

Article XII.—DESCRIPTIVE CATALOGUE OF THE
ORTHOPTERA FOUND WITHIN FIFTY MILES
OF NEW YORK CITY.

By WILLIAM BEUTENMÜLLER.

The object of the present paper is to enable those interested in the study of Orthoptera to determine the species found within a radius of fifty miles of New York City. Reference has also been made to those species which are likely to occur in this district.

The descriptions of the species and genera have all been taken from specimens in the collection of the American Museum of Natural History, and have in most cases been compared with the original descriptions and quotations taken therefrom.

Much assistance has been rendered me by the following gentlemen, to whom I herewith desire to express my sincere thanks for their kindness and readiness in aiding me in my work.

Mr. Wm. T. Davis for list of species and loan of specimens found on Staten Island; Prof. John B. Smith, of New Brunswick, N. J., and Mr. Nathan Banks, of Sea Cliff, L. I., for lists of species taken by them in their respective localities; Mr. A. P. Morse, of Wellesley, Mass., for list of Acrididæ of New England, and presentation of specimens of *Opomala brachyptera*, *Stethophyma lineata* and different species of *Spharagemon*, including types of his *S. saxatile* and *S. æquale scudderi*; Mr. Blatchley, of Terre Haute, Ind., for specimens of *Scudderia*, and Dr. S. H. Scudder and Prof. Lawrence Bruner for identification of doubtful species. The plates were drawn from nature by Mr. L. H. Joutel, and the figures in the text by Mr. R. L. Ditmars.

In order to properly understand the terms used in this paper, it has been thought advisable to insert the following cut, which was redrawn from the First Report of the U. S. Entomological Commission, p. 258.

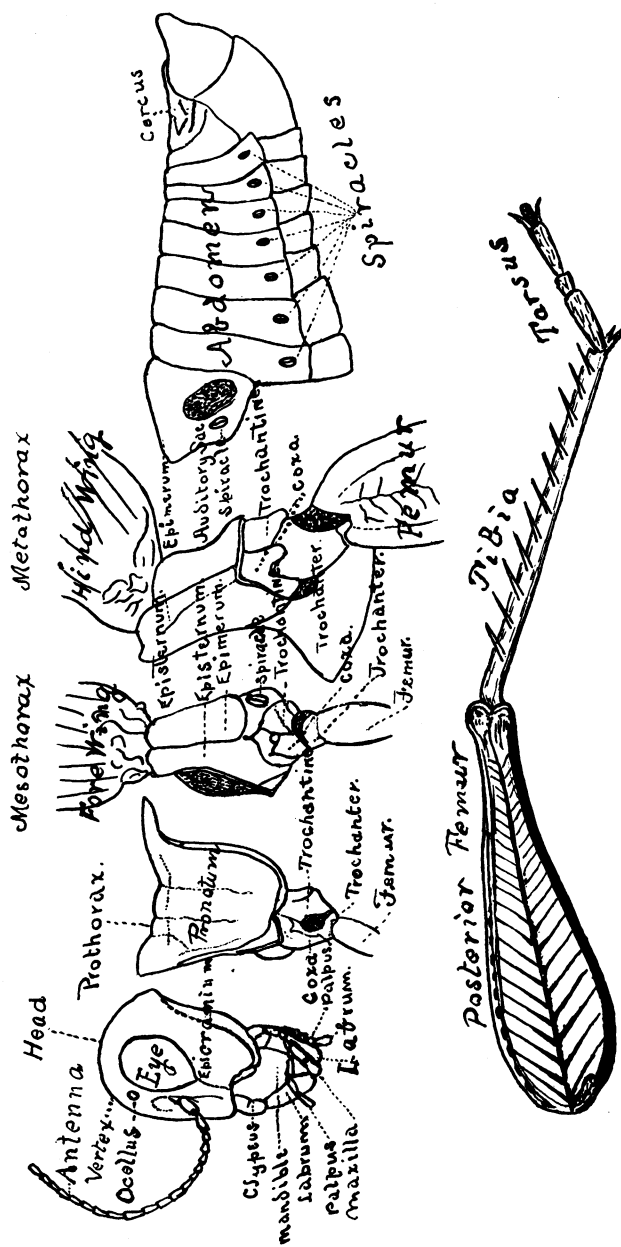


FIG. 1. External Anatomy of *Melanoplus spretus*.

FORFICULIDÆ.—EARWIGS.

The members of this family may be known by their long, slender and flattened bodies, with the sides almost parallel, and the last abdominal segment furnished with a pair of forceps. Wings and wing covers present or absent.

Anisolabis Fieber.

Body long and slender, without wings, and of nearly equal width throughout ; antennæ about half as long as the body, about 19-jointed. First and third tarsal joints of about equal length ; second joint much smaller ; forceps rather stout, slightly curved.

Anisolabis maritima (Bonnell).

PLATE V, FIG. I.

