

NOTES ON SOME WESTERN ORTHOPTERA: WITH THE
DESCRIPTION OF ONE NEW SPECIES.

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During the summer of 1906 the writer spent three months on the Pacific coast in company with Dr. H. G. Dyar. The main object of the expedition was the collecting and breeding of mosquitoes, but as occasion permitted some collections were made in other orders, especially Orthoptera, to which the following notes pertain.

On the way out to the coast a stop was made at El Paso, Texas, where on May 25 about an hour was spent just before dark collecting across the Rio Grande in Mexico, near Ciudad Juarez. The collecting here was quite productive, and it is to be regretted that more time could not have been spent at this point. The immediate locality collected over was a sandy desert region sparsely covered with *Larrea*, etc. In this shrub *Boottettia argentatus* was found in some numbers and on the bare ground *Trimerotropis vinculata* and *Heliastus aridus* were common.

We spent May 30 collecting along the course of a creek at Sierra Madre, California. On June 1 we went to San Diego and the following day a trip was made to Tia Juana in Lower California. The morning of June 3 was spent in collecting near San Diego, and we returned to Los Angeles in the evening. Orthoptera were few in this region, in fact all through southern California insect life was surprisingly scarce.

On June 5 the writer proceeded to Indio and Cochella, where three days were spent collecting. This desert region is much below sea level and very hot, the thermometer registering considerably over 100 degrees during the middle of the day even at that time of the year.

From June 9 to June 12 was passed in the vicinity of Los Angeles, and on June 13 a steamer was taken at San Pedro for Santa Catalina Island, where the 14th was spent collecting back of Avalon. The ground there is hilly and rocky, vegetation scant, and insects, especially Orthoptera, not abundant.

On June 18 another trip was made to San Diego, returning to Los Angeles on June 20. On June 23 the writer started alone for various points north. While at Los Angeles collecting trips were taken to various points in the surrounding region.

On June 25 and 26 my time was spent in collecting at Guadalupe, and then the journey north was continued, a stop of one day being made at San Luis Obispo. San Francisco was reached on the evening of June 28, and on the 30th a steamer was taken for Eureka, where I arrived on the following day. Here one week was spent, when I returned south and proceeded to Chico, where I met Doctor Dyar on July 10. Together we resumed travel northward, stops being made at various points. From Sisson we ascended Mount Shasta as far as the snow line, and from Thrall we made a side trip to the Klamath Lake region in Oregon.

On July 30 we reached Portland, Oregon, and the following day stopped in Seattle, Washington. On August 1 we made a trip to Mount Rainier, returning to Seattle on August 4. At Paradise Valley, on Mount Rainier, we found insect life abundant, and, though time prohibited our lingering there for more than a few hours, we secured a number of desirable specimens.

On August 5 we proceeded to Vancouver, British Columbia, and on the following day went to Nanaimo and Wellington, on Vancouver Island. We left Wellington for Victoria on August 8, stopping at several points on the way. On August 14 we left Vancouver and traveled eastward, stopping at Laggan, Calgary, Medicine Hat, and Moose Jaw, Canada, and Portal, North Dakota. At Portal our last collecting was done, and we left there for home on August 26, reaching Washington three days later.

Following is a list of the Orthoptera observed on this trip.

Family BLATTIDÆ.

BLATTA ORIENTALIS, Linnæus.

One male, one female, Chico, California.

BLATTELLA GERMANICA Linnæus.

One male, on steamer off the coast of California in early July.

PERIPLANETA AMERICANA Linnæus.

One male, Indio, California.

Family MANTIDÆ.

LITANEUTRIA OBSCURA Scudder.

One female, Indio, California, June 5. This specimen is immature. It was found running in the desert and was very much like the surface of the ground in color.

Family PHASMIDÆ.

At Ciudad Juarez, Mexico, I found two green nymphs of a Phasmid and tried to rear them to maturity, but failed. One cast its skin once, but both soon died. They have a pair of small horns and were found on *Larrea* species.

Family ACRIDIDÆ.

TELMATETTIX HESPERUS Hancock.

One female, Sierra Madre, California. This specimen was taken on sandy ground near a creek and its ashy and brown coloration offered little contrast to its surroundings.

BOOTETTIX ARGENTATUS Bruner.

Four males, two females, two nymphs, Ciudad Juarez, Mexico, May 25. Found on *Larrea* bushes at dusk, so dark in fact that insects, even in exposed positions were scarcely distinguishable. These specimens would not have been found but for their song which at that hour was very loud.

