed at the base, the anterior and posterior margins straight, the surface with two shallow discoidal depressions (visible only in certain lights), rather strongly deflexed at the sides, entirely impunctate; scutellum triangular; elytra with a few minute punctures (only visible under a strong lens), testaceous and shining like the rest of the surface, the sides from the shoulders to below the middle with a single ridge; the underside and legs testaceous, the anterior tibiæ with a piceous upper edge, the other tibiæ black.

*Hab.* PANAMA, David in Chiriqui (*Champion*).

A single specimen.

PHÆSTUS.

Elongate; head broad, not constricted behind; eyes small; antennæ filiform, the terminal joints thin, the third joint about three times longer than the second; thorax transverse, the sides straight, the surface transversely sulcate; elytra very finely rugose, their epipleuræ almost obsolete; tibiæ unarmed; the first joint of the posterior tarsi as long as the following two joints together; claws bifid; anterior coxal cavities open.

The curious insect for which I propose this new genus is distinguished by the head being broad and not constricted posteriorly, the thorax transversely sulcate, and the elytral epipleuræ almost obsolete; it somewhat resembles in general appearance the genus *Dircema*. The epipleuræ of the elytra are entirely absent from the basal portion, and extremely narrow from the middle downwards. The distinctly bifid claws separate *Phæstus* from *Phyllobrotica*. In the slightly sulcate tibiæ and general appearance the genus approaches *Cœlomera*; for the present, however, I prefer to place it near *Microbrotica*.

1. ***Phæstus chiriquensis***. (Tab. XXXIII. fig. 1.)

Testaceous, the antennæ and the legs black; thorax impunctate; elytra bluish-black, very finely rugose throughout.

Length  $3-3\frac{1}{2}$  lines.

Head with a fine central longitudinal groove, the vertex swollen; the frontal tubercles trigonate and distinct; clypeus narrowly transverse, swollen; labrum and palpi piceous; antennæ two thirds the length of the

body, tapering towards the apex, the third and following joints nearly equal in length; thorax about two and a half times broader than long, the sides straight, the angles obtuse, the disc transversely depressed at the middle, shining, testaceous, not visibly punctured; scutellum broad, nearly subquadrate, its apex broadly truncate; elytra very dark bluish-black, opaque, extremely finely rugose.

*Hab.* PANAMA, Volcan de Chiriqui (*Champion*).

\*\*\* *Tibiæ mucronate; claws bifid.*

### TRIARIUS.

Body elongate; antennæ filiform, the second and third joints short and nearly equal; thorax transversely subquadrate, without depression; elytra irregularly punctured, their epipleuræ very narrow and visible at the base only; tibiæ armed with a spine; the first joint of the posterior tarsi as long as the following two joints together; claws bifid, the inner division rather short; anterior coxal cavities open.

The almost invisible elytral epipleuræ place *Triarius* near *Phyllobrotica* and *Phyllechthrus*, from both of which the armed tibiæ and bifid claws separate it. The spine at the apex of the posterior tibiæ is long and very distinct.

I place a single species from Northern Mexico in this genus.

#### 1. *Triarius mexicanus*.

Testaceous, the head, the basal three joints of the antennæ, the thorax, and legs fulvous; elytra scarcely visibly punctured, testaceous; breast black.

Length 2-3 lines.

Head not visibly punctured; the frontal tubercles transversely trigonate; clypeus narrowly transverse; antennæ black, the first three joints fulvous, the third joint scarcely longer than the second; thorax transverse, about one half broader than long, narrowed towards the base, the sides nearly straight, the surface not visibly punctured; scutellum black or piceous; elytra extremely finely and closely punctured, the rest of the surface (when seen under a very strong lens) very finely granulate and slightly rugose; legs robust; all the tibiæ armed with a spine, the spine long and very distinct on the posterior pair; the last abdominal segment in the male truncate in the middle, deeply sinuate at the sides.

*Hab.* MEXICO, Northern Sonora (*Morrison*).

\*\*\*\* *Tibiæ mucronate; claws appendiculate.*

### NEOBROTICA.

Body elongate; antennæ filiform, the third joint generally long and slender; thorax subquadrate, more or less deeply transversely sulcate, the sulcation not extending to the sides; legs slender; tibiæ mucronate; the first joint of the posterior tarsi as long as the following three joints together; claws appendiculate; the anterior coxal cavities open.

*Neobrotica* has entirely the appearance, and in many instances the elytral pattern, of *Diabrotica*. It might be easily mistaken for that genus, unless the claws are examined, these being appendiculate in *Neobrotica* (instead of bifid as in *Diabrotica*); with this character a deeply sulcate thorax is generally combined. Several species described here offer a striking instance of so-called "mimicry" in regard to the colour and markings of the elytra (and indeed of the antennæ also), and in this respect agree in every particular with some forms of *Diabrotica*. As I have in several cases both sexes

before me, there can be no question of sexual differences in regard to the structure of the claws, &c. The genus will no doubt include some species at present referred to *Diabrotica* and *Cerotoma*.

### 1. *Neobrotica variabilis*.

Flavous, the head, the intermediate joints of the antennæ, and the breast black; elytra very closely punctured, a subquadrate mark at the base, and a slightly curved transverse band below the middle black.

