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**CHARACTERS OF TWENTY-FOUR NEW SPECIES OF HEMIPTERA
FROM THE GALAPAGOS ISLANDS AND
THE COAST AND ISLANDS OF CENTRAL
AMERICA AND MEXICO**

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A study of the Hemipterous Insects brought back by the Templeton Crocker Expedition of the California Academy of Sciences has brought to light a number of forms new to science, the descriptions of which are given in the following pages. Of most interest are the sixteen new species from the Galapagos Islands.

The relationships of these are entirely with the American fauna. Some are very close to well-known continental species, while others have become more strongly differentiated in response to their insular environment. Notable among these latter forms is that described below as *Diaphnidia crockeri* which introduces striking coloration into a genus hitherto containing species that are only monochromatic, or at most with a few fuscous or black markings.

No trained entomologist accompanied this expedition, but Mr. Crocker very generously delegated his secretary, Mr. Maurice Willows Jr., to act as entomologist when not occupied with other duties. Mr. Willows' efforts resulted in the addition of 2,400 insects to the collection of the Academy, among which were many species new to the Academy collection in addition to a number of new species described here and to be described in later papers.

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SPECIES FROM THE GALAPAGOS ISLANDS

1. *Geotomus murinus* Van Duzee, n. sp.

Apparently allied to *obscurus* Sign.; piceous with the legs and antennæ paler and the puncturation of the elytra reduced. Length 5.5 mm.

Head regularly rounded before; as long as its width immediately before the eyes; anterior margin a little recurved; tylus but slightly elevated, the cheeks scarcely meeting before it; surface but feebly wrinkled; marginal setæ six in number with one below the margin either side the tylus, and another discal either side near the eye. Pronotum broader anteriorly, shaped as in Signoret's figure 161, the sides subparallel and narrowly recurved, with a few bristles within the anterior angles; disk with a median arc of confused punctures behind the ocelli and an irregular transverse row of coarse punctures behind the callosities, terminating either side in a field of more obscure punctures extending to near the anterior angle. Scutellum moderately convex with scattering punctures that omit the basal field. Elytra with a row of regular punctures either side of the claval suture and a partial second row on the corium; disk of corium with a few nearly obsolete punctures. Opaque area beneath shaped about as in Signoret's figure 155 but with its marginal extension shorter and broader and the angles of the posterior field more acute; osteolar canal flattened and opaque like the adjacent surface, slightly widened and rounded at tip, the opening forming a small notch. Rostrum attaining intermediate coxæ; hind femora with a few minute teeth before the apex; hind tibiæ terete, with their spines longer than their thickness. Antennal segments I, II and III subequal, the middle of II about reaching apex of head. Ocelli placed at about their own diameter from the eyes; tarsi pale.

Holotype, a unique female, C. A. S. Ent. No. 3625, taken by Mr. Willows at Tagus Cove, Albemarle Island, May 27, 1932. This is close to a species from Arizona and northern Mexico, but the latter has the eyes much narrowed inferiorly, the osteolar canal broader and more oblique at apex and the pronotum broader anteriorly.

2. *Thyanta similis* Van Duzee, n. sp.

Size and aspect of *antiguensis* Westwood and best distinguished from that species by comparative notes. Length 7 mm.

Head a very little but obviously shorter proportionately than in *antiguensis*. Antennal segment III shorter than II, equal in the allied species. Sides of the pronotum rectilinear in *antiguensis*, slightly emarginate in *similis* with the intranumeral smooth vitta scarcely distinguished; the humeri a little more angled and marked with a slender black marginal line. Scutellum longer, the apex narrower and more angled. Membrane hyaline with a rather broad fuscous longitudinal vitta either side. Rostrum attaining apex of ventral II, a little shorter in *antiguensis*. Connexivum immaculate. Basal genital plates of female flat, convex or subtumid in *antiguensis*.

Color dull green varied with paler and tinged with red in places as in *antiguensis*, the punctures concolorous or but little darker than the adjoining surface; pronotum and scutellum with a median pale line more or less distinct.

Holotype, female, C. A. S. Ent. No. 3626, taken on Jervis Island, June 6, 1932, by Mr. Maurice Willows. *Paratype*, one female taken on Charles Island at Post Office Bay, April 24, 1932, by Mr. Willows;

the latter specimen is more croceous, marked with reddish areas and apparently is not fully pigmented. The ultimate tergal segment seems to have a fringe of pale hairs in this species.

3. *Nysius (Ortholomus) naso* Van Duzee, n. sp.

A large species with the head porrect and strongly produced; testaceous to rufo-testaceous, with a vitta against each eye, a transverse band on the callosities and the disk of the scutellum black; elytra whitish veined with fuscous. Length 5 mm.

Head as long as wide across the eyes, extended in the same plane as the pronotum, conically produced as far before the eyes as the width between the eyes. Antennæ long, segment I scarcely attaining the apex of the tylus; II two and a half times as long as I; III two-thirds as long as II; IV as long as III, fusiform. Rostrum attaining third ventral segment; segment I reaching the base of the head; segments I, II and III subequal, each about twice the length of IV. Pronotum twice as wide on hind margin as on anterior, one-half wider than long, but little depressed anteriorly; callosities forming a narrow elevated ruga, median line broadly, very feebly, depressed. Scutellum with the usual Y mark feebly elevated. Elytra milky subhyaline, the veins slightly prominent, surface minutely sericeous pubescent.