Bruner^a refers with doubt the genus *Gymnæs* of Scudder to the genus *Bootettix*, likewise referring *Gymnæs punctatus* to the synonymy under *Bootettix argentatus*. I have a male of Scudder's species from Palm Springs, California, and have examined his type specimen, a female. I have both sexes of *Bootettix argentatus*, including the type. From a study of this material I unhesitatingly pronounce the two species distinct, but congeneric. Thus the genus *Gymnæs* of Scudder is a synonym of the earlier established *Bootettix* of Bruner and its only species is valid and must be called *Bootettix punctatus*.

OPEIA TESTACEA Scudder?

One nymph, Dominguez, California, June 2.

PHLIBOSTROMA QUADRIMACULATUM Thomas.

Common at Calgary and Medicine Hat, Canada. There should be recognized two forms of this common and widely distributed species. The typical form *quadrifasciatum*, having *parvum* Scudder and *lactum* Uhl as synonyms, has the elytra decidedly shorter than those of the other form, which must be known as *P. pictum* Scudder. For convenience these two forms may be differentiated on the relative length of the elytra as compared with that of the pronotum. In the typical form the elytra are three or less times as long as the pronotum, while in the long-winged *pictum* they are more than three times as long. The short-winged form is usually smaller than the long-winged variety.

STENOBOTHRUS CURTIPENNIS Harris.

Both macropterous and brachypterous forms taken at Portal, North Dakota.

^a Biol. Cent. Amer., Orth., II, 1904, p. 52.

BRUNERIA SHASTANA Scudder.

One female, Sisson, California.

GOMPHOCERUS CLAVATUS Thomas.

Common at Portal, North Dakota.

PSOLÆSSA BUDDIANA Bruner.

One female, Ciudad Juarez, Mexico. This specimen has a conspicuous yellow dorsal stripe extending from the vertex of the head to the tip of the elytra. The femoral spot is also distinct, but this is not unusual.

PSOLÆSSA MACULIPENNIS Scudder.

Both sexes taken at Ciudad Juarez, Mexico.

AGENEOTETTIX SCUDDERI Bruner.

One female, Medicine Hat, Saskatchewan, Canada.

ARPHIA PSEUDONIETANA Thomas.

Common at Calgary, Medicine Hat, and Moose Jaw in Canada and at Portal, North Dakota.

CHIMAROCEPHALA PACIFICA INCISA Caudell.

Two females, Sierra Madre, California, May 30. These specimens were filled with eggs.

ENCOPTOLOPHUS PARVUS Scudder.

Four males, six females, Moose Jaw, Canada. These can not be distinguished from specimens from New Mexico now before me. Some specimens of this species are decidedly green, but the usual color is brownish. The green form was described by Bruner as *montanus*, but both green and brown forms from Medicine Hat and Moose Jaw, Canada, and Bozeman, Montana, were identified by him as *montanus*. I can find no character for separating these into two forms and am therefore constrained to consider *montanus* a synonym of *parvus*. Over fifty examples are before me.

CAMNULA PELLUCIDA Scudder.

This common species was taken at Sisson and Eureka, California, Klamath Lake, Oregon, on Vancouver Island, British Columbia, and at Calgary, Alberta, Canada.

HIPPISCUS, species.

Two females, Medicine Hat, Canada, and Portal, North Dakota.

LEPRUS GLAUCIPENNIS Scudder.

Two males, one female, one nymph, Catalina Island, California. The male has the base of the wings blue like those of *interior*, not greenish blue as in typical specimens. *Interior* may yet prove to be but a form of *glaucipennis*.

DISSOSTEIRA CAROLINA Linnæus.

Common at places on Vancouver Island, British Columbia, and also taken at other points.

SPHARAGEMON ÆQUALE Say.

Both sexes taken at Calgary and Medicine Hat, Canada.

SPHARAGEMON COLLARE Scudder.

Both sexes taken at Portal, North Dakota.

SPHARAGEMON VENUSTA Stål.

Both sexes taken on Santa Catalina Island, California. Also collected at Sisson and Thrall in California.

LACTISTA GIBBOSUS Saussure.

One female, Sierra Madre, California.

TRACHYRHACHIS KIOWA Thomas.

Common at Calgary, Moose Jaw, Canada, and Portal, North Dakota.

CONOZOA BEHRENSI Saussure.