*Var.* The basal mark of the elytra separated into spots, the tibiæ and tarsi flavous.

Length 3 lines.

Head black, impunctate; the clypeus with an acute central ridge; antennæ half the length of the body, the basal four and the terminal joints flavous, the other joints black or fuscous, the extreme apex of the last joint black; thorax one half broader than long, flavous, impunctate, deeply transversely sulcate; scutellum piceous or black; elytra extremely closely and distinctly punctured, a subquadrate mark at the base (the interior of which remains of the ground-colour) extending to near the middle, and a narrow transverse band (in one specimen semilunate in shape) below the middle, black.

*Hab.* MEXICO, Jalapa (*Höge*).

*N. variabilis* resembles some species of *Diabrotica* (*D. adelpha*, *D. annularis*, &c.). In one specimen the posterior band of the elytra is thicker and of a semilunate shape, in the other it is more transverse; the first named has the anterior portion of the basal mark broken up into three spots (two humeral and one scutellar), and its posterior portion into four transversely placed spots (two on each elytron); other differences I cannot find.

### 2. *Neobrotica ornata*.

Flavous, the head and the breast black; thorax impunctate, deeply transversely sulcate; elytra finely punctured, a ring-shaped mark at the base, and another near the apex of each, dark blue.

*Var.* The elytral markings connected at the sides; the tibiæ and tarsi fuscous.

Length 2-3 lines.

Head entirely black, or with the lower portion obscure fulvous; antennæ flavous, the intermediate joints slightly darker, the third joint twice (in one specimen nearly three times) as long as the second; thorax deeply transversely sulcate, impunctate, flavous; elytra finely but not very closely punctured, with slight traces of longitudinal sulcations, each with a blue ring at the base, and another near the apex; legs and the underside flavous, the breast black; the anterior tibiæ and the first joint of the anterior tarsi dilated in the male.

*Hab.* MEXICO, Tuxtla, Teapa (*Sallé*), Cordova, Tapachula in Chiapas (*Höge*).

*N. ornata* exactly resembles in the general colour and pattern of the elytra *Diabrotica biannularis* and several allied species, from which the deep sinuate groove of the thorax and the appendiculate claws distinguish it. The head is generally piceous or black, but sometimes the vertex is of that colour only; the antennæ in some specimens have the intermediate joints darkened, in others they are entirely flavous. The elytra are very finely granulate (when seen under a strong lens), and the second ring-shaped mark is sometimes open behind. In a single example from Teapa the elytral blue rings are connected at the sides by a longitudinal stripe, and the tibiæ are piceous as well as the intermediate joints of the antennæ; but as I am unable to

detect any other mark of distinction, I treat this specimen as a variety of the present species. *N. ornata* seems to vary in one or more respects in series of specimens obtained at the same localities. The dilated anterior tibiæ and tarsi in the male insect is another distinctive character of this species.

### 3. *Neobrotica punctatissima*.

Flavous, the base of the head black, the lower part of the head, the antennæ, and the thorax fulvous, the latter bifoveolate; elytra closely and strongly punctured, a ring-shaped mark at the base, and another below the middle, open behind, dark blue.

Length 2-3 lines.

*Hab.* MEXICO, Acapulco (*Höge*).

In this species the thorax, instead of having a deep transverse groove as usual in *Neobrotica*, has two deep round foveæ at the sides, these foveæ, when seen in certain lights, assuming an oblique shape. *N. punctatissima* resembles in general coloration and elytral pattern *N. ornata*, but differs in the thoracic impressions and the very closely and deeply punctured elytra; the blue ring at the base of the latter is larger than in *N. ornata*, and its posterior edge is straight; and the blue mark below the middle is lunate in shape, and open behind.

### 4. *Neobrotica imitans*.

Fulvous, the head and breast black; thorax deeply sulcate; elytra very closely and distinctly punctured, fulvous, two elongate spots at the base, two others below the middle, and the suture below the scutellum, black.

Length  $2\frac{1}{2}$ -3 lines.

*Hab.* COSTA RICA (*Van Patten*).

*N. imitans* almost exactly resembles *Diabrotica 9-maculata*, Jac., and several other closely allied species, in the pattern of the elytra. The elytra may almost be described as "rugosely punctured;" of the spots or short stripes, the longest is placed at the shoulder; the other stripes are— a short one near the suture below the base, another below the scutellum at the sutural margin, and two others near the apex, of which the slightly curved outer one is the longest. The thorax is transverse, with the usual deep sulcation.

### 5. *Neobrotica cæruleo-lineata*.

Testaceous; thorax deeply transversely grooved; elytra closely punctured, obsoletely longitudinally sulcate, a longitudinal stripe at the shoulder, another near the apex, two small spots on the disc, and the suture anteriorly, metallic blue.

*Var.* The intermediate joints of the antennæ, the vertex, the breast, and the tibiæ more or less piceous.

Length 3- $3\frac{1}{2}$  lines.

*Hab.* MEXICO, Tepansacualco (*Sallé*), Teapa, Tapachula (*Höge*); GUATEMALA, San Isidro (*Champion*).