Deep blackish brown, shining ; underside considerably paler ; legs pale luteous, also the antennæ at the base, and becoming darker towards the tip. Length, 15–22 mm. ; forceps, 3–4 mm. Width, 3–4 mm.

Rather common at Sandy Hook, N. J., and along the banks of the Hudson River ; also taken along the sea shore of Long Island and on Staten Island. Ranges throughout nearly the whole temperate and tropical world. Found under sticks, stones and rubbish during July and August.

Spongophora (Serville).

Body long and slender, flattened, with the sides of the abdomen straight ; antennæ over half the length of the abdomen, 15–20-jointed, with the joints rather long ; wings and wing covers present. First tarsal joint longer than the second and third together ; third joint scarcely longer than the second ; forceps nearly straight, very long and with a few teeth on the inner edge in the male ; nearly unarmed in the female.

Spongophora brunneipennis (Serville).

Head, thorax and wing covers blackish brown ; abdomen rich chestnut brown ; wings yellowish, edged within and at the apex with dark chestnut brown ; palpi luteous ; antennæ 14–15-jointed, darker than the palpi ; legs honey yellow ; forceps simple, straight, incurved at the tip and half as long as the abdomen,

with a quadrate basal tooth (female) or two-thirds as long as the abdomen, with a more or less prominent inner tooth before the middle. Length, 9 mm. ; forceps, 3-4 mm.

Recorded from New Jersey, Pennsylvania southward to Mexico, and is probably also found in this vicinity.

Forficula *Linnaeus.*

Body more or less flattened, usually long and slender ; antennæ generally a little more than half as long as the body, 10-14-jointed, the joints cylindrical, scarcely longer at the apex than at the base, seldom less than four times as long as broad ; wing covers present ; wings sometimes present ; first tarsal joint a little longer than the third, the second broadened at the apex and passing beneath the third joint ; forceps of varied construction.

Forficula aculeata *Scudder.*

Dark chestnut brown ; palpi and legs luteous ; thorax longer than broad and narrower than the head, the sides pale luteous ; wing covers nearly twice as long as the thorax, luteous, and broadly margined inwardly with deep chestnut brown ; hind wings considerably shorter than the wing covers ; male forceps about three-fourths as long as the abdomen, slender, arcuate, bent downward beyond the middle and again horizontal to the tip, before which is also a short tooth ; pygidium with a long sharp point. Length of body, male and female, 9-11 mm. ; forceps of male, 4-5 mm. ; female, 2.5 to 3.5 mm.

Rare in this vicinity. Taken in May on Snake Hill, N. J., under stones. It probably also occurs in other localities in this vicinity.

Forficula pulchella *Serville.*

Head blackish ; antennæ brown, paler at base ; thorax brown, with the sides and hind margin paler ; wing covers brown ; wings yellow edged with brown ; abdomen reddish brown ; forceps of male arcuate in the middle, pointed, with an inner tooth near the base. Length of body, 8 mm. ; forceps of male, 5 mm. ; female, 2.5 mm.

Recorded from Niagara, N. Y., and will probably also be found in this vicinity.

Forficula auricularia *Linnaeus.*

Fusco-ferruginous ; antennæ 14-15-jointed ; basal joint, sides of thorax and legs testaceous ; wings and wing covers dull luteous, the latter half as long again as the pronotum ; forceps of male usually as long as the abdomen, hori-

zontal, depressed, and dilated at the base, and beyond rather strongly arcuate, tapering to a point, the extreme base of inner edge tuberculate-denticulate, with a distinct inner tooth at base of the arcuate portion. Body about 11 mm.; forceps, male, 4-8 mm.; female, 3 mm.

This species has been recorded from New York and New Jersey. It is also found in Cuba, Para, Europe, North Africa, West Asia and Madeira.

Labia *Leach.*

Size small; body long and flattened; antennæ about half as long as the body, 10-13-jointed; the joints rarely more than three times as long as broad; wing covers present; wings present or absent; first and third tarsal joints of equal length; second joint very small, simple and compressed; forceps about half as long as the abdomen, in the male, simple, curved; in the female, straight and incurved at the tip.

Labia minor (*Linn.*).

Much smaller than any of the preceding species. Light brown, pubescent; head blackish; antennæ 10-12-jointed, fuscous; mouth-parts pale; pronotum narrower than the head, and a little longer than broad; wing covers nearly twice as long as the thorax; hind wings as long as the pronotum; legs pale luteous; abdomen reddish brown in the middle above; forceps of male more than half as long as the abdomen, and distantly serrulate on inner edge; last segment of male with an apical, compressed, upcurved, long and slender tubercle. Length of body, 3.75-6 mm.; forceps, 1.25-2 mm.

Quite rare in this vicinity; May and June. Found from Maine to Texas; also in Europe, Siberia and Madeira.

Synopsis of Species of Forficulidæ.

Anisolabis.

Wing covers and wings wanting.

Legs testaceous.....*A. maritima.*

Spongophora.

First tarsal joint longer than the other two together; wing covers and wings present.