Color testaceous, becoming rufo-testaceous on the head, pronotum anteriorly, sides of the scutellum, tergum and beneath; marked with black as follows: head, except a broad dorsal vitta, a transverse line on the callosities, not attaining the margins, disk of the scutellum, sternum, a large spot on each of the pleural pieces, a large mark of the basal disk of the venter which sends a vitta either side to connect with a band on the sixth ventral segment, and the base of the genital segment. Legs pale testaceous, the femora dotted with black, apical tarsal segment black; antennæ rufo-testaceous, the basal segment with a dusky spot; elytral veins, including commissure and apical margin, blackish. Membrane hyaline with a median fuscous vitta over a black vitta on the tergum.

Holotype, a unique male, C. A. S. Ent. No. 3627, taken on Charles Island, May 14, 1932, by Maurice Willows.

4. *Creontiades castaneum* Van Duzee, n. sp.

A distinct chestnut-brown species with the pronotum and scutellum almost piceous; antennæ and legs varied with paler, the hind margin of pronotum slenderly whitish. Length 5.5 mm.

Male. Vertex between the eyes one-half the width of an eye, deeply sulcate; oblique frontal striæ almost obsolete; clypeus prominent with a slight transverse depression before its base. Antennæ: segment I stout, slightly shorter than the pronotum; II twice the length of I; III a little less than twice the length of I (15:26); IV equal to I. Pronotum almost twice as wide as long, smooth and polished, without rugæ, callosities moderately prominent. Scutellum nearly equilateral, minutely rugulose and depressed on disk at base, polished at apex and along the lateral margins. Elytra parallel, opaque, impunctate. Rostrum attaining apex of hind coxæ.

Color chestnut, becoming almost piceous on the pronotum, scutellum, pleuræ, base of abdomen and apical one-half of hind femora, basal two-thirds of antennal II and narrow base of III and IV pale, as is also the rostrum, apex of coxæ, trochanters and base of femora; tip of rostrum and of the last tarsal segment and the tibial

spines black; hind tibiae brown, becoming pale at apex; hind edge of pronotum slenderly whitish and there is an obscure pale spot within the basal angles of the scutellum and another either side of its apex; genital segment pale. Whole upper surface clothed with decumbent pale hairs. Basal antennal segment with a subapical black bristle on its inner face. Membrane fuscous.

Holotype a unique male, C. A. S. Ent. No. 3628, taken by Mr. Maurice Willows on Chatham Island, April 17, 1932.

5. *Creontiades willowsi* Van Duzee, n. sp.

Aspect of *debilis* V. D. but with larger eyes and much narrower vertex in the male, with segment I of antennae more slender and with the membrane enfumed about as in *rubrinervis*. Length 6 mm. to tip of membrane.

Head small with very large prominent eyes, especially in the male; vertex narrow, but slightly convex, its width between the eyes but one-half the width of an eye; median sulcus distinct, oblique rugae somewhat obscure; tylus narrower and more prominent than in *debilis*. Pronotum polished, about twice as wide as long (32:17); hind tibiae a little longer than the elytra to tip of cuneus (85:75). Vestiture very fine, pale and deciduous, fully matured examples being nearly glabrous.

Color yellowish testaceous, about as in *femoralis* and *rubrinervis*, a little darker than in *debilis*; hind submargin of pronotum usually with a slender fuscous line; tips of tarsi and rostrum and a minute dot on extreme base of hind tibiae and the eyes black; apex of hind femora very slightly darker; membrane distinctly enfumed.

Described from a series of 24 specimens taken on Jarvis Island, June 6, and Sullivan Bay, James Island, June 13, 1932, all taken by Mr. Willows, to whom I take pleasure in dedicating this interesting addition to the Mirid fauna of these islands.

Holotype, male, C. A. S. Ent. No. 3629, and *allotype*, female, No. 3630, from Jarvis Island.

6. *Pæciloscytus vegatus* Van Duzee, n. sp.

Allied to *cuneatus*; a little more slender with the second antennal segment longer, the basal segment black and the legs darker. Length 3 mm.

Head longer than wide (11:7). Pronotum with the sides more deeply sinuate, the hind margin distinctly impressed behind the prominent humeri; collar broader than in *cuneatus*. Antennae longer than in the allied species; segment I as long as width of vertex between the eyes, distinctly surpassing apex of tylus; II nearly five times as long as I (5:24); III and IV subequal, together one-third the length of II. Rostrum attaining base of genital segment.

Color fuscous-testaceous as in *cuneatus*; basal segment of the antennae and the tylus piceous; the callosities and an indistinct ante-humeral spot infuscated; a median vitta on the vertex, bifurcate before, and the disk of the pronotum posteriorly slightly embrowned; antennal segments III and IV and apex of II darker; collar and narrow hind edge of pronotum paler. Legs pale brown with a paler subapical spot on the femora beneath; apices of tibiae and tarsi infuscated; coxae and venter pale brown; genital segment yellowish; rostrum testaceous, black at tip; basal

angles and narrow sides of scutellum brown and a brownish cloud covers the clavus and inner field of the corium; cuneus reddish, pale at base and tip; membrane lightly infuscated, with paler nervures.

Holotype, a unique male, C. A. S. Ent. No. 3631, taken at Tagus Cove, Albemarle Island, May 27, 1932, by Mr. Willows.

7. *Fulvius geniculatus* Van Duzee, n. sp.

Aspect of *imbecilis* Say but with shorter antennae, white coxae and fuscous legs with pale knees. Length 3.5 mm.