*N. cæruleo-lineata* resembles *Diabrotica fulvicornis*, Jac., and several other closely

allied species. The head generally has the vertex, as well as the labrum, piceous; the antennæ have the third and fourth joints of equal length; and the thorax is impunctate. The elytra are closely and finely punctured, and have traces of longitudinal sulcations; the blue spots and lines vary slightly, and the short sutural anterior stripe is sometimes only indicated, while the line at the shoulder is, in one instance, broken up into two spots; the two subsutural spots are placed in a line before and below the middle. From *N. imitans* the present insect is distinguished by the finely punctured (not semi-rugose) elytra; the markings are more slender, the outer ones being still more elongate and of a lighter blue colour; the interstices between the punctures are obsoletely sulcate, which is not the case in *N. imitans*.

### 6. *Neobrotica linigera*.

Pale fulvous or testaceous, the head and breast black; thorax bifoveolate; elytra closely punctured, testaceous, a short curved stripe at the shoulder, another near the suture at the base, and two short narrow streaks, placed transversely below the middle, bluish-black.

Length 3-4 lines.

Head impunctate, black; antennæ fulvous, the third joint nearly three times the length of the second and as long as the fourth joint; thorax one half broader than long, impunctate, with a deep fovea on each side; elytra finely and closely punctured, the punctuation arranged somewhat in lines, the two longitudinal stripes at the base abbreviated before the middle, of curved shape, and forming the sides of a ring which is open above and below, the spots below the middle shorter (but as slender as the others), the outer one placed slightly lower than the spot near the suture.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

This species also is closely allied to *N. cæruleo-lineata* and *N. imitans*, but differing from both in the absence of the sutural anterior stripe and in the shape of the elytral markings, of which those placed anteriorly are curved and inclined to each other, although open at both ends; the spots placed below the middle are, on the contrary, nearly straight; the punctures of the elytra are arranged in close and semiregular lines.

Ten specimens.

### 7. *Neobrotica semicostata*. (Tab. XXXIII. fig. 15.)

Testaceous; head and thorax impunctate; elytra strongly and closely semipunctate-striate, the interstices longitudinally costate, the disc obscure greenish.

Length 3 lines.

*Hab.* MEXICO, Panistlahuaca (*Sallé*).

The single specimen contained in the Sallé collection is of a uniformly pale testaceous colour, the disc of the elytra alone being slightly stained with greenish. In this species the elytra are finely and closely costate throughout, the punctuation of the interspaces being strong, deep, and simple, frequently geminate. Except in the elytral sculpture, *N. semicostata* does not differ from its allies.

### 8. *Neobrotica oberthüri*.

*Diabrotica oberthüri*, Baly, Trans. Ent. Soc. Lond. 1886, p. 452<sup>1</sup>.

*Hab.* GUATEMALA<sup>1</sup>, Capetillo (*Champion*); COSTA RICA (*coll. Jacoby*).

*N. oberthüri* so closely resembles *Diabrotica nigro-lineata*, Jac., in the elytral pattern and general coloration that I at first mistook it for, and indeed (*ante*, p. 523) quoted it as a synonym of, that species. I have since discovered, accidentally, and in this I am confirmed by Mr. Baly, that *D. oberthüri* must be placed in *Neobrotica*, on account of the different structure of the antennæ (in which the third and fourth joints are equal), the deep transverse groove of the thorax, and the appendiculate claws. The discoidal subsutural stripe on each elytron is sometimes interrupted in the middle.

### 9. *Neobrotica pallescens*.

Ovate, dilated, pale fulvous or testaceous, the head, the intermediate joints of the antennæ, and the tibiæ and tarsi black; thorax transversely grooved; elytra finely punctured, with traces of longitudinal costæ.

Length  $2\frac{1}{2}$  lines.

Head entirely black; antennæ half the length of the body, the first two and the last three joints testaceous, the apex of the terminal joint black, the third joint more than double the length of the second; thorax twice as broad as long, the disc with a deep transverse depression not extending to the sides, impunctate, of a more reddish tint than the elytra; elytra widened posteriorly, closely punctured, the interstices obsoletely longitudinally costate and slightly transversely wrinkled; tibiæ and tarsi black.

*Hab.* BRITISH HONDURAS, R. Hondo (*Blancaneaux*).

The entire absence of any elytral markings together with the colour of the antennæ and tibiæ distinguish *N. pallescens*.

### 10. *Neobrotica cæruleo-fasciata*.

Elongate, subparallel, pale fulvous, the head and breast black; thorax deeply transversely grooved; elytra finely punctured, a transverse band at the base, and a narrower spot or band below the middle metallic blue.

♂?. Elytra with narrow longitudinal costæ.

Length  $2\frac{1}{2}$ – $3\frac{1}{2}$  lines.

Head impunctate, black; eyes large; antennæ pale fulvous, the intermediate joints slightly darker, the third joint double the length of the second; thorax one half broader than long, impunctate, the disc with a deep transverse depression not extending to the sides; scutellum black; elytra very closely punctured, fulvous, the basal transverse band of regular shape and occupying the first third of the entire length, the second band slightly curved (not quite touching the sutural or lateral margins and placed below the middle), both of a dark blue or greenish colour.

*Hab.* PANAMA, Bugaba, Volcan de Chiriqui, Caldera, Tolé (*Champion*).