Forceps shorter than the pronotum, wings and wing covers together.....*S. brunneipennis.*

Forficula.

Second tarsal broad at apex, lobate and passing beneath the third joint.

Last segment with a long sharp point.....*F. aculeata.*

Forceps of male with a basal tooth on the inner edge.....*F. pulchella.*

Forceps of male with an inner tooth at the arcuate portion, *F. auricularia.*

Labia.

First and third tarsal joints equal; second, minute and compressed.

Last segment of male with a long apical tubercle.....*L. minor.*

BLATTIDÆ.—COCKROACHES.

May be known by having the body elongate or broad and depressed; the pronotum shield-like, and the head bent down and sloping backwards. The legs are well developed for running, and are furnished with numerous spines. The wing covers overlap when at rest. Antennæ long and slender.

***Phyllodromia* Serville.**

Body longer than broad; abdomen not broader than the thorax; sides of body almost parallel in the female and slightly narrowing from the base in the male; wing covers extending to the tip of the abdomen or a little beyond. Supra-anal plate truncate in the male; pointed and notched in the female.

***Phyllodromia germanica* (Linn.).**

Yellowish brown, head and antennæ somewhat darker. The wings extend to the tip of the abdomen. On the thorax are two dark-brown longitudinal stripes. Length about 16 mm.; width, 4 mm.

This is the common small Roach which is so abundant in dwelling houses. It is commonly known as the Croton or Water Bug. It was imported from Europe during the time of the introduction of our Croton-water system, finding its way along the pipes from house to house. The eggs are laid in a capsule, containing about thirty-six eggs, attached to the end of the abdomen of the female. The insect is fond of warm places, especially around fireplaces and warm-water pipes. It breeds with great rapidity, and there are probably four broods a year in this vicinity.

***Ichnoptera* Burmeister.**

Allied to *Periplaneta*. Abdomen elongate, slender, not wider than the thorax, sides almost parallel, tapering towards the end of body; wing covers much longer and broader than the abdomen. Anal plates rounded; subanal plate with two minute stylets bent downwards. Legs spined, but not as strongly as in *Periplaneta*. Antennæ about as long as the body.

***Ichnoptera unicolor* (Scudder).**

Entirely uniform pale yellowish brown, without any markings whatever. The eyes are pitchy black, and the antennæ are slightly darker than the wings. The wings extend considerable beyond the abdomen. Length of body, 12 to 15 mm. ; expanse of wings, 32 to 40 mm.

Found in woods under loose stones and the bark of trees during the day, and flying at light at night in June. The insect is very active when disturbed, and produces a crackling noise by rubbing its wing cases together.

***Ichnoptera pennsylvanica* (De Geer).**

Much larger and darker in color than the preceding species. The median vein of the fore wings, dark ; hind wings translucent, yellowish brown along the costa, veins dark ; thorax dark brown, with a broad light border. Length about 16 mm. ; expanse of wings about 50 mm.

Not common in woods under stones and loose bark of trees in June. Like the preceding species this species also produces a crackling noise when disturbed.

Periplaneta Burmeister.

Size large. Wings strongly developed, as long or longer than the abdomen. Subanal stylets long ; anal plates truncate or pointed. Legs with long spines. Thorax as broad as the abdomen, narrower in front than behind, with the angles well rounded. Antennæ much longer than the body.

***Periplaneta americana* (Linn.).**

PLATE V, FIG. 4.

Reddish brown ; thorax pale with two reddish brown patches. The wings are well developed in both sexes, and extend beyond the end of the abdomen. Legs somewhat paler than the body. Antennæ much longer than the body, and extending beyond the tips of the wings. Length of body about 27 to 30 mm. ; expanse of wings about 60 to 70 mm.

This is the largest species of Cockroach found in this vicinity. It inhabits houses, especially bake-shops, and feeds upon nearly everything. The wings are well developed, and adapted for flight.

Stylopyga *Fischer.*

Differs from *Periplaneta* in having the wings and wing covers in the female rudimentary, and in the male much shorter than the abdomen ; the outer border of the anterior pair of wings is also less rounded than in *Periplaneta*.

Stylopyga orientalis (*Linn.*).

PLATE V, FIGS. 2 AND 3.

Deep chestnut brown or piceous, with the legs and underside of body somewhat paler. The wings of the males do not reach the tip of the abdomen. The wings are absent in the female, and the wing covers are rudimentary. Length, about 22–27 mm.

This insect is sometimes one of the most disgusting household pests. It is nocturnal in habit, and feeds upon almost anything. It differs from *P. americana* by having the wings not reaching the tip of the abdomen in the male, and aborted in the female.

Panchlora *Burmeister.*

Abdomen broad, flattened, sides evenly rounded, anal plates notched. Thorax about as wide as the first abdominal segment, narrower in front than behind, angles well rounded, sides flattened. Antennæ about half as long as the body. Wings reaching the tip of the abdomen or a little longer ; tarsi spined ; femora unarmed.

Panchlora viridis (*Fabr.*).