Head as long as broad across the eyes. Eyes produced on the gula. Antennae short, segment I scarcely as long as width of head across the eyes; II twice as long as I, very slightly clavate at apex; III a little longer than I, linear (IV wanting); II nearly as long as posterior width of pronotum. Rostrum attaining fifth ventral segment. Pronotum nearly as long as head, shaped as in *imbecilis*, with similar prominent callosities.

Color fuscous brown becoming piceous on pronotum anteriorly and on the head; basal lobe of scutellum with an obscure reddish mark either side; corium with a transverse whitish band opposite middle of clavus which is extended along the costal margin; extreme tip of clavus touched with pale; base of cuneus with a yellowish white lunule; antennae rufo-fuscous; apical third of segment II white; rostrum testaceous brown; coxae white, narrow base and apex of I and broader base of II and III brown; legs fuscous brown, paler on the tibiae and tarsi, the knees narrowly whitish; membrane moderately enfumed, darker in the cell, nervures brown, venter brown, more or less tinged with rufous.

Chatham Island, April 18, 1932, one male (*holotype*, C. A. S. Ent. No. 3632); James Island, June 4, 2 males; Jarvis Island, June 6, 1 female; Narborough Island, May 28, one female (*allotype*, C. A. S. Ent. No. 3633).

The shorter antennae, partly white anterior coxae and fuscous legs will distinguish this species from *imbecilis* Say. In Reuter's key of 1895 and in Poppius' key of 1909 this runs to *quadristillatus* Stål from Brazil, but the white anterior coxae will distinguish it.

8. *Diaphnidia crockeri* Van Duzee, n. sp.

Pale yellowish testaceous, polished, elytra faintly green, beautifully marked with red. Length 3 mm.

Head half as wide as the pronotum; front and vertex together convex, polished; the front tumidly projecting above base of tylus, with a few erect pale bristles; viewed from above scarcely projecting before the eyes. Anterior margin of pronotum one-half as long as the posterior; sides straight, sharp but scarcely carinate on posterior lobe; transverse sulcus distinct, not attaining the margins; hind edge broadly excavated. Scutellum large, the lobes but poorly differentiated, exposed portion of basal nearly as long as the posterior lobe. Elytra diaphanous, parallel, the costa but feebly arcuate posteriorly; cuneus as long as greatest width of corium. Basal segment of antennae short, stout, scarcely exceeding apex of tylus; II linear, four times the length of I (III and IV covered in mounting).

Color pale yellowish testaceous, polished; elytra obviously tinged with bluish green, the costal and subcostal nervures green; commissure with a broad Y-shaped red mark the forks of which reach to the middle of the scutellar margin; corium

with a row of three large red dots, one on basal third, another opposite apex of clavus, the third at middle of apical margin; a similar red dot occupies the basal angle of the membrane, and the apex of the membranal nervures are red; the male has a red mark behind the inner angle of the eye, and two divergent spots are indicated on the posterior lobe of the pronotum; antennal II slightly infuscated in male; tips of tarsi blackish.

Described from one male (allotype) and one female (holotype) taken on James Island, June 4, 1932. *Holotype*, C. A. S. Ent. No. 3634, and *allotype*, No. 3635.

This is the first brightly colored species known to me in this genus. It is a most beautiful insect under a lens and it gives me pleasure to dedicate it to Mr. Templeton Crocker whose generosity and personal interest in the scientific aspects of the expedition made possible these large and valuable additions to the collections of the California Academy of Sciences.

9. *Platymetopius æquinoctialis* Van Duzee, n. sp.

Related to *cinerus* but with the colors darker, the lines of the vertex broad and continuous, the elytra tinged with fulvous, and the apical areoles mostly black. Length 4 mm.

Vertex nearly twice as long as its basal width (12:7); depressed along the median line, anterior edge sharp, apex subacute. Pronotum as long as basal width of vertex, broadly arcuate behind. Median third of ultimate ventral segment produced for one-third the length of the segment, truncate at apex; pygofer with a few scattering short bristles.

Color fulvo-testaceous becoming darker on elytra apically and more grey on pronotum and apex of vertex; median line of vertex anteriorly, an arcuate vitta either side attaining base of vertex and a slender line just behind the apical margin, briefly reflected on to the vertex above the ocelli, whitish. Pronotum with seven longitudinal lines, the median less distinct; scutellum with three such lines. Elytra greyish fulvous, deeper colored apically; round white dots wanting across middle of elytra, those adjacent to apical transverse veinlets edged with black, or mostly so, with a short white marginal vein beyond the costa; face and below pale yellow; dots at base of tibial spines a little darker and there is a brown cloud on the apex of the ultimate ventral segment.

Holotype a unique female, C. A. S. Ent. No. 3636, taken by Maurice Willows at Tagus Cove, Albemarle Island, May 24. The percurrent pale lines of the vertex and the black apical areoles will roughly distinguish this from the many allied North American species.

A single male from James Island, June 4, has the entire vertex eaten away so it cannot safely be placed.

10. *Deltocephalus insularis* Van Duzee, n. sp.

Allied to *signatiformis* V. D. but a little larger and darker with the apex of the head a little more rounded, and different markings on the vertex. Length 4 mm.

Vertex a little shorter than its basal width (6:8); surface feebly convex, not at all depressed, apex in a blunt almost rounded angle; front slightly longer than wide (12:10); clypeus large, flat, almost parallel-sided. Elytral venation essentially the same as that of *obesus* but with the nervures more prominent, the costal areole broader and the sutural areole of the clavus furnished with one or two transverse veinlets connecting the apex of the adjoining nervure with the suture. Ultimate ventral segment of the female essentially truncate across its entire width. Male valve small, obtuse at apex; plates scarcely longer than the valve, narrow, truncate at apex, hardly more than passing the middle of the pygofers, the latter heavily armed with stout bristles.