*N. cæruleo-fasciata* closely resembles *Diabrotica godmani* in the colour and pattern of the elytra, but differs greatly in the long third joint of the antennæ and the deep transverse thoracic groove. I am, however, unable to say with certainty whether all the specimens before me must be regarded as one and the same species, as in some examples the posterior elytral band is represented by a large oval spot (as seen in *Diabrotica pulchella*); in another specimen the band at the base of the elytra includes



a small flavous spot. In the individual which I doubtfully treat as the female (but which may possibly represent another species) the elytra have a number of closely approached narrow longitudinal costæ, while the head differs in the smaller and more widely separated eyes, the lower portion of the latter being also much broader and more produced than in the male insect. In all these forms the antennæ and thorax are of similar structure, and it therefore seems better to treat them as representing one and the same species.

### 11. *Neobrotica vittatipennis*. (Tab. XXXIII. fig. 13.)

Black, the head, antennæ, thorax, and legs flavous; elytra semirugose-punctate, flavous, a subsutural vitta, divided anteriorly, a lateral broader longitudinal band near the margin, and a subapical small sutural spot, black; the femora with a black streak above.

Length 3 lines.

Head impunctate, without distinct frontal tubercles, the vertex with a central groove; antennæ scarcely half the length of the body, the second joint small, the third and following joints slender and elongate; thorax two and a half times broader than long, impunctate, the disc with a deep transverse groove; elytra rugosely punctured, the punctuation near the suture somewhat arranged in rows; legs elongate, the metatarsus of the posterior tibiæ as long as the following three joints together; claws appendiculate.

*Hab.* MEXICO, Juquila (*Sallé*).

A single specimen. This species may be recognized by the subsutural black band of the elytra being interrupted anteriorly; the subsutural band, as well as the sub-lateral one, which is gradually widened posteriorly, does not extend to the base nor to the apex of the elytra. The legs are rather slender and elongate.

### 12. *Neobrotica inconspicua*.

Pale testaceous, the lower joints of the antennæ, the tibiæ, and the breast piceous; thorax deeply grooved, impunctate; elytra closely and distinctly punctured, with traces of longitudinal costæ.

Length 4 lines.

*Hab.* MEXICO, Cerro de Plumas (*Höge*).

A rather large species, distinguished by its uniform pale testaceous colour, and the closely punctured and obsoletely costate elytra. The five lower joints of the antennæ are piceous; the other joints are broken off. *N. inconspicua* cannot be mistaken for *N. semicostata*, the latter having deeply and rugosely punctured elytra with very closely costate interspaces. In the present insect the elytra have very faint indications of two transverse bands, one before and another below the middle; but whether this is accidental or indicative of bands in more plainly marked specimens I am unable to say, as only one example is before me.

### 13. *Neobrotica quadriplagiata*.

Fulvous, the base of the head, the intermediate joints of the antennæ, and the tibiæ and tarsi black; thorax deeply grooved, impunctate; elytra very distinctly but not very closely punctured, the interstices subrugose,

the surface violaceous-black, a round spot at the base, and another at the apex connected with the lateral margin, flavous.

Length 2 lines.

*Hab.* GUATEMALA, San Gerónimo (*Champion*).

The antennæ have the first four and the last three joints fulvous; the apical spots on the elytra are connected with the narrow flavous lateral margin at the apex, but separated at the sides by the narrowly protruding point of the ground-colour; the breast is black at the sides only. A single specimen.

#### 14. *Neobrotica hondurensis*. (Tab. XXX. fig. 22.)

Fulvous, the head, the intermediate joints of the antennæ, and the tibiæ and tarsi black; thorax deeply transversely grooved; elytra testaceous, a narrow transverse band at the base, a broader one at the middle, and a semicircular mark at the apex of each, bluish-black.

Length 2-2½ lines.

Head black, impunctate; antennæ black, the basal two and the apical three joints fulvous, the third joint double the length of the second; thorax nearly twice as broad as long, the disc with a deep sinuate transverse groove, impunctate; scutellum flavous; elytra closely punctured, with some very obsolete longitudinal depressions at the sides, testaceous, a narrow transverse band at the base, strongly dentate at its posterior margin, another but broader band at the middle, and a ring-shaped mark near the apex, open behind, bluish-black; tibiæ and tarsi black.

*Hab.* BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA, Cubilguitz (*Champion*).

The three examples before me differ somewhat in regard to the elytral markings, these being of a bluish colour in one and black in another specimen; in the latter the second transverse band is narrower, the punctuation of the elytra is a little stronger, and the breast is black; in the third specimen (from Guatemala) the posterior dark elytral band is almost entire and only slightly notched at the apex, indicating the ring-shaped mark of the typical form.

#### 15. *Neobrotica simulans*.

Pale fulvous, the head and breast piceous; thorax impunctate; elytra finely and closely semipunctate-striate, a narrow transverse band at the base, a broader one at the middle, and a ring-shaped mark near the apex of each, dark blue.

Length 2 lines.

*Hab.* GUATEMALA, Chacoj in Vera Paz (*Champion*).