Head pale yellowish green ; eyes brown. Thorax and body pale green, the former with a yellow band on each side before the margin, and the latter with a yellow shade along the back. Underside of body and the legs pale greenish white ; wing covers semi-transparent, veins pale green, with a white basal streak, running below the anterior margin to nearly the middle of the wing. Hind wings transparent, with the veins also pale green. Length of body, about 18 mm. ; width, 8 mm.

This West Indian species is occasionally found in this vicinity, and may be easily recognized by its pale green color.

Ectobia *Westwood.*

Body about twice as long as broad ; wing covers scarcely reaching the tip of the abdomen ; subanal stylets of males absent ; antennæ longer than body ; supra-anal plate pointed ; subanal plate truncate, angles rounded.

Ectobia borealis (*Saussure*).

Body broad and stout, pitchy brown below, lateral edge light brown. Wing covers scarcely reaching the tip of the abdomen ; hind wings about half the length. Thorax broader than long, much rounded at the sides, chestnut brown, broadly margined in front and at the sides with yellowish white. Antennæ as long as the body. Head pitchy brown with light markings. Legs light brown with the spines darker. Wing covers chestnut brown with a rather long yellowish brown basal streak running along the anterior margin to about the middle of the wing. This light line is only dimly visible in dried specimens. Length, 16 to 20 mm. Width of body, about 7 to 8 mm. Width of thorax, 6 to 7 mm.

Not rare in this vicinity in woods under stones and bark. June and July.

Temnopteryx *Brunner.*

Abdomen almost as broad as long ; anal plates pointed ; thorax somewhat narrower than the abdomen, much narrower in front than behind, anterior angles well rounded, posterior angles acutely rounded. Wing covers very short ; hind wings rudimentary.

The species of this genus very much resemble larval forms of other species of *Blatta*.

Temnopteryx virginica *Brunner.*

Head and body above chestnut brown or piceous ; thorax bright chestnut ; legs and underside of thorax luteous ; underside of body lighter than above ; wing covers about one-third as long as the abdomen. Length, 8-12 mm. Width, 5-6 mm.

Common in woods under stones from April until September.

Synopsis of Species of Blattidae.

Phyllodromia.

Body narrow, wings reaching the tip of abdomen.

Thorax with two dark brown stripes. *P. germanica*.

Ichneoptera.

Wing covers much broader and extending considerably beyond the body.

Size small ; uniformly yellowish brown. *I. unicolor*.

Size large ; thorax dark brown, with light border. *I. pennsylvanica*.

Periplaneta.

Wings well developed, extending beyond the abdomen ; legs with strong spines.

Chestnut brown ; thorax pale, with two chestnut brown patches, *P. americana*.

Stylopyga.

Wings not reaching tip of abdomen in the male ; rudimentary in the female.

Wholly deep chestnut brown or piceous. *S. orientalis*.

Panchlora.

Abdomen very broad and flattened ; antennæ shorter than the wing covers.

Pale green, thorax with a yellow stripe on each side ; wing covers with a white basal streak *P. viridis*.

Ectobia.

Body twice as long as broad ; wings reaching the tip of abdomen, antennæ longer.

Thorax with a broad pale border ; wing covers with a pale basal streak. *E. borealis*.

Temnopteryx.

Wing covers about half as long as the abdomen.

Wholly chestnut brown or piceous. *T. virginica*.

PHASMIDÆ.—WALKING STICKS.

Diapheromera *Gray.*

Wingless ; body stick-like, very long, slender, narrow and of almost equal width throughout ; antennæ very long and thread-like ; legs long and graceful ; femora of middle legs swollen and provided with a prominent spine, in the male.

Diapheromera femorata (*Say*).

PLATE X, FIG. 10.

Wholly green, greenish or varying from very light to dark chocolate brown. Length, 65–85 mm.

This insect is popularly known as the Walking Stick. It is found in this vicinity during the latter part of August and in September, and is not rare. It feeds on the foliage of hazel, oak, hickory, locust and other trees and shrubs. The eggs are

gray, oval in outline, and are dropped loosely on the ground in autumn and hatch the succeeding year. When at rest the insect mimics a green twig or dead branch.

GRYLLIDÆ.—CRICKETS.

The Gryllidæ may be known by their large globose head, with long thread-like antennæ. The wing covers are rather flat on top and abruptly bent downwards at the sides; except in *Gryllo-talpa* and *Tridactylus*, which have the wing covers oval, and the fore tibiæ very broad and toothed; the other species have the anterior legs slender, and the posterior femora stout and swollen, except in *Ecanthus* where they are rather slender. The hind wings are folded when present; and the wing covers of the males are provided with a stridulating organ.

Tridactylus Oliver.

Body glossy. Head and pronotum convex; eyes oval; antennæ short; wing covers not reaching the end of the body; wings longer or shorter, folded lengthwise like a fan. Anterior tibiæ broad and flat, armed at the end with four spurs; all the tarsi very slender; posterior femora long and broad, with a rounded shallow depression at the end. Body narrower than the thorax.