Color testaceous-grey, becoming more yellowish on the head, anterior margin of the pronotum and scutellum; vertex with a transverse blackish vitta behind the ocelli that is notched at the middle anteriorly and before which are two subapical brown points; behind this vitta are two small brown dashes; pronotum with four or six brown points behind the pale anterior margin and showing five obscure pale longitudinal vittae; elytral nervures pale, mostly edged with fuscous, the transverse veinlets often thickened and white; scutellum with the basal angles, two points between them, and the impressed line fuscous; front slightly suffused with brown, with pale arcs; hind femora with one apical brown point beneath, the tibiae in the male about thrice annulate with fuscous; base and apex of tergum with a whitish band.

Holotype, male, C. A. S. Ent. No. 3637, taken April 17 on Chatham Island. *Allotype*, female, C. A. S. Ent. No. 3638, taken April 24, on Charles Island. This species pertains to subgenus *Hebecephalus* of DeLong's Monograph of *Deltocephalus*.

11. *Scaphoideus discalis* Van Duzee, n. sp.

Size and form of *neglectus* Osb. but with the elytral markings nearly as in *sanctus* Say; face heavily marked with black. Length 4 mm.

Vertex about as in *neglectus*, its length one-fourth less than its basal width (7:10); eyes wider posteriorly than in any of our related species, not obviously narrowed there. Pronotum as long as basal width of vertex. Elytra shorter and less flaring at apex than in *neglectus*. Apex of last ventral segment of female truncate with a slight angle either side. Valve of male subacutely triangular; plates narrower and more acute at apex than in *sanctus*, the pygofers more heavily fringed with bristles.

Color white slightly tinged with yellow; vertex mostly immaculate, the ocelli, a wide pair of minute points before the apex, a close pair on hind margin either side against the eyes and the incised median line basally, fuscous or black; pronotum immaculate but darkened by the black mesonotum showing through; scutellum tinged with yellow, the basal angles a little darker; elytra polished, subopalescent white, marked with a common broad transverse brown band the basal margin of which is parallel with the scutellar margin of the clavus, its apical margin slightly concave; this band becomes obscure on the costal areole and carries a large semi-circular white spot either side and a smaller median white spot divided by the commissure and broken out slenderly either side to the claval suture; the margin above the white areas bordered with blackish; a narrow blackish band covers the apical transverse nervures and margins the outer apical areole, the apical nervures being pale; apical submargin with a narrow fuscous line; face tinged with yellow with a broad basal black band in which is a narrow sinuate white line; a narrow black band crosses the entire face at lower margin of the eyes; apex of clypeus and cheeks black

and there may be a black line across the base of the clypeus; legs pale with the fore and middle femora and a series of minute dots at the base of the tibial spines fuscous; abdomen pale yellow with the tergum, a line on the base of the male plates, the base of the female pygofers, a mark on the apex of the connexival segments and the basal ventral segment, black; male valve, except its extreme edge, and the oviduct and apex of the last ventral segment of the female piceous.

Described from two pairs taken on Chatham Island, April 17, by Mr. Willows. *Holotype*, male, C. A. S. Ent. No. 3639, and *allotype*, female, No. 3640. This is a strongly marked species like *cruciatus* but the form of the elytral saddle recalls *sanctus*.

12. *Athysanus digressus* Van Duzee, n. sp.

Allied to *obscurinervis* Stål but wanting the two round spots on the anterior margin of the head. Length 4 mm.

Vertex more than twice broader than long (15:7), rounded before as in *exitiosus*; pronotum a little longer than the vertex (10:7); front as long as its basal width, its sides rather abruptly narrowed to the base of the clypeus, nearly rectilinear below in the related species; anterior femora with a series of short spines on basal two-thirds, terminating in two longer ones. In *obscurinervis* the small spines are smaller and there are three longer ones on apical one-third. Ultimate ventral segment of female feebly sinuate, in the related species broadly subangularly emarginate. Valve of male subacutely triangular; plates long, exceeding the pygofers; sides sinuate before the middle, apex obtuse, about as in *obscurinervis*.

Color as in *obscurinervis* but with elytral nervures paler; transverse black band of vertex produced anteriorly in a triangle, more or less developed; marginal round black spots wanting but certain dark individuals of *digressus* show a pale brown crescent on the front of the vertex superior to the location of the round black spots; front with the median line and lateral arcs brown; legs and beneath pale, the latter more or less infuscated in the darker males; pronotum with about six black dots on anterior submargin; basal angles of scutellum with the usual black marks.

Described from nine males and nine females taken by Mr. Willows as follows: Chatham Island, April 17; James Island, June 4; Jervis Island, June 6; Sullivan Bay, James Island, June 13, and North Seymour Island, June 12. *Holotype*, male, C. A. S. Ent. No. 3641, and *allotype*, female, No. 3642, from Chatham Island.

This species seems to be widely distributed on the islands and to show the same variation in color as is found in *obscurinervis* Stål. The want of the black spots on the front of the head, the abruptly narrowed frontal apex and the form of the ultimate ventral segment of the female are certainly of specific value and will, perhaps, best distinguish this species. For the purpose of comparison I have considered the neotropical *obscurinervis* and our well known *exitiosus* as specifically distinct as I do not feel entirely satisfied that they are identical.

13. *Oliarus galapagensis* Van Duzee, n. sp.