*N. simulans*, of which I have only a single specimen for examination, is almost identical in the design of its elytra with the preceding species, but differs from it as follows: the margins of the elytral bands are more regular, not dentate; the second band, which is separated from the first by a very narrow space, is narrowed and rounded at the suture (in *N. hondurensis* the corresponding band is narrowed at the sides); the ring-shaped marks near the apex are closed and meet at the suture; and the legs are entirely fulvous. The elytra show traces of longitudinal depressions; the intermediate

joints of the antennæ are obscure piceous, the other joints fulvous. In other respects the species agrees with *N. hondurensis*.

### 16. *Neobrotica sex-maculata*.

Testaceous, the intermediate joints of the antennæ piceous; thorax transverse, deeply sulcate; elytra strongly costate, the interstices deeply punctured, two spots at the base, two at, and two others below the middle, dark violaceous.

Length 3 lines.

Head testaceous, impunctate; antennæ piceous, the basal two joints beneath and the ninth joint testaceous (the apical ones wanting); thorax twice as broad as long, impunctate, with the usual deep sulcation; elytra each with about ten longitudinal costæ, the interstices deeply, often geminate, punctate, a spot at the shoulder, a smaller one near the scutellum, two spots near the middle, and two others, transversely and somewhat obliquely placed, dark violaceous; the underside and the femora testaceous, the tibiæ and tarsi piceous.

*Hab.* MEXICO, Tlatingo (*Sallé*). A single specimen.

### 17. *Neobrotica denticornis*. (Tab. XXXIII. fig. 11, ♂.)

Testaceous, the antennæ, tibiæ, and tarsi obscure piceous; thorax transverse, deeply sulcate; elytra geminate-punctate-striate, the interstices narrowly longitudinally costate, a transverse band at the base, another one at the middle, and a semilunate mark at the apex of each, dark violaceous.

♂. The third and fourth joints of the antennæ swollen, deeply emarginate on their upper edge.

Length 2 lines.

*Hab.* GUATEMALA, Cubilguitz, Paso Antonio (*Champion*); NICARAGUA, Chontales (*Janson*).

Smaller than *N. sex-maculata*; the costæ of the elytra less distinctly raised; the spots replaced by broad and deeply coloured bands—in one specimen they extend to the suture (which is likewise dark violaceous), and in another the band at the base is separated into two spots. The antennæ in the female are simple; in the male they are formed as in certain species of *Cerotoma*.

An example from Chontales is figured.

### 18. *Neobrotica cavifrons*. (Tab. XXXIII. fig. 12, ♂.)

Black, the head, thorax, and legs fulvous; elytra irregularly punctured, black, each with an angular narrow stripe from the base to the sides (touching the suture about the middle), a short oblique stripe near the apex, and the lateral margin flavous.

♂. Head with a deep frontal excavation; antennæ with the third joint swollen, the fourth joint transverse, both with their inner apical angles acutely produced.

Length 2½ lines.

♂. Head fulvous, impunctate, deeply excavated below the antennæ, the excavation furnished with a small tubercle within and its anterior edge in the shape of a strongly raised ridge; antennæ (male) fulvous, stained with piceous, the second joint very small, the third strongly swollen at the base, its inner apical angle produced into a sharp point, the fourth joint shorter, transversely produced within, the following joints rather short and nearly equal; thorax almost twice as broad as long, the sides nearly straight, the posterior angles produced into a small tooth, the disc with a rather shallow transverse sulcation not extending to the sides, the surface fulvous, impunctate; scutellum black; elytra finely and irregularly punctured, the interspaces somewhat rugose, the lateral margin narrowly flavous, a similarly coloured slightly oblique

stripe extending from the middle of the base to the suture at the middle and from there at nearly right angles to the lateral margin, and another small obliquely curved stripe near the apex of each, the latter extending from the suture to the apical angle, and forming (with the corresponding stripe on the other elytron) a ring-shaped mark; underside, tibiae, and tarsi black, the femora fulvous, with a small blackish spot; claws appendiculate; the anterior coxal cavities open.

*Hab.* MEXICO, La Parada (*Sallé*).

I have only seen a single male specimen of this curiously-marked insect, which resembles in several respects certain species of the genus *Cerotoma*.

### 19. *Neobrotica modesta*.

Testaceous, the head, the intermediate joints of the antennæ, and the tibiae and tarsi black; thorax impunctate, pale fulvous; elytra finely punctured and obsoletely costate, a spot at the shoulder (sometimes absent) black; breast piceous.

Length  $2\frac{1}{2}$ –3 lines.

Head not visibly punctured; the frontal tubercles indistinct, bounded behind by a deep fovea; antennæ with the basal two and the apical three joints testaceous or flavous, the rest black, the third joint scarcely shorter than the fourth; thorax one half broader than long, the disc impunctate, with a deep transverse sulcation not extending to the sides; scutellum testaceous; elytra closely and irregularly punctured, the interstices obsoletely longitudinally costate, more distinctly so at the sides than on the disc, the shoulders with a black spot.

*Hab.* MEXICO, Tuxtla (*Sallé*).

Two specimens; one of these is smaller than the other, and has the humeral spot obsolete, and the breast scarcely darker than the rest of the under surface.

### 20. *Neobrotica undecim-maculata*.

Testaceous, the head, the intermediate joints of the antennæ, the tibiae, tarsi, and breast black; elytra finely punctured, and obsoletely longitudinally sulcate, three spots at the base, four at and four others below the middle, placed transversely, black.