Tridactylus terminalis Scudder.

PLATE V, FIG. 15.

Head and thorax pitchy black, glossy, sometimes with reddish brown spots. The hind femora are black with two white spots or fasciæ. The wings reach to the tip of the abdomen, or extend a little beyond, in both sexes. Length about 7 mm.

Found from May to September in damp situations. The insect burrows perpendicularly in the ground; the channel expanding at the bottom. According to Mr. Wm. T. Davis it is very difficult to capture, owing to its marvelous agility. The power of leaping is so great that it seems to disappear quite mysteriously, and one wonders which way it has gone, it being seldom that the departure can be accurately followed by the eye.

Gryllotalpa Latreille.

Head oval ; thorax convex, sub-elliptical, sides rounded ; body rounded and about twice as long as the thorax ; anterior legs very stout and strong, broad and flattened, with four long spines at the tip and a movable claw-like organ outside, with two spines ; middle legs short and slender ; hind legs longer. Wing covers about half as long as the abdomen ; hind wings half as long or longer than the abdomen.

Gryllotalpa borealis Burmeister.

Cinnamon brown, covered with short, fine hairs of the same color. The wing covers are less than one-half as long as the abdomen, and the hind wings extend a little beyond the wing covers. Length, about 30 mm.

This insect is commonly known as the Mole Cricket, so called from the enlarged fore feet, head and thorax, which wonderfully mimic a mole. It lives in damp places, especially along the borders of ponds and sandy banks of streams, where it burrows in the ground, and forms long channels with raised ridges, which very much resemble a miniature mole hill. The eggs are deposited in masses of from 200 to 300 in a round cavity deeper in the ground.

Gryllotalpa columbia Scudder.

PLATE V, FIG. 5.

Differs from the preceding species by having the upper wings somewhat longer, and the hind wings extending beyond the tip of the abdomen. Length, 30-35 mm.

The habits are the same as in *G. borealis*, but the insect is less common, and it is probably nothing more than a long-winged variety.

Gryllus Linnæus.

Body stout ; head large and globose ; eyes large and rounded ; antennæ thread-like, longer than the body ; thorax broader than long, about as wide as the head ; hind femora powerful, well developed and adapted for leaping ; hind tibiæ with a double row of long spines growing longer towards the tip ; anal cerci long and tapering ; ovipositor of female as long or longer than the abdomen ; wing covers as long or shorter than the abdomen bent down at the sides. Wing covers of male provided with a well-developed organ for stridulation ; hind wings as long, longer or shorter than the abdomen, sometimes aborted.

***Gryllus pennsylvanicus* Burmeister.**

PLATE V, FIGS. 6 AND 7.

Wholly shining jet black, covered with a very fine grayish pubescence on the thorax, legs and underside of body. In older examples this pubescence becomes abraded, and the insect is then very glossy. The wing covers are as long or more or less shorter than the body, and vary in color from ochraceous brown to pitchy black. The hind wings are shorter, or as long, or extend considerably beyond the wing covers, like tail-like projections. Length, 10 to 20 mm.; ovipositor, 12 to 15 mm.

The above description includes the forms known as *Gryllus luctuosus* Serv., *G. nigra* Harris, and *G. neglectus* Scud.

G. luctuosus is the form with the hind wings projecting like tails beyond the wing covers; *G. neglectus* is the form with the wing covers as long or shorter than the abdomen in the female and as long as the abdomen in the male; *G. nigra* is the form with somewhat shorter ovipositor.

This insect is very common everywhere in this neighborhood from May until frost, in open fields and woods, under stones, sticks and rubbish. The eggs are laid singly in loose soil, and the young crickets emerge in fourteen days. The egg is elongated, whitish, and is slightly curved; the sides almost parallel. Length, 2 mm.; width, .75 mm. The young cricket is pitchy black with a whitish longitudinal stripe on the middle of the head; the stripe is continuous along the back to the end of the body. The first abdominal segment is sordid white above and below. The thorax is also whitish beneath. At the end of body are two ferruginous bristle-like appendages with rather long hairs.

***Gryllus abbreviatus* Serville.**

Head, thorax and body shining black. The legs vary from reddish brown to pitchy black. Wing covers fusco-testaceous, and as long or nearly as long as the abdomen. Hind wings shorter than the wing covers. The ovipositor of the female is very long. Length, 18-23 mm.; length of ovipositor, 18-21 mm.

This species may be distinguished from the preceding species by the remarkable length of the ovipositor of the female, and by the great size of the head. It is also a much heavier and clumsy

species. Quite common in this vicinity, especially in the sandy districts of Long Island and New Jersey. The insect makes its appearance during August and lasts until frost. The eggs, as far as my experiments are concerned, do not emerge before the following year. *G. angustus* Scudder is the form which is less clumsy and considerably narrower than *G. abbreviatus*.

***Gryllus domesticus* Linn.**

PLATE V, FIG. 8.