Aspect of *excelsus* Fowl., smaller with longer and narrower vertex; elytra with heavy punctate veins; apical cross-veins bordered with fuscous. Length 5 mm.

Vertex nearly twice as long as wide at base, its bounding carinae arcuate rather than angulate; front about as in *franciscanus* Stal, including the clypeus one-half longer than wide (22:14); frontal ocellus small but distinct. Mesonotum with five evident carinae. Elytra hyaline with strong punctate nervures; the transverse nervures and those separating the apical areoles bordered with fuscous; clavus with an irregular subbasal sutural brown spot and a smaller discal mark; costa slightly and evenly arcuate; wings feebly hyaline, with fuscous nervures; legs pale brown, lighter on the tibiae and tarsi, the coxae and incisures whitish, spines tipped with black; pleurae and ventral segments fuscous, the latter slenderly edged with pale; hind tibiae with one small spur before the middle. Apical angles of front, as in *franciscanus*, without pale spots.

Holotype, a unique female, C. A. S. Ent. No. 3643, taken by Mr. Willows seventeen miles northwest of Tagus Cove, Albemarle Island, May 22, 1932. Apparently the Galapagos Islands show no such development of this genus as we find in the Hawaiian Islands. The relationships of the present species are entirely with those of the North American fauna, to some species of which it is quite closely allied.

14. *Philates breviceps* Van Duzee, n. sp.

A small species with short vertex, more broadly tumid mesonotum, and unicarinate front. Length 4 mm.

Vertex two-thirds as long as wide at base (8:12); surface depressed, obliquely rugose, ecarinate; anterior margin sharp, but slightly reflexed, the sides more elevated posteriorly against the eyes. Front a little shorter than its greatest width (16:18); obviously carinate. Pronotum as long as the vertex, ecarinate. Mesonotum broadly tumid, not as abruptly depressed posteriorly as in the other species; carinate on basal one-half; the lateral carinae short, diverging posteriorly; commissural margin of elytra, viewed from the side, distinctly concavely arcuate. Hind edge of ultimate ventral segment with a small notch either side of the broad median lobe.

Color lurid brown more or less irrorate and marked with blackish on either side the vertex at base and on the angles and base of the mesonotum; elytra with a broad whitish vitta above the bullae, bordered below by a blackish cloud that may be extended to the apical angles; apical margin with the usual brown dashes; femora, at least the posterior, infuscated; antennae and their sockets infuscated; extreme tip of the head with a pale spot.

Holotype, female, C. A. S. Ent. No. 3644, taken by Mr. Willows at Black Beach Road, Charles Island, April 25, 1932. A male taken at the same time is too immature to be made a type. Two nymphs also were taken.

15. *Philates servus* Van Duzee, n. sp.

Allied to *productus* but with the carinæ of front and vertex obsolete or nearly so; notch of last ventral segment of female shallow and straight. Length, male 4-5 mm., female, 5-5.5 mm.

Vertex almost as long as its basal width between the lateral carinæ (11:12); median carina obsolete or slightly indicated anteriorly, the margins carinately elevated, oblique rugæ obsolete. Front distinctly widened opposite the antennæ, median carina obvious, at least below; lateral carinæ obsolete. Pronotum little more than one-half the length of the vertex (7:12); scarcely carinate but with the disk depressed behind the vertex. Mesonotum distinctly tumid before the depressed apex; median carina strong, lateral slender, obsolete anteriorly. Elytra not quite twice as long as wide (7:4). Last ventral segment of female with a broad shallow median notch, its fundus or base rectilinear.

Color testaceous-brown obscurely irrorate or varied with darker; apical margins of elytra with the usual brown dashes distinct; tibiæ and tarsi more obscure, the tarsal claws and tip of rostrum black; hind femora dusky brown; male with a black subapical point either side the mesonotum and there is a blackish cloud from middle to apex, scarcely indicated in the female, with a suggestion at inner angle of clavus; there may also be black irrorations on sides of mesonotum, on the pleuræ, sides of face and apex of front. In both sexes there is an impressed black point at base of elytra that apparently is characteristic of the genus. Hind femora of male distinctly infuscated.

Holotype, male, C. A. S. Ent. No. 3645, and *allotype*, female, No. 3646, from Tagus Cove, Albenmarle Island, May 25. Two males taken on James Island, June 4, together with nymphs, may belong here but more material is needed to decide the matter. In all the species of this genus known to me the elytra of the males are distinctly produced to the obtusely angled apex, not truncate as in the females, a character not mentioned by either Stål or Osborn, both of whom record males.

16. *Philates vicinus* Van Duzee, n. sp.

Allied to *servus* but with the apex of head a little more rounded and the surface of mesonotum between the lateral carinæ polished. Length 6 mm.

Vertex slightly longer than wide at base between the carinate edges (12:11); surface depressed, flat, obliquely rugose, the margins strongly acutely reflexed anteriorly, apex obtusely rounded; front distinctly carinate, its sides obtusely angled at the antennæ, rectilinear either side, its apex tumidly produced leaving the profile somewhat acute. Pronotum long, but slightly shorter than the vertex (10:12) the obtuse lateral carinæ distinguished by a deep groove exteriorly. Mesonotum with a very prominent median carina, the adjoining compartments polished. Ultimate ventral segment of female deeply notched, its fundus feebly arcuate. The hind tarsi in this genus are short and broad, in this type they are flattened and ragged, probably through some accident.