Length  $2\frac{3}{4}$  lines.

*Hab.* MEXICO, Jalapa (*Höge*).

*N. undecim-maculata* agrees with *Diabrotica spilota*, Baly, in the colour and markings of the elytra, but is separated from that species by the generic characters. The antennæ have the third joint slightly shorter than the fourth; the thorax is impunctate, and of the usual shape and sculpture; of the three basal spots on the elytra the central one surrounds the scutellum, the other spots being placed transversely in pairs near and below the middle.

### 21. *Neobrotica melanocephala*. (Tab. XXXIII. fig. 14.)

Head, the intermediate joints of the antennæ, the tibiae, tarsi, and breast black; thorax fulvous, deeply sulcate; elytra finely geminate-punctate, fulvous, the basal and sutural margins anteriorly, and a narrow lateral stripe from the base to the apex, black; abdomen testaceous.

Length 3 lines.

Head entirely black, with a deep fovea between the eyes; antennæ nearly two thirds the length of the body, the basal two and the apical three joints fulvous, the rest black, the third joint as long as the fourth;

thorax twice as broad as long, pale fulvous, shining, impunctate, with a deep transverse sulcation; scutellum testaceous; elytra obsoletely longitudinally costate, the interstices finely geminate-punctate, a narrow sublateral stripe (indented at and more deeply so below the middle) extending nearly to the suture, the latter anteriorly, the basal margin narrowly, and a small triangular sutural mark near the apex, black; the underside, with the exception of the breast, and the femora fulvous.

*Hab.* MEXICO, Cordova (*Sallé*).

A single specimen; this, on account of the irregular markings of the elytra, is probably not a well-marked representative of the species.

## PYESIA.

*Pyesia*, Clark, Ann. Nat. Hist. 3rd ser. xvi. p. 260 (1865).

This genus has hitherto contained only a single species of large size, distinguished by the transversely shaped and subangulate thorax, the mucronate posterior tibiæ, and the appendiculate claws, all of which characters are present in a single specimen obtained by Herr Höge in Mexico. The typical species, *P. laticornis*, Germ., is from Brazil.

### 1. *Pyesia mexicana*.

Broadly oblong-ovate, subdepressed, greenish-black; antennæ black; thorax fulvous, with five greenish spots; elytra dark metallic-greenish, finely rugose-punctate.

Length 4 lines.

Head smooth, metallic-greenish; the frontal tubercles strongly raised, broad; the clypeus broadly trigonate, its apex broad, black; the labrum and palpi black; antennæ nearly as long as the body, robust, the second joint short, the third one half longer, the fourth the longest, the following joints gradually shorter; thorax nearly three times as broad as long, the sides strongly rounded and subangulate at the middle, the base and apex greatly narrowed, the anterior angles acute and slightly produced, the disc with a central longitudinal groove, the surface depressed near the anterior angles, finely and somewhat rugosely punctured, fulvous, with four greenish-aneous spots placed transversely and semicircularly across the disc, and another small spot near the middle of the base; scutellum broadly trigonate, black, impunctate; elytra depressed, dark greenish, very closely and finely rugose-punctate throughout, their epipleuræ continued below the middle; legs rather robust, the tibiæ compressed, their outer edge acute but not sulcate; the first joint of the posterior tarsi as long as the following two joints together; claws appendiculate; the anterior coxal cavities open; the entire under surface covered with fine pale pubescence.

*Hab.* MEXICO, Cordova (*Höge*). A single example.

EXOR. A. Chev. 1877  
MALACOSOMA.

*Malacosoma*<sup>pyesic</sup>, Chevrolat in d'Orbigny's Dict. Univ. vii. p. 605 (1846); Weise, Archiv für Naturg. 1886, ii. p. 581.

*Malacosoma* is a genus tolerably rich in species, having in common mucronate tibiæ and a convex prosternum, the latter being just visible between the coxæ. A single species from Mexico, distinguished by remarkably short antennæ, possesses, however, the other characters of *Malacosoma*, and I accordingly place it in this genus.

### 1. *Malacosoma olivacea*.

*Crioceris olivacea*, Fabr. Syst. Eleuth. i. p. 451<sup>1</sup>.

*Galeruca olivacea*, Oliv. Entom. vi. p. 651, t. 4. f. 64<sup>2</sup>.

*Hab.* MEXICO, Acapulco (*Höge*); GUATEMALA, Teleman, Chacoj, Pantaleon (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui, David, Caldera (*Champion*).—GUIANA<sup>2</sup>; BRAZIL, Bahia<sup>1</sup>; PERU (*coll. Jacoby*).

Apparently a common species in Tropical America, and contained in most collections. Olivier's figure gives a correct idea of the elytral pattern; varieties have not come under my observation. From Mexico we have only received a single specimen.

### 2. *Malacosoma encaustica*.

*Galeruca encaustica*, Germ. Ins. Spec. Nov. p. 598 (1824)<sup>1</sup>.

*Hab.* MEXICO, Cordova, Vera Cruz (*Sallé*), Oaxaca, Jalapa (*Höge*); GUATEMALA, Senahu, Panzos, Sabo, Purula, San Gerónimo, Capetillo, Cerro Zunil, Las Mercedes (*Champion*); NICARAGUA, Chontales (*Janson*); COSTA RICA (*Van Patten*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).—BRAZIL, Bahia<sup>1</sup>; AMAZONS (*coll. Jacoby*).