Seven males, one female, Guadalupe, California, one female, San Diego, California. This species is very similar to *sulcifrons* but the pronotum is decidedly more rugose above and the median carina more distinctly bilobate. The pronotum is also noticeably less elongate than in *sulcifrons*.

CONOZOA SULCIFRONS Scudder.

Both sexes taken at Indio, California.

TRIMEROTROPIS ALBOLINEATA Bruner.

Two males, San Diego, California.

TRIMEROTROPIS CÆRULEIPENNIS Bruner.

Two males, Santa Catalina Island and Sisson, California.

TRIMEROTROPIS CÆRULEIPES Bruner.

This species was taken at Thrall and Sisson in California and at Wellington and Nanaimo on Vancouver Island, British Columbia. At the latter place they were very active, making a loud crackling noise while in the air.

This is a very variable species. The form with the apical half of the wing clouded was described by McNeill as *tessellata* from a single male specimen from Turkey Tanks, Arizona. I have a female from the same place taken on the same date, July 17, and it is unquestionably this species and is topotypical. The name may be used in a varietal sense but the form is certainly not specifically distinct from the typical form with the wings apically hyaline. About seventy specimens are before me and the range of variation covers both forms. The variety has about as wide a range as the typical form, the above specimens from Vancouver Island belonging to it.

TRIMEROTROPIS CITRINA Scudder.

Taken at Calgary, Alberta, Canada.

TRIMEROTROPIS KEOBELEI Bruner.

One male, Dunsmuir, California.

TRIMEROTROPIS MONTICOLA Saussure.

Both sexes taken at Calgary and Moose Jaw, Canada.

TRIMEROTROPIS OBSCURA Scudder.

Collected at Dunsmuir, California, and Ashford, Washington.

TRIMEROTROPIS SUFFUSUS Scudder.

Two females, foothills of Mount Shasta in California.

TRIMEROTROPIS TEXANA Bruner.

One male, Tia Juana, Lower California.

TRIMEROTROPIS VINCULATA Scudder.

This common and widely distributed species was taken at Ciudad Juarez, Mexico, in Lower California, at Indio, Sierra Madre, and Pasadena in California, and also on Santa Catalina Island, California.

The stigma, which is usually blue in this species, is often yellowish or colorless. In desert regions, as at Indio, this species often flies into a thorny desert shrub, when they are very difficult to secure.

TRIMEROTROPIS VINCULATA SIMILIS Scudder.

One male, Calgary, Alberta, Canada. A study of a long series of *similis* has resulted in my reducing it to a variety of *vinculata*. I have it from California, and its distribution is probably as extensive as that of *vinculata*.

AULOCARA ELLIOTTI Thomas.

One male, Klammath Lake, Oregon, July 27.

ANCONIA INTEGRATA Scudder.

Several specimens at Indio, California, June 5. This is one of the commonest grasshoppers in this dry desert region, but even it occurs only sparingly. These grasshoppers are wild and hard to catch, especially as they often fly in thorny shrubs, where they are very difficult to get. They are protectively colored when on the ground and when flushed fly long distances, especially the females which fly much farther than the males.

HADROTETTIX TRIFASCIATUS Say.

Two females, Calgary, Alberta, Canada.

HELIASTUS ARIDUS Bruner.

Three females, four males, Ciudad Juarez, Mexico.

HELIASTUS CALIFORNICUS Thomas.

Both sexes taken at Sierra Madre, California, May 30. These beautiful little grasshoppers are fine examples of protective coloration. They were taken on sand along a creek and their color so perfectly blended with their surroundings that they would most certainly have escaped observation had they remained inactive. In specimens taken on white sand the white predominated, while one taken in a field on dark sand was mostly dark brown with darker mottlings. The varying coloration seems wholly due to surroundings. The type specimens in the U. S. National Museum are reddish, having probably been taken on similarly colored ground.

PHRYNOTETTIX ROBUSTUS Bruner.

One pair taken at Ciudad Juarez, Mexico. Notwithstanding its large size, this is an inconspicuous insect, owing to its color, which harmonizes with the surroundings. It is a clumsy creature and lives on bare, rocky ground.

SCHISTOCERCA VAGA Scudder.

Two gravid females, Sierra Madre, California, May 30.

HESPEROTETTIX FESTIVUS Scudder.

One male, three females, Indio, California. One of these females is light brown, an unusual coloration.

BRADYNOTES OBESA Thomas.

One male, foothills of Mount Shasta, in California.

MELANOPLUS BIVITTATUS Say.

Collected at Moose Jaw, Alberta, Canada, and Portal, North Dakota.