Pale brown, with chestnut-brown markings on the head and thorax. The wing covers extend to the end of the abdomen, and the hind wings extend considerably beyond. Length, 21 mm. ; ovipositor, 12 mm.

This is the European House-cricket, or "cricket of the hearth," whose familiar chirp is so well known in houses, and especially about fireplaces. In this vicinity it is not common.

Nemobius Serville.

Small sized species, allied to the genus *Gryllus*. Head and thorax with comparatively long hairs ; first and second joints of maxillary palpi minute, third and fifth joints of about equal length, fourth joint smaller. The venation of the wing covers of the female differs from *Gryllus*, the veins running longitudinally, while in *Gryllus* they run obliquely from both sides, thus forming lozenge-shaped spaces between. Hind tibiae with long spines of unequal length. Ovipositor of female straight, longer or shorter than the abdomen.

***Nemobius fasciatus* (De Geer).**

PLATE V, FIG. 9.

Dusky brown to almost piceous, with head and thorax hairy ; the wing covers and legs sometimes paler. On the head are four black longitudinal stripes, which are only faintly visible in dried specimens. A black line also on each side of the thorax, continuous with a line of the same color along the sides of the wing covers. Body above black, with indications of two rows of pale spots. Underside pale brown with a broken, blackish, spot-like stripe on each side. In the male the pale portion of the underside of the body is usually reduced to a stripe along the middle. The ovipositor is straight, and pointed obliquely upwards, and is about as long as the hind femora. Spines on tibiae of hind legs rather long. The wing covers in the male are as long or almost as long as the abdomen, and in the female they are about half as long. The hind wings are over twice the length of the wing covers, and project beyond like tails. Length, male and female, about 9-11 mm. ; ovipositor, 8 mm.

Nemobius fasciatus, form **vittatus** (*Harris*).

PLATE V, FIG. 10.

This form only differs from *fasciatus* in having the hind wings aborted ; in color, size and marking it is the same.

The form *vittatus* is exceedingly common in open wood and meadows in this vicinity. It is found from July until frost. The form *fasciatus* is quite scarce. The stridulation of this species is a continuous silvery, drop-like sound. It can be reproduced by taking a silver half-dollar between two fingers and striking the coin with the edge of a nickel.

Nemobius affinis *Beutenmüller*.

PLATE V, FIG. 11.

Shining ; head and thorax fusco-testaceous or wholly piceous, and sparsely covered with rather long hairs. Antennæ longer than the body. Wing covers of the female not reaching the end of the body, and with a paler line along the angle where the wing turns down at the sides. In the male the wing covers reach the tip of the abdomen. Hind wings absent. The abdomen above in both sexes is blackish, with faint traces of some paler spots ; on the underside the body is wholly testaceous, as are also the legs. Anal appendages extending beyond the ovipositor, which points obliquely upwards. Length, about 6-8 mm. ; ovipositor, 3-4 mm. ; anal appendages, 6.5 mm.

Closely allied to *Nemobius fasciatus*, form *vittatus*, but is much smaller and more shining. It also differs by the shortness of the ovipositor, it being about one-half as long, and by having the abdomen wholly testaceous beneath. The stridulation is a long, continuous, soft, rolling *whirrrrrrrr*. The insect occurs from about the latter part of July until frost. It is found in the same places as the preceding species, and is rather common.

Anaxipha *Saussure*.

Closely allied to *Nemobius*, but differs by having the ovipositor of the female sabre-like and curved upwards with the end compressed. The antennæ are very long, about five times as long as the body, and the spines of hind tibiæ are of equal length. Wing cases of male almost encasing the abdomen, with a round glassy patch on top near the end of the wing. Hind wings absent.

***Anaxipha exigua* (Say).**

Head and thorax testaceous with a few short hairs, and the former with three blackish lines in front, connivant at the mouth parts. Antennæ very long, about five times as long as the insect. Wing covers paler than the thorax, reaching the end of the abdomen in the male and somewhat shorter in the female. Hind wings absent. Abdomen of male black; abdomen of female pale testaceous above and below, black laterally. Ovipositor curved, chestnut brown. Length about 5 mm. Ovipositor, 2 mm. Antennæ, 20 mm.

This insect is not uncommon in this vicinity, and occurs from August until late in October. It is most common during late August and early September. It lives mostly on bushes, rarely on the ground, and especially on bushes growing in salt meadows. According to Mr. Davis it clings to the stems from six inches to a foot above the ground, and its song has a particularly silvery tone.

***Phylloscirtus Guérin*.**

Small sized. Head broader than the thorax; eyes prominent and protruding. Antennæ long, hair-like; ocelli absent; last joint of maxillary palpi exceedingly broad, spoon-like; last joint of labial palpi similar but very much smaller; thorax longer than broad; abdomen almost entirely encased by the wing covers; hind wing present or wanting; wing covers of female with parallel longitudinal veins; ovipositor sabre-like, short, and curved upwards; sides of wing cases of male bent obliquely downwards; hind legs graceful, with weak spines on the tibiæ.