Germar's description of this rather common species is sufficient for its recognition; normally-coloured individuals are testaceous, with two longitudinal ferruginous stripes on each elytron, these stripes being joined before the apex; in many examples the stripes are obsolete or entirely indistinct. Mexican specimens are often of an entirely dark fulvous colour, owing probably to discoloration after death. The species varies in size from 3–5½ lines.

### 3. *Malacosoma lævicollis*.

Testaceous; second and third joints of the antennæ short; thorax impunctate; elytra closely punctured, each with two ferruginous longitudinal stripes.  
Length 4½ lines.

*Hab.* NICARAGUA, Granada (*Sallé*); COSTA RICA, Volcan de Irazu, Rio Sucio (*Rogers*).

At first sight *M. lævicollis* seems to agree perfectly with *M. encaustica*, agreeing as it does entirely in the general colour and the pattern of the elytra; the structure of the antennæ, however, at once shows its specific distinction, the second and third joints being short and equal, which is not the case in the allied species, these latter having the third joint double the length of the second. The thorax in *M. lævicollis* is much less transverse and entirely impunctate; the elytra at the base are twice as wide as the thorax. Seven specimens, all agreeing in the above particulars.

### 4. *Malacosoma obsoleta*.

*Crioceris obsoleta*, Fabr. Syst. Eleuth. i. p. 450<sup>1</sup>.

*Hab.* MEXICO, Cordova, Toxpan (*Sallé*); GUATEMALA, Las Mercedes, San Isidro,

Senahu (*Champion*); NICARAGUA, Chontales (*Janson, Belt*); COSTA RICA (*Van Patten*), Volcan de Irazu (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui, David (*Champion*).—GUIANA, Cayenne<sup>1</sup>; PERU (*coll. Jacoby*).

Although Fabricius has described a form or variety of this species in which the elytra have each only three spots, and of which I possess a specimen thus marked from Peru, all the others before me from the above localities have five fuscous spots on each elytron—of these, one is placed at the shoulders, two (of elongate shape) near the suture (one near the scutellum, the other below the middle), one (transverse in shape) near the lateral margin at the middle, and one near the outer margin close to the apex. When the posterior spots are absent the typical form as described by Fabricius is produced; specimens occur in which one or more of the spots are confluent. The thorax and elytra are very closely and finely rugose-punctate. *M. obsoleta* is evidently a rather common and very widely distributed species in Tropical America.

### 5. *Malacosoma brevicornis*.

Fulvous, the antennæ, knees, and tarsi black; head and thorax impunctate; elytra closely and distinctly punctured.

Length 3 lines.

Head with a few fine punctures; the frontal tubercles very strongly raised, transversely oblique; labrum and the palpi piceous; antennæ short, black, the first joint fulvous, the second and third joints short, subcylindrical, the following joints transversely trigonate, gradually widened; thorax about one half broader than long, the margins rounded, the surface rather convex and not visibly punctured; elytra very closely and rather distinctly punctured, the interstices somewhat wrinkled; legs robust, fulvous, the knees and the tarsi black; the prosternum convex between the anterior coxæ.

*Hab.* MEXICO, Monclova in Coahuila (*Dr. Palmer*). A single specimen.

The antennæ are very short, and do not extend beyond the base of the thorax: this is the only important character in which *M. brevicornis* differs from the other species of *Malacosoma*. In its general shape and colour *M. brevicornis* greatly resembles the European *M. lusitanica*.

### MALACORHINUS.

Body elongate or oblong; palpi rather robust; antennæ filiform (sometimes serrate in the male), the third joint distinctly longer than the second; thorax subquadrate, always constricted near the base; elytra generally widened towards the centre, often with a median lateral fovea in the male, their epipleuræ broad at the base and extending below the middle; tibiæ mucronate; the first joint of the posterior tarsi as long as the following three joints together; claws appendiculate; the anterior coxal cavities open; prosternum not visible between the anterior coxæ.

Type *Malacorhinus foveipennis*, Jac.

This genus seems to be rather numerously represented in Mexico and Guatemala. It has the general appearance of, and was indeed at first mistaken by me for, *Malacosoma*; the invisible prosternum, however, forbids the identification of the rather numerous species with that genus. The posteriorly narrowed and subquadrate thorax and the

peculiar deep fovea on the lateral margin of the elytra in the males of several of the species are characters not to be met with in the other genera inhabiting our region.

### 1. *Malacorhinus foveipennis*.

*Diabrotica foveipennis*, Jac. P. Z. S. 1879, p. 790<sup>1</sup>.

*Hab.* MEXICO, Tuxtla (*Sallé*), Cerro de Plumas (*Höge*); GUATEMALA, Dueñas<sup>1</sup>, San Gerónimo, Sinanja, Telemán, Panzos (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui, David, Caldera (*Champion*).

The small spine at the apex of all the tibiæ and the appendiculate claws place this species much more appropriately in *Malacorhinus* than in *Diabrotica*. The elytra in the male have a deep median fovea placed near the lateral margin, and within this fovea a tubercle. Two examples from Mexico have the thorax rufous, and the bands and spots of the elytra of the same colour, the markings of the latter being brighter than in the specimens from the other localities. The elytral bands in some examples are only indicated by spots, and in others are more or less connected.