Color testaceous-brown, obscurely irrorate with fuscous; subapical points on mesonotum and a dot near the basal angles black; antennæ and anterior and intermediate tarsi brown, the latter and the rostrum tipped with black; on either side

at base of clypeus with a brown line; apical elytral margin with the usual brown dashes; base of front slightly infuscated.

Holotype, a unique female, C. A. S. Ent. No. 3647, taken on Jervis Island, June 6. The extent of fuscous coloring varies much in this genus, one specimen of *major* taken by the expedition being almost black with a broad pale dorsal vitta. All the known species are represented in the present material and most of them show darkened specimens, while two males of *productus* are pale testaceous and one is a clear light green, these three perhaps immature. The subapical impressed points on the mesonotum may be infuscated or concolorous.

KEY TO THE KNOWN SPECIES OF PHILATES

Vertex one-half as long as wide at anterior angle of eyes; distinctly obliquely striate; Charles Island.	<i>breviceps</i> n. sp.
Vertex about two-thirds as long as wide at anterior angle of eyes.	1
1. Ultimate ventral segment of female deeply notched either side of a rounded median lobe.	2
- Otherwise.	3
2. Front and vertex with distinct median carina; lateral carinæ of front distinct at base; tip only of tarsi black; North Seymour Island.	<i>productus</i>
- Carinæ of front obsolete, of vertex nearly so; Tower Island.	<i>cinerea</i>
3. Median notch of ultimate ventral segment of female deep, its fundus nearly straight; tarsi infuscated.	<i>vicinus</i>
- Median notch of ultimate ventral segment of female shallow.	4
4. Median notch of ultimate ventral segment of female with its fundus or base straight.	<i>servus</i>
- Median notch of ultimate ventral segment of female with its fundus minutely notched.	<i>major</i>

SPECIES FROM THE ISLANDS AND COAST OF CENTRAL AMERICA AND MEXICO

17. *Parajalysus punctipes* Van Duzee, n. sp.

Honey-yellow with the pronotal spines, dots on legs and antennæ and a line on apical margin of corium black. Length 5 mm. to tip of elytra.

Head nearly vertical before; vertex convex, polished, with the median line and a spot either side obviously paler, anteriorly prominent above base of tylus. Antennæ as long as entire body from tip of tylus to apex of membrane; segment I longer than II and III together, slender, briefly clavate at apex; IV fusiform, equal to III but a little shorter than II. Pronotum with a golden sheen; anterior lobe with four smooth pale granules either side; pronotal spines long, black, the median posterior spine preceded by a short pale carina. Scutellum small, smooth and tuberculate posteriorly. Elytra hyaline with a black line on the costal half of the apical margin. Beneath paler, the venter and a callous on each side of the pleural pieces whitish. Antennæ and tibiæ obscure castaneous, indistinctly dotted with black; femora pale distinctly dotted with black, their clavate apices pale castaneous; antennal incisures pale, apex of tarsi black. Rostrum attaining intermediate coxæ.

Holotype, a unique male, C. A. S. Ent. No. 3648, taken at Coseguina, Nicaragua, July 7, 1932, by Mr. Maurice Willows. This seems to be nearest to *P. concivis* Horvath from Peru but it is smaller and the proportionate lengths of the antennal segments are different.

18. *Arphnus tripunctatus* Van Duzee, n. sp.

Soiled whitish testaceous with a point at tip of scutellum, one at apex of each elytron and apical segment of antennæ black. Length 4 mm.

Head one-half longer than its width at base of antennæ; tylus short as in *tristis*, projecting before the bucculæ as far as one-half the length of the bucculæ. Segment I of antennæ as long as one-half the width of vertex between the eyes; II one-half longer than I in female, a little shorter in male (5:4), distinctly clavate, especially in the male; III equal to I and II together; IV scarcely longer than I, fusiform, its apical one-half clothed with minute pale hairs. Eyes small. Pronotum as long as head, a little shorter than its basal width (15:18); median carina distinct on anterior lobe. Rostrum scarcely attaining intermediate coxæ in male, a little longer in female.

Color whitish testaceous, paler on the elytra, coarsely, closely punctate, the punctures concolorous on the elytra, more luteous on the pronotum and pleuræ; vertex with four longitudinal lines whitish farinose; median area of scutellum more fulvous; tip of clavus and of corium, the eyes and the apical segment of antennæ black or nearly so; apex of membrane with three pale fuscous marks; venter obscurely punctate and rugulose; coxæ castaneous; lower surface of head, a lateral vitta on the pleuræ and a shorter one next the base of the elytra pale farinose.

Holotype, male, C. A. S. Ent. No. 3649, and *allotype*, female, No. 3650, and two male paratypes taken on Isabel Island, Mexico, July 27, 1932, by Mr. Maurice Willows. The large size, short tylus and pale color will distinguish this species.

19. *Lygus keiferi* Van Duzee, n. sp.

Aspect of *rubicundus* but narrower with longer antennæ and less opaque elytra. Length 4 mm.

Vertex about one-fourth narrower than an eye (5:7), the eyes much more deeply notched for the reception of the antennæ; apex of head less produced than in *rubicundus*, the tylus scarcely exceeding the cheeks. Segment I of antennæ much longer than in *rubicundus*, a little longer than the width of an eye viewed from above (8:7); II as long as from front of head to tip of scutellum, three and one-half times as long as I; III one-half longer than I; IV equal to I. Pronotum not quite twice as wide as long (13:23); narrower anteriorly than in the allied species, the anterior angles broadly rounded; surface polished, obscurely rugose. Scutellum a fourth wider than long, feebly convex and minutely shagreened. Elytra about a fifth longer to tip of corium than their greatest combined width (32:26). Rostrum just passing hind coxæ. Hind tibiæ nearly a third longer than the corium (40:32). Whole upper surface clothed with short pale hairs.