The species of this genus somewhat resemble small *Cicindelas*, and may be at once recognized by the very broad spoon-like joints of the palpi.

***Phylloscirtus pulchellus* (Uhler).**

PLATE V, FIG. 16.

Head and thorax bright crimson red, the latter with the lateral margins narrowly bordered with white; palpi black; antennæ much longer than the body, black at base, then whitish for some distance, then again blackish to the tip. Abdomen shining jet black; wing covers chestnut brown or almost black. Legs yellowish. Length, 7 mm.

Rather scarce in this vicinity. It is found on shrubs and limbs of trees, during September and October.

***Apithus agitator* Uhler.**

It is possible that this insect may be found in the vicinity of New York City. It is a southern species, and may be looked for in southern New Jersey. It inhabits grape vines and dense shrubbery, and is found fully developed in September.

***Orocharis saltator* Uhler.**

Like the preceding, this is also a southern species, and possibly may occur here. It also inhabits shrubbery and trees.

***Æcanthus* Serville.**

Thorax elongated, narrow, sides deflexed, anterior portion somewhat narrower than the posterior portion. Antennæ about twice as long as the body. Hind legs long and slender, with weak spines on the tibiæ. Wings of female wrapped around the body. Wing covers of male flattened and transparent.

The members of this genus may be easily known by their narrow and slender hind legs and structure of the wings.

***Æcanthus niveus* (De Geer).**

PLATE V, FIGS. 12 AND 13.

Wholly pale, whitish green with two slightly elevated black dots on the underside of each antenna, one on the first and one on the second joint.



FIG. 2.
Underside of
basal joints
of antennæ of
Æ. niveus.

Top of head and first joint of antennæ usually pale yellowish brown. Tip of ovipositor of the female black. Wing covers almost twice as long as the abdomen; hind wings as long as the upper. Average length, from head to tip of wings, 16 mm.; body, 11 mm.; width of male wing covers, 6 mm.; female, 3 mm.

Very abundant during August and September in gardens and open woods, on vines and trees. The stridulation of this insect is very shrill and only heard at night, but sometimes also on cloudy days and in dark places in the shrubbery, when the song is quite faint.

The stridulation is a continuous, pulsating, equally sustained *trrr-reee-trrr-reee*, etc.; it has also been described as a pulsating sound like *re-teat, re-teat*, or *a-beat, a-beat*.

***Æcanthus angustipennis* Fitch.**

Wholly pale greenish white ; wings transparent and sometimes with a pale yellowish-brown patch on top of the head. Antennæ with two elevated black marks on the underside, the one on the first joint hooked at the base, with the hook turned inward and the mark on the second joint oblong. Average length from head to tip of wing covers, 14 mm. ; body, 10 mm. ; width, 3.5 mm.



FIG. 3.
Underside of
basal joints of
antennæ of *Æ.*
angustipennis.

This species is not as common as *Æ. niveus*. It inhabits the higher parts of different kinds of forest and fruit trees. The stridulation is very different from *Æ. niveus*. It is a faint, continuous *recccccc*, lasting about five seconds, and terminating abruptly, with an equal interval of rest. Usually sings at night only, but sometimes also late in the afternoon in shady places, and on cloudy days. The insect may be readily separated from *niveus* by the much narrower wing covers and the different shaped marks on the basal joint of the antennæ. Found from August until the colder weather sets in.

***Æcanthus nigricornis* Walker.**

Yellowish green, with three more or less distinct black, longitudinal stripes on the head and thorax, which are sometimes entirely black. The legs are yellowish with a blackish tinge, or entirely black. Underside of body black ; upperside yellowish green. Antennæ black with four black marks on the first two joints. The innermost mark on the first joint about twice the length of the outer, and nearly always confluent at the upper ends. On the second joints the marks are more equal. In many individuals the antennæ are entirely black ; then the marks are not discernible. Hind wings extending more or less beyond the wing covers. Average length from head to tip of wing covers, 15 mm. ; body, 11 mm. ; width, male, 4.5 mm., female, 3 mm.

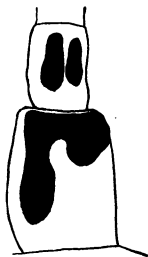


FIG. 4.
Underside of basal
joints of antennæ of
Æ. nigricornis.

Our most common species in this vicinity. It is found from the latter part of July until frost, along roadsides and in open fields on low bushes. The stridulation is a very shrill, continuous *whirrr*, often lasting several minutes. It sings in the hottest sunshine and by night.

***Æcanthus 4-punctatus* Beutenmüller.**

FIG. 5.
Underside of basal
joints of antennæ
of *Æ. 4-punctatus*.

Wholly pale yellowish green, with the antennæ fuscous ; basal joints yellowish green with two black marks on the underside of each of the first and second joints. The marks are similar to those of *Æ. nigricornis*, but are not united on the first joint as is usually the case in *nigricornis*. The wings protrude more or less beyond the wing covers. Size about the same as *Æ. nigricornis*.