### 2. *Malacorhinus tripunctatus*. (*Malacosoma tripunctata*, Tab. XXX. fig. 25.)

*Diabrotica tripunctata*, Jac. P. Z. S. 1879, p. 790<sup>1</sup>.

*Hab.* MEXICO, Guanajuato, Juquila (*Sallé*); GUATEMALA, Dueñas<sup>1</sup>, Capetillo<sup>1</sup> (*Champion*).

Like the preceding species, *D. tripunctata* is better placed in the present genus; in the male the elytra have a similar fovea near the lateral margin.

### 3. *Malacorhinus irregularis*. (Tab. XXXIII. fig. 16, ♂.)

Reddish-fulvous, the antennæ and legs black; thorax impunctate; elytra finely and closely punctured, with a spot at the shoulder, a triangular patch round the scutellum, a transverse spot at the sides, and an oblique transverse band on each below the middle, black.

♂. Elytra with an elongate lateral fovea below the shoulders.

Length 3 lines.

Head impunctate; the frontal tubercles strongly raised, transverse; clypeus narrow, transverse, its middle extending upwards in the shape of a narrow raised ridge; antennæ half the length of the body, black, the first joint fulvous, the third joint one half longer than the second; thorax rather convex, subquadrate, the sides rounded in front and narrowed near the base, the angles not produced, the surface impunctate, reddish-fulvous; elytra somewhat widened towards the middle, very finely and closely punctured, with a lozenge-shaped transverse band at the base, widened at the suture and connected laterally with a spot at the shoulder, a transverse spot below the latter, and a strongly oblique transverse band placed some distance before the apex of each, black; all the tibiæ with a small spine; anterior coxal cavities open.

*Hab.* MEXICO, Acapulco (*Höge*), Vera Cruz, Tuxtla (*Sallé*).

An example from Acapulco is figured.



#### 4. *Malacorhinus antennatus*. (Tab. XXXIII. fig. 19, ♂.)

Testaceous, the apical joints of the antennæ, the tibiæ, and tarsi black; thorax impunctate; elytra very finely punctured, with a spot at the shoulder, another near the scutellum, and two, placed transversely, at the middle of each, black.

♂. The third, fourth, and fifth joints of the antennæ strongly triangularly dilated, the sixth joint pear-shaped.

♀. Antennæ slender, filiform.

Length  $2\frac{1}{2}$ –3 lines.

♂. Head impunctate; the frontal tubercles trigonate, strongly raised; antennæ half the length of the body, the lower five joints obscure piceous or dark fulvous, the others black, the second joint short, the third and following two joints triangularly flattened, the inner apical angles of each joint produced into a point, the sixth joint pear-shaped, its base broad and emarginate, the terminal five joints slender and thin; thorax subquadrate, scarcely broader than long, the sides narrowed at the base, the surface impunctate, with an obsolete depression near the anterior angles; scutellum piceous; elytra very closely and finely punctured, testaceous, the apices often fulvous, each with four small black spots—two at the base and two at the middle; the last ventral segment emarginate in the middle, the emargination preceded by a deep oblong fovea.

*Hab.* GUATEMALA, Las Mercedes, Zapote, Mirandilla, Chiacam, Cubilguitz, Purula, Senahu, Sinanja, Chacoj (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui, San Feliz (*Champion*).

The antennæ in the female are simple and filiform, and with the third joint one half the length of the fourth.

#### 5. *Malacorhinus decem-punctatus*. (Tab. XXXIII. fig. 18.)

Testaceous or fulvous, the antennæ, tibiæ, and tarsi black; thorax very finely punctured; elytra each with five black spots, 2. 1. 2.

♂. Elytra with a deep longitudinal excavation at the lateral margin.

Length 2–3 lines.

Head impunctate; antennæ two thirds the length of the body, black, the first joint more or less testaceous or fulvous, filiform, the third joint one half longer than the second; thorax slightly broader than long, distinctly narrowed at the base, the sides rather strongly deflexed in front and rounded before the middle, the surface very minutely and rather closely punctured; elytra more distinctly and more closely punctured than the thorax, slightly widened towards the middle, testaceous or fulvous, with a spot at the shoulder, another near the scutellum, one near the lateral margin at the middle, and two others (sometimes connected) below the latter, placed obliquely transverse, black.

*Hab.* MEXICO, Ventanas (*Forrer*), Toxpam, Cordova, Vera Cruz (*Sallé*), La Noria in Sinaloa, Jalapa (*Höge*); BRITISH HONDURAS, R. Hondo (*Blancaneaux*); GUATEMALA, Mirandilla, Zapote, Capetillo, San Gerónimo, Teleman (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba (*Champion*).

The thorax in this species is very distinctly narrowed at the base, and its surface is extremely finely punctured; the elytral spots are often more or less confluent, and the two posterior ones occasionally form a narrow transverse irregular band. The fovea at the sides of the elytra in the male is of large and elongate shape, and has a pointed tubercle placed on the middle of its outer margin; sometimes one or two other tubercles are seen protruding from the upper margin.

A specimen from La Noria is figured.