MELANOPLUS BORCKII Stal.

One male, Guadalupe, California, June 24.

MELANOPLUS DAWSONI Scudder.

Taken at Moose Jaw, Canada, and Portal, North Dakota.

MELANOPLUS DAWSONI TELLUSTRIS Scudder.

Common at Calgary and Moose Jaw, Canada, and Portal, North Dakota.

MELANOPLUS DEVASTATOR CONSPICUUS Scudder.

Collected at Chico and Thrall, California, and at Wellington on Vancouver Island, British Columbia.

MELANOPLUS DEVASTATOR OBSCURUS Scudder.

Taken at Sisson and Carpenteria, California, on lupine; also taken at Klamath Lake, Oregon.

MELANOPLUS DEVASTATOR TYPICALIS Scudder.

One male, Santa Catalina Island, California; others of both sexes on the mainland.

MELANOPLUS MONTICOLA Bruner.

Five males, six females, Laggan, Alberta, Canada. These specimens were taken high up in the mountains near Laggan, some on Mount Fairview and others near Lake Agnes.

MELANOPLUS FEMORATUS Burmeister.

One female, Sisson, California; one male, Wellington, on Vancouver Island, British Columbia.

MELANOPLUS FEMUR-RUBRUM DeGeer.

Collected at Klamath Lake, Oregon, and at Portal, North Dakota, in the United States, and at Medicine Hat in Canada.

MELANOPLUS FLAVESCENS Scudder.

One female, Indio, California, June 6.

MELANOPLUS FUSCIPES Scudder.

One male, two females, Sierra Madre, California, May 30.

MELANOPLUS GLADSTONI Scudder.

Common at Calgary, Medicine Hat, and Moose Jaw, Canada. Three females from Calgary are indistinguishable from others of the same sex except that the posterior tibiæ are pale greenish instead of red.

MELANOPLUS INFANTILIS Scudder.

Many specimens of both sexes taken at Calgary, Medicine Hat, and Moose Jaw, Canada, and Portal, North Dakota.

MELANOPLUS INTERMEDIUS Scudder.

Both sexes at Eureka, California, July 6.

MELANOPLUS MARGINATUS PAUPER Scudder.

Common at Guadalupe, California, where it was taken on sugar beets. Also collected at Chico, California.

MELANOPLUS PACIFICUS Scudder.

Common at Dunsmuir and Sisson, California.

MELANOPLUS PACKARDII Scudder.

Collected at Moose Jaw and Calgary, Canada.

MELANOPLUS PINCTUS Scudder.

One pair at Sweetwater Junction, California, and one female at San Diego, California.

MELANOPLUS TENUIPPENNIS Scudder.

One male, on sugar beets at Guadalupe, California, June 24.

MELANOPLUS, species.

Two females, Klamath Lake, Oregon.

MELANOPLUS WASHINGTONIANUS Bruner.

Three males, four females, Laggan, Alberta, Canada, August 17. These were taken on Mount Fairview and across the valley from that point near Lake Agnes. This is probably the insect recorded by Walker from Laggan as questionably *Podisma dodgei*, his record being based on a single female specimen. This species is near *montanus*, but the acute prosternal spine of the male and the wider mesoternal interspace of the female serve to separate it from that species.

AEMOPLUS RAINIERENSIS Caudell.

Many specimens, both sexes and nymphs, in Paradise Valley, Mount Rainier, Washington, in August.

Family LOCUSTIDÆ.

PLATYLIRA CALIFORNICA Scudder.

One immature male apparently in the last stage, Sierra Madre, California, May 30.

ORCHELIMUM AGILE DeGeer.

One male, Sisson, California, in July.

XIPHIDION SALTANS Scudder.

One male, Portal, North Dakota, in August.

XIPHIDIUM VICINUM Morse.

One immature female, Sisson, California; one long-winged female, var. *productum*, at Portal, North Dakota.

CAPNOBOTES FULIGINOSUS Thomas?

One immature female, foothills of Mount Shasta in California, on a species of *Ceanothus*.

NEDUBA CARINATA Walker.

Three males and one immature female at Eureka, California, on July 5, and several young specimens, which probably belong to this species, at Sierra Madre, California, May 30.

NEDUBA CARINATA PICTURATA Scudder.

One male, Eureka, California, July 5.

IDIONOTUS BRUNNEUS Scudder.

Three males, Thrall, California, July 28, chirping in the evening.

IDIOSTATUS HERMANI Thomas.

