

(Concluded from page 350.)

arcuate band, the more or less pallid costal margin faintly infuscated next the outer limit of the vitta. Hind femora with the inferior carina strongly arcuate, the outer face pallid, more or less strongly marked with three broad, oblique, blackish bands, beneath like the tibiae and tarsi, very pale luteous, the spines black tipped.

Length of body, ♂, 22 mm., ♀, 28 mm.; of tegmina, ♂, 24 mm., ♀, 26 mm.

Described from 1 ♂, 1 ♀, taken in the Prescott Mountain District, central Arizona, by Dr. Edward Palmer.

HIPPISCUS (X.) LATEFASCIATUS sp. nov.

Very dark brownish fuscous, marked with cinereous, of a moderately robust form (the ♂ rather slender) and rather below the medium size. Head sparsely and slightly rugulose above, not very broad, the fastigium of the vertex plane with rather low bounding walls, open behind, and in front completely engulfing the faintly biareolate median foveola, the lateral foveolae distinct, triangular, rather small, the frontal costa of moderate breadth, sulcate throughout except at the contracted summit. Pronotum very dark, the dorsum sometimes with subdecussate, broad, cinereous markings, the lateral lobes more tinged with gray, but with a large central quadrangular black patch on prozona; dorsum of ♂ nearly plane, of ♀ somewhat tumid, of both rather strongly and coarsely verruculose, the more prominent elevations longitudinal but short; median carina obsolete between the sulci (but here accompanied by only an obsolete discal scutellum) nowhere prominent except where it passes, in the ♀, over the stabbed front of the metazona; process rectangulate; lateral carinae prominent, rather sharp, and extended. Tegmina pantherine, cinereous, and dark brown, the darker markings prevailing, ex-

tending to the apex, crossing almost or quite the whole wing, and everywhere very much broken, hardly more blended at the base than elsewhere; sutural stripe cinereous. Wings pale citron at base with corresponding reticulation, pellucid with black reticulation and a few cellular maculations at apex, and between an unusually broad, arcuate, blackish fuliginous band which narrows only when following the outer margin to the anal angle, which it reaches and leaves in the ♂ only a little more than two, in the ♀ three or four marginal lobes free at the apex; it is separated by a fine fulvous line from the humeral vitta, the outer limit of which corresponds to that of the arcuate band and extends nearly or quite to the base, leaving only the basal half of the costal edge light colored. Hind femora externally pale cinereous with three broad, very oblique, blackish bands, internally coral red blotched with blackish at the base, beneath, like the tibiae, coral red, the latter more or less hoary externally on the basal half, the spines black tipped.

Length of body, ♂, 23-25 mm., ♀, 33.5-37 mm.; tegmina, ♂, 25-27 mm., ♀, 31.5-36 mm.

Described from 4 ♂, 2 ♀.

This is a northern species, living next our northern boundary, occurring from the Red River in Manitoba (Donald Gunn) and Calgary, Alberta, British Columbia, June 11 (Bean in S. Henshaw's collection) to the upper Missouri and Yellowstone (F. V. Hayden).

HIPPISCUS (X.) OBSCURUS sp. nov.

Blackish fuscous, of slender form and small size. Head dark only on summit, being elsewhere cinereous or livid, flecked with fuscous dots, not very large nor very tumid, faintly subrugulose in the vicinity of the