Found in the same localities with *Æ. nigricornis*, and it is possible that it may be a form of that species.

***Æcanthus pini* Beutenmüller.**

Head and antennæ testaceous, the latter becoming darker towards the tip ; first two joints with four black marks ; the inner mark on the first joint



FIG. 6.
Underside of basal
joints of antennæ of
Æ. pini.

long and straight, the outer oblique ; those on the second joint parallel ; eyes black ; thorax testaceous with a longitudinal line on each side above ; anterior pairs of legs testaceous ; posterior femora green, tibiæ testaceous ; body beneath black with the sides yellowish green ; body above blackish with a green stripe along the back ; elytra transparent, with grass-green veins ; hind wing slightly protruding beyond the elytra ; veins also green.

The female is somewhat paler than the male, and the wings extend a little more beyond the elytra ; ovipositor dark testaceous, tip black. Average length from head to tip of wing covers, 14 mm. ; body, 12 mm. ; width, 4.5 mm.

Somewhat resembles *Æ. nigricornis*, but may be readily distinguished from it by the grass-green color of the wings and the testaceous head and thorax, and marks on basal joints of the antennæ. This insect lives only on pine trees, and usually on the high branches. Its song is a continuous, soft and metallic *reccccccccc*, with numerous undulations. When many individuals are heard together, their stridulations sound not unlike the jingling of sleigh-bells at a distance.

Has been found by me in Windham Co., Conn., and it is not unlikely that the insect also occurs in this vicinity. It should be looked for in the pine districts.

***Æcanthus latipennis* Riley.**

Pale yellowish green, with the wing covers very much broader in the male than in any other species of the genus. The antennæ are destitute of black marks on the underside of the first two joints, which are characteristic of the other species of *Æcanthus*. The basal joints of the antennæ and top of head are of a distinct pink color. The wing covers extend considerably beyond the abdomen, and the wings in the male are much shorter than the wing covers, and in the female about as long. Average length from head to tip of wing covers of male 16 to 19 mm. ; width of wing covers, 7-8 mm. ; female, 14-17 mm. ; width, 3-4 mm.

Quite scarce in this vicinity, but not uncommon in certain localities on Staten Island. The insect lives on low plants, in damp places. The stridulation is a shallow, continuous trill lasting for some time, with indefinite intervals of rest. Sings late in the afternoon and by night. Found during September and October. Easily distinguished from the other species by the pink color of the basal joints of the antennæ and top of head.

Xabea Walker.

Body smooth, shining, slender ; head broader than the thorax ; antennæ with a rather short tubercle on the underside of the basal joint ; first and second joints of the maxillary palpi cylindrical, minute ; third joint very long and slender ; fourth joint much smaller than the second, clavate ; fifth joint longer than the third, straight on one side and swollen on the other, apex oblique ; thorax long, sides parallel ; wing almost twice as long as the wing covers ; legs pubescent ; hind tibiæ without spines. In form and general appearance this genus very much resembles *Æcanthus*, but differs in having the hind tibiæ unarmed, different palpi, and long hind wings.

***Xabea bipunctatus* (De Geer).**

PLATE V, FIG. 14.

Pale pinkish brown, with two rather large blackish spots on each of the upper wings in the female. The hind wings very long and extend much beyond the upper wings, and have a decided opalescent hue when expanded. The legs are pale with a pinkish hue. In the male the dark spots on the upper wings are absent. Length to tip of wing covers about 17 mm. ; body about 13 mm. ; width about 5 mm. ; female, 4 mm.

Easily recognized by its pinkish-brown color and the dark spots on the wing cases in the female.

Synopsis of Species of Gryllidæ.

Tridactylus.

Antennæ shorter than body, anterior tibiæ flattened and armed with teeth.
Small species : glossy black, sometimes marked with red... *T. terminalis*.

Gryllotalpa.

Antennæ shorter than body ; anterior tibiæ flat, armed with teeth and a movable, claw-like organ outside.

Large species : brown, covered with short hairs.

Wing covers less than half the length of abdomen ; wings extending a little beyond wing covers..... *G. borealis*.

Wing covers more than half the length of abdomen ; hind wings very long *G. columbia*.

Gryllus.

Antennæ longer than the body ; wing covers abruptly bent down at sides.

Black, wing covers sometimes brown ; ovipositor, 12-15 mm. long.

Hind wings short ; wing covers as long as the abdomen,

G. pennsylvanicus.

Hind wings extending beyond the wing covers, like tails, form *luctuosus*.

Wing covers shorter than the abdomen in the female, hind wings abbreviated form *neglectus*.

Ovipositor rather short. form *nigra*.

Wing covers always testaceous.

Form robust ; hind femora usually ferrugineous ; ovipositor, 18-21 mm. long. *G. abbreviatus*.

Much more slender than *abbreviatus*. form *angustus*.

Pale testaceous, head and thorax with chestnut-brown markings, *G. domesticus*.

Nemobius.