Color reddish testaceous, at times almost sanguineous or again subhyaline and tinged with green, especially along the costa; pronotum paler anteriorly; scutellum

with an abbreviated pale vitta at apex; inner margin of cuneus and sometimes the apex of the corium narrowly sanguineous; antennæ and legs testaceous, the apical half of hind femora more or less red, with an obscure pale subapical annulus; coxæ and disk of venter whitish, sides more or less sanguineous including a pale longitudinal vitta; tip of rostrum and tarsi blackish; membrane faintly enfumed, a pale spot at apex of areoles, apex of veins sanguineous.

Described from three females taken on Socorro Island, March 27, by Mr. Willows, a long series of both sexes taken on the same island, May 4-9, 1925, by Mr. H. H. Keifer, and two taken by Mr. Keifer, April 30, 1925, on Clarion Island. *Holotype*, male, C. A. S. Ent. No. 3651, and *allotype*, female, No. 3652, taken by Mr. Keifer at 2,000 feet elevation on Socorro Island, May 9. The slender antennæ and anteriorly strongly narrowed pronotum recall *olivaceus* Reuter.

20. *Aligia plena* Van Duzee, n. sp.

Aspect of *jucunda* Uhler, with the elytra strongly marked as in some *Scaphoideus*. Length 5.5 mm.

Vertex as in *jucunda*, its length one-third its width; transverse impression deeper than in its ally; margin subacute as in that species. Front broader than in *jucunda*, nearly as wide at base as long (15:18); clypeus scarcely widened at apex; cheeks broadly angled below the eye above which is a deep sinuation. Elytra much more than twice longer than broad (72:28); venation similar to that of *jucunda*, the costal node with three recurved veins, the radial connected to the claval suture by about sixteen transverse veins; second transverse vein incomplete in the type. Last ventral segment of female obtusely angularly produced at apex.

Color strongly contrasting, about as in *Scaphoideus lobatus* V. D.; vertex whitish, four marks on anterior margin, two dots against each eye and a basal dash either side the middle black, incised line brown, abbreviated before, basal field with a large fulvous spot on either side; face black; frontal arcs and disk of loræ fulvous; cheeks white varied with ferruginous. Pronotum fulvo-testaceous edged with whitish and varied with blackish, these marks leaving two white spots behind each eye. Scutellum white; lateral areas and median vitta of anterior lobe fulvous, two dots on anterior lobe and two marginal dots on posterior black, this posterior lobe with a discal yellowish cloud. Elytra pale fulvous becoming whitish hyaline on the costal and apical areas and on the scutellar margin; veins and some irregular marks on the clavus and disk of corium blackish; clavus with a large common median white spot and a smaller one on the suture on basal one-third; corium with a row of about four white spots along the disk; apical margin blackish.

Wings smoky hyaline with fuscous veins. Abdomen and pectus black varied with yellowish on the disk of the venter, connexivum, disk of pygofer and margin of propleuræ. Legs black; anterior and intermediate tibiæ and tarsi, spines of hind tibiæ and base of hind tarsi pale.

Holotype, a unique female, C. A. S. Ent. No. 3653, taken by Mr. Willows at Port Parker, Costa Rica, July 4, 1932.

21. *Acanalonia clarionensis* Van Duzee, n. sp.

Testaceous-brown, green when teneral, more or less irrorate and marked with fuscous; front with strong median carina; vertex very short, distinguished from front by a carina; costa strongly arcuate. Length, male 5, female, 7 mm.

Male: vertex very short, its median length one-fifth its width; median carina about as wide as long; anterior edge distinctly carinate. Front scarcely longer than wide, its greatest width at the antennæ is to its length either side the base of the clypeus as 20:22; median carina strong, not continued on the clypeus; sides parallel at the eyes, a little arcuate from there to the antennæ, then abruptly converging to the clypeus. Pronotum about as long as the width of the vertex, ecarinate. Scutellum twice as long as the pronotum; median carina wanting, lateral more or less distinct; disk convex before the apex. Elytra not twice as long as wide (80:55), the costa broadly arcuate from base to apex of clavus. The females are longer and have the elytra more truncate at apex. Last ventral segment of female cut out nearly to its base either side of a broad lingulate median tooth, this tooth nearly twice as long as wide (8:5) and rounded at apex.

Color testaceous-brown, more or less irrorate with fuscous, especially on the inner and apical areas and in a wide longitudinal vitta below the bullæ, the darker specimens showing a short whitish radial vitta just above the bullæ and a more or less distinct pale dorsal vitta covering the vertex, the pro- and mesonotum between the lateral carinæ, and the commissural arcole; usually there are a few blackish marks along the outer two arcoles on the corium, the apical dashes nearly obsolete in pale specimens. Immature individuals are green while adults vary much in the extent of infuscation.

Described from two pairs taken by Mr. Willows on Clarion Island, March 22, 24, 1932, and a long series taken by Mr. H. H. Keifer on Clarion Island, April 26 to May 1, 1925. Among Mr. Willows' material is one male labeled Socorro Island, March 26. *Holotype*, female, C. A. S. Ent. No. 3654, and *allotype*, male, No. 3655, taken on Clarion Island, March 24, by Mr. Willows.

22. *Acanalonia excavata* Van Duzee, n. sp.

Allied to *conica* Say but with shorter vertex and very distinct genital characters. Length 9 mm. to tip of elytra.