posterior margin of the fastigium of the vertex; this distinct, plane, as broad as long, open behind, closed by a V-shaped carina in front, the walls low but distinct and in the middle angulate; median carina when present terminating in the middle of the fastigium; lateral foveolae very distinct, elongate triangular, including between their tips the equally deep biareolate foveola, which in the ♀ is sometimes confluent with the sulcus of the frontal costa; the latter moderately broad, subequal, but slightly contracted at summit, more or less sulcate throughout, above with a slight median carina. Pronotum compressed, but little expanded on the metazona, plane above, the process of metazona rectangulate, the median carina slight, equal, straight, uninterrupted between the sulci, the lateral carinae slight and confined to the metazona, the dorsal surface longitudinally rugulose with short vermiculations, more crowded, transverse, and subdued on the lateral lobes of the metazona. Tegmina dark brownish fuscous marked with dark cinereous after the fashion of *H. (X.) neglectus* and as there somewhat variable, the sutural stripe hardly visible. Wings pale citron on basal half with corresponding reticulation (except where the humeral vitta runs in nearly to the base), blackish fuliginous beyond, the apex of the two uppermost lobes generally more or less vitreous with black reticulation, at the most occupying a triangular area which takes in less than a fourth of the costal margin, and is then generally abridged by the infuscation or infumation of the extreme apex. Hind femora dark grayish cinereous externally, crossed obliquely by three obscure, moderately narrow, dark fuscous stripes, internally black with apical and postmedian transverse luteous stripes, inferiorly luteous often with a reddish tinge; hind tibiae rather pale coral red, apically often becoming luteous, the spines black tipped.

Length of body, ♂, 22 mm., ♀, 28.5 mm.; of tegmina, ♂, 22 mm., ♀, 27 mm.

Described from 2 ♂, 3 ♀, obtained by G. R. Crotch in British Columbia.

This species is closely allied to *H. (X.) neglectus*, from which it is to be distinguished mainly by the greater breadth of the dark markings on the wings, the darker colors of the body and tegmina, and far less brightly contrasted sutural stripe of the latter.

HIPPISCUS (X.) NEGLECTUS.

Oedipoda neglecta Thom., Proc. acad. nat. sc. Philad., 1870, 81-82; Rep. U. S. geol. surv. Wyo., 276-277; Syn. Acrid. N. A., 128-129; Rep. U. S. surv. 100th mer., 5, 881-882, pl. 44, fig. 3; Bull. U. S. geol. surv. terr., 4, 483.

Arphia neglecta Thom., Proc. Dav. acad., 1, 254.

Hippiscus neglectus Scudd., Bull. U. S. geol. surv. terr., 2, 264; Thom., Rep. ent. Ill., 9, 95, 114-115.

Xanthippus neglectus Sauss., Prodr. Oedip., 94-95; McNeill, Psyche, 6, 63-64.

Cratypedes putnami Thom., Proc. Dav. acad., 1, 257-258, pl. 36, fig. 6; Rep. U. S. ent. comm., 2, 259.

Hippiscus lineatus Scudd., Proc. Bost. soc. nat. hist., 19, 31; Ent. notes, 6, 9; Cent. Orth., 48, 84; Rep. U. S. ent. comm., 2, app. 2, 26; Sauss., Prodr. Oedip., 87.

(Not *Oe. neglecta* Thom., Key Ill. Orth., 3; Bull. Ill. mus., 1, 64.)

This species is somewhat variable, especially in the markings of the tegmina, which at one extreme resemble those of species of *Trimerotropis*, at the other those of *Encoptolophus*, and in some are almost entirely of a warm brown color with concolorous sutural stripe and the merest clouds of lighter

shades barely indicating any markings at all. It is hardly surprising that it has been described under several names.

I have before me 28 ♂ and 34 ♀, mostly taken by myself in Colorado and the adjoining territories on the west and north and at an elevation ranging from 6000-8500', in July and August. This is apparently the principal region of its abundance, but it extends southward to southern Utah (E. Palmer), northeastern New Mexico (C. Thomas) and the borders of Arizona (Thomas), Arizona (Bruner in litt.), westward to various localities in Nevada (H. Edwards), Camp Hallock, Nev. (E. Palmer), Ruby Valley, Nev. (R. Ridgway), near Lake Tahoe, California (S. Henshaw in Capt. Wheeler's explorations of 1876), and the Sierra Nevada, Calif. (H. Edwards); and northward to Montana where according to C. Thomas it was collected by Dr. E. Coues, and west of which I have seen specimens sent me by Mr. Bruner from Soda Springs and Coeur d'Alene, Idaho, and Yakima River, Washington, July 18; Bruner also informs me that he has specimens in his collection from Ft. McKinney, Wyo.; Salmon Co., Henry Lake, Beaver Cañon, and Camas Prairie, Idaho; Colville, Washington; and even from Ft. McLeod, British America. It is twice stated by C. Thomas to occur in southern Illinois, but by a wrong identification for *H. (H.) haldemanni*; it does not seem to occur east of the foot hills of Colorado, the easternmost localities known to me being Blackhawk, July 2 (A. S. Packard), Beaver Brook Cañon, 6000', July 11, and Georgetown, 75-8500', July 12-18 (S. H. Scudder), and Manitou, 6300' (July 14, A. S. Packard, and Aug. 24-25, S. H. Scudder).