One male, Dunsmuir, California, July 19; several nymphs, foothills of Mount Shasta, California, July 24.

ATELOPLUS NOTATUS Scudder.

One immature male, Indio, California, June 5. This was under the loose bark of a small dead tree in the desert.

STENOPELMATUS FUSCUS Haldemann.

Taken at Sierra Madre, Gaudalupe, and San Luis Obispo in California. At the latter place they were quite common under cow droppings, most of the specimens collected being immature. The one at Sierra Madre was found dead in a field.

CYPHODERRIS PIPERI Caudell.

Two males, Longmires Springs, Washington, at the base of Mount Rainer. These two were stridulating at night. (See Ent. News, vol. xviii, p. 335-336.)

MARSA PACIFICA Scudder.

A pair of immature specimens at Dunsmuir, California, July 20.

MARSA SALEBROSA Scudder.

One male, two females, Ashford, Washington, in August, all immature.

MARSA TUBERCULATA, new species.

Description.—Color ashy gray mottled with black. Antennae slender, over twice as long as the body, testaceous, apically with some of the joints darker. Head mostly pallid, somewhat infuscated behind the eyes and especially above the acute vertex, which is prolonged between the enlarged basal joints of the antennae as an elongate triangular process; palpi long, the last joint excavate beneath for three-fourths its length or more. Thorax pale brown, blackish dorso-laterally, the lower part of the lobes mottled; metanotum and mesonotum about equal in length, together about equaling the pronotum. Abdomen somewhat compressed, pale beneath,

dorsally and laterally infuscated; in the male the dorsal surface of all but the last two or three abdominal segments is covered with high acute brown tubercles, mostly about three times as high as the basal width; on the sides these tubercles grow smaller and shorter, fading entirely below; in addition to this conspicuous covering of long tubercles the abdomen of the male is ornamented above on each of the 2, 3, 4, and 5 segments by a prominent, smoothly rounded process, twice as long as the tubercles, subcylindrical, brownish in color with an oblique white V-shaped spot on the anterior surface of each toward the base: the process on the 2 segment is smaller and more conical than the others. Cerci of both sexes long and stout, but little shorter than the pronotum, simple, cylindrical and slenderly pointed in the female: in the male cylindrical, apically blunt and with a short subapical pointed branch. Legs moderate, dark and light mottled, the mottling assuming a somewhat banded form, especially on the tibiae; anterior femora about as long as the pronotum, unarmed; anterior tibiae as long as the femora, unarmed above, except apically, below armed with about three sharp spines in the apical half; intermediate legs similar to the anterior ones except the femora has a genicular spine posteriorly and the tibiae are armed above with a couple of distinct sharp spines on each side; posterior femora about four times as long as wide, moderately swollen basally above, the lower margin straight and inconspicuously dentate; posterior tibiae slightly longer than their corresponding femora, straight in both sexes, armed below on the median line with two or three minute fine spines near the apex, and above with a series of triangular teeth and five long calcaria on each side, besides apical spurs; tarsi of all the legs long, the basal joint equaling in length that of the rest combined. Ovipositor stout, of moderate length, apically smooth, the teeth of the lower side of the inner valves dull.

Length.—Pronotum, male, 3 mm., female, 3.5 mm.; posterior femora, male, 8 mm., female, 10 mm.; cerci, male, 2 mm., female, 2.5 mm.; ovipositor, 5 mm.

Type.—Cat. No. 11420, U.S.N.M.

One male, one female, Eureka, California, July 5.

These specimens were taken under the loose bark of an old tree close to the ground. This is the smallest species in the genus.

Family GRYLLIDÆ.

GRYLLUS VOCALIS Scudder.

One male, Santa Catalina Island, California. *Gryllus assimilis* has been recorded from this island by Rehn.

GRYLLUS PENNSYLVANICUS Burmeister.

One male, Dunsuir, California.

GRYLLUS PENNSYLVANICUS ABBREVIATUS Scudder.

Both sexes at Moose Jaw, Canada.

NEMOBIUS FASCIATUS ABORTIVUS Caudell.

Both sexes at Calgary, Medicine Hat, and Moose Jaw, Canada, and Portal, North Dakota.

CECANTHUS ARGENTINUS Saussure.

One male, San Diego, California, June 9.

MYRMECOPHILA OREGONENSIS Bruner.

Wellington, on Vancouver Island, British Columbia, a single immature specimen. Rev. G. W. Taylor gave me a number of other specimens of this species taken on the island by himself.