Vertex one-half as long as wide between the eyes, flat, ecarinate, in the same plane as the pronotum, separated from the front by an obscure carina that does not reach the eyes. Front slightly wider than its greatest length (23:20), ecarinate, sides parallel as far as the antennæ, rectilinear from there to the apex; clypeus ecarinate. Pronotum as long as vertex, ecarinate and without impressed points. Mesonotum about four times as long as pronotum, median carina obsolete, lateral nearly so, as are the subapical impressed points. Elytra nearly twice as long as wide (140:75). Last ventral segment of female trisinate, the median sinus broad and deeper than the lateral, and separated from them by a sharp black-tipped tooth.

Color clear light green, irrorate with paler on dorsum and with a pale median area, narrowed to a line on the vertex. Mesonotum with four vague fivous clouds anteriorly, the lateral carinæ indicated by green lines; costal edge and veins in part paler; apical brown dashes nearly obsolete; beneath pale, the tarsi fulvo-testaceous; eyes castaneous.

Holotype, female, C. A. S. Ent. No. 3656, taken July 7, 1932, by Maurice Willows, on Coseguina Slope, Nicaragua.

This seems to be close to *decens* Stål but that is larger with the vertex as long as its basal width according to Melichar. But he says the front has a distinct middle keel reaching to the clypeus while Stål in his original description says "front not longitudinally carinate." Following Stål this might well be *decens* except for its much smaller size. It seems best for the present at least to consider it as distinct.

23. *Dascalina tumida* Van Duzee, n. sp.

Form nearly of *edax* V. D.; larger, with the pronotum tumidly elevated anteriorly and the elytra rounded at apex. Length 7 mm. to tip of elytra.

Vertex at middle line about one-third its basal width (5:14); medially depressed. Front as long as broad, flat, ecarinate; sides feebly arcuate, base depressed, leaving the basal edge subacute medially; clypeus ecarinate, its base rectilinear. Pronotum ecarinate, as long as vertex, its edge slightly elevated. Mesonotum 5.5 times as long as pronotum, tumidly elevated anteriorly above the vertex to a height equal to the basal width of the clypeus; disk behind the prominence flattened and longitudinally feebly sulcate. Elytra a little more than twice longer than its greatest width (11:5); a little narrowed toward the rounded apex; clavus scarcely elevated at base, leaving the commissure straight; costal area opposite the bullæ nearly one-third the total width of the elytra (15:50); venation heavy but obscured by the coriaceous texture of the elytra, with one prominent vein from the bulla, that curves out at the apex of the node and then in to join the apical series of transverse veins. Wings smoky hyaline with fuscous veins. Hind tibiæ with two subapical teeth.

Color dark yellowish varied with fuscous-brown, especially on the base of the clavus, on the costal margin below the bullæ to the node, and on the inner apical field from before the apex of the clavus, the disk of the pronotum becoming piceous. Beneath pale with the coxæ and clypeus, its base excepted, fuscous; legs varied with brown.

Holotype, a unique female, C. A. S. Ent. No. 3657, taken by Mr. Willows at Acapulco, Mexico, April 3, 1932. This runs to *grisea* Fabr. in Melichar's key but is quite a distinct species. It has much the aspect of my *edax* from Lower California but the longer and tumid pronotum and rounded apex of the elytra will at once distinguish it.

24. *Euidella grossa* Van Duzee, n. sp.

Aspect of *altamazonica* Muir but much larger, more deeply colored and with longer basal segment of antennæ. Length to tip of elytra 6 mm.

Macropterous female; vertex as in *altamazonica*, scarcely exceeding the eyes, its length to front of head as seen from above equal to its width between the eyes; carinæ distinct. Front moderately convex, its length nearly twice its greatest

width (15:8); its width at apex over one-half its greatest width (5:8), median carina distinct; clypeus flat, tricarinate. Antennæ passing apex of front; segment I slender, about one-half the length of II. Pronotum not wider than head; lateral carinæ diverging, straight, terminating at hind angle of eye far from hind margin; mesonotal carinæ equally prominent, lateral rectilinear and slightly diverging. Elytra long, surpassing abdomen by one-third their length; wings fully developed. Basal segment of hind tarsi twice as long as II and III together; spur flat, the arcuate edge armed with very minute black teeth.

Color testaceous-brown; pleuræ with a pale area; elytra fuscous; clavus whitish, infuscated at base and apex; costal areole and outer two apical areoles whitish; veins obscurely granulate, with minute hairs; wings somewhat infuscated apically, with fuscous veins.

Holotype, female, C. A. S. Ent. No. 3658, taken by Mr. Willows at Port Parker, Costa Rica, July 4, 1932. The large size and deep fuscous vitta covering the whole median area of the elytra, will distinguish this species and will justify its description from a unique female.

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THE CACTACEAE OF THE GALAPAGOS ISLANDS

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FOREWORD

The *Cactaceae* of the Galapagos Islands are among the most interesting plants of the archipelago, not only scenically because of their size and aspect but also botanically because of their peculiar morphologic characters and local distribution. This study on their taxonomy has been based mainly on the collections obtained by the Templeton Crocker Expedition of the California Academy of Sciences and by Alban Stewart, botanist on the Academy Expedition of 1905-1906. Through the kindness of Dr. J. M. Greenman, it has been possible to study critical specimens of the Galapagian *Cactaceae* in the Herbarium of the Missouri Botanical Garden. In the citation of specimens under each species, the specimen is in the Herbarium of the California Academy of Sciences unless otherwise indicated.