HIPPISCUS (X.) MONTANUS.

Oedipoda montana Thom!, Rep. U. S. geol. surv. terr., 5,462-463; Syn. Acrid. N. A., 129-130; Glov., Ill. N. A. ent., Orth., pl. 12, fig. 12.

Hippiscus montanus Sauss., Add. prodr. Oedip., 170.

This species appears to be wide spread though rather rare, perhaps local. It comes from Idaho (Franklin, June 12, Bruner), and Thomas also reports it from the upper part of the Snake River plain near the mountains, and in southern Montana. He adds that it was not noted south of Market Lake, but from the north or Atlantic slope of the range to Virginia City in Montana. Two of his types which I have seen through the favor of Dr. Riley are marked as coming from Montana and Idaho. But it also occurs further south and east, for it is found in the southwestern part of Holt Co., Nebr. (Bruner), and the greater part of the Sand Hill region of central and western Nebraska (Bruner in litt.), as well as in New Mexico (Taos Valley, Bruner in litt.) and at Holbrook, Arizona (Bruner).

HIPPISCUS (X.) LATERITIUS.

Xanthippus lateritius Sauss., Prodr. Oedip., 92-93.

I have not seen this species, which seems from Saussure's description to fall in this immediate neighborhood. It is described from Nevada.

HIPPISCUS (X.) CALTHULUS.

Xanthippus calthulus Sauss., Prodr. Oedip., 93.

I have a single ♀ of this species taken by Crotch in southern Nevada. Saussure's specimens also came from Nevada, but Bruner sends me a specimen from Placer Co., California, taken in June.

HIPPISCUS (X.) *GRISEUS* sp. nov.

Almost uniformly griseus, moderately robust and rather below the medium size. Head not very broad nor very tumid above, the summit subrugulose; fastigium of vertex with distinct and moderately elevated, strongly bent lateral walls, open or partially closed behind, the median carina extending faintly to the centre, separated by a slight V-shaped wall from the nearly circular biareolate median foveola; lateral foveolae moderately distinct, of medium size, rounded triangular; frontal costa of moderate breadth, narrowed somewhat at summit where it shows a slight median carina and below the ocellus where it is deeply sulcate, expanding and fading at base. Pronotum expanding moderately on the metazona, which is faintly tumid, heavily stabbed anteriorly but without plications, rather densely and considerably verrucose, the process rectangulate, its margins subcrenulate by reason of the verrucosities, the median carina slight and equal, but subobsolete between the sulci, the lateral carinae distinct and tolerably sharp, but not elevated and confined to the metazona. Tegmina griseo-cinereous with dark brown fleckings, in the apical third of the wing faint and pretty uniformly distributed, before that largely collected into two narrow transverse stripes, one crossing the base of the outer discoidal field, the other and larger midway between it and the base, but all often very obscure, those of the apex sometimes obsolete. Wings pale citron at base with similar reticulation, vitreous at apex with black reticulation and an extramesial, strongly ar-

cuate, dark fuliginous, moderately narrow band tapering along the hinder margin in passing to the anal angle which it fails to reach and leaving from two to three marginal lobes free at the apex; it is separated by a luteous line from the humeral vitta of the same color, the outer margin of which forms with that of the upper part of the arcuate band a straight oblique line; it runs to the base leaving the costal edge luteous. Hind femora very broad with strong arcuation of the inferior carina, the outer surface pale or fusco-cinereous with more or less obscured blackish brown oblique bands; interior and inferior surface and tarsi yellowish luteous, the spines black tipped.

Length of body, ♀ 33-34 mm.; of tegmina ♀, 28-33 mm.

Described from 5 ♀, taken by Dr. Edward Palmer, April 20-30, at Mokiak Pass, Utah.

HIPPISCUS (X.) *VITELLINUS*.

Xanthippus vitellinus Sauss., Prodr. Oedip., 94.

I have one female of this species from Nevada (H. Edwards), the locality from which it is described by Saussure. Mr. Bruner also sends me specimens from Reno, Nevada, and Umatilla, Oregon, June 25, and reports it from Idaho between Beaver Cañon and Henry Lake.

Edwards notes that in life the hind wings are red at base.

HIPPISCUS (X.) *AURILEGULUS* sp. nov.

Very dark brownish fuscous, not very robust and of small size. Head rather broad at summit but not tumid, the frontal costa a

little more prominent than usual, the face and cheeks more or less finely sprinkled with dark cinereous, the summit subrugulose; fastigium of vertex shallow, open behind and also in front, where the subcircular faintly biareolate median foveola is completely blended with it; median carinae slight, passing a variable distance into the fastigium; lateral foveolae rather pronounced but small and triangular oval; frontal costa moderately slender, considerably narrowed at the summit, almost as much so and with unusual abruptness below the ocellus, expanding considerably at base, sulcate throughout, sometimes with a median carina above. Pronotum moderately stout, expanding almost regularly from base to apex, but not greatly; the process of metazona rectangulate, its margins subcrenulate; the dorsal surface plane, subverruculose; median carina nearly obliterated between the principal sulci with a slight discal scutellum, otherwise equal, straight, and slight; lateral carinae sharp but not elevated throughout the metazona, the lateral lobes of metazona almost as rough as the dorsum. Tegmina dark brownish fuscous with faint brown or brownish cinereous markings, the apex subvitreous, mottled obscurely with brownish fuscous; the principal lighter markings are a broad but inferiorly narrowing transverse patch at the end of the basal third of the tegmina, a narrow but variable transverse stripe just beyond the extreme base of the outer discoidal field and a very irregular and obscure inferior blotch at the very base of the tegmina; sutural line flavous and very distinct. Wings bright citron yellow at base with corresponding reticulation, obscure hyaline at apex with black reticulation and a rather narrow, arcuate, extramesial, fuliginous band, narrowing as it passes along the outer margin toward the anal angle, which it nearly or quite reaches and leaves about three of the marginal lobes free at the apex; the apex is also obscured almost or quite as deeply next the margin, but the outer limits of the band are determinable; it is separated by a pallid

line from the humeral vitta, the outer limits of which are subcontinuous with its own and which extends almost to the base, leaving a fulvous edge of the costal margin hardly obscured by a stigma. Hind femora dark cinereous crossed more or less distinctly by three oblique blackish stripes, beneath and within mostly blue black, the tibiae coral red with black tipped spines.

Length of body, 21.5-23 mm.; of tegmina, 23.25-5 mm.

Described from 3 ♂ taken in California by H. Edwards (his No. 79) and in Sonoma Co., April 27-May 9, by Baron R. von Osten Sacken.

HIPPISCUS (X.) STIGMOSUS sp. nov.

This species differs from the preceding only in the markings of the tegmina and wings and may prove to be only a varietal form. The tegmina differ in having the markings still more obscure with the single exception of the spot at the base of the outer discoidal area which is more pronounced and whitish; and of the sutural stripe which is just as bright as in the other species; the mottling of the apex is almost entirely or quite lost. In the wings the extramesial band, besides being generally fainter, and sometimes broken into maculae by the penetrating citron colored veins, also extends to a much less distance toward the anal angle, sometimes hardly more than half way toward it.

Length of body, ♂, 25 mm., ♀, 34 mm.; of tegmina, ♂, 25 mm., ♀, 29 mm.

Described from 3 ♂, 1 ♀, received from California (J. Behrens), Napa Co., California, (H. Edwards), and southern Nevada (G. R. Crotch). Mr. Bruner also sends me specimens from Ukiah, California, collected in April by J. H. Burke, and from Placer Co., California, taken in June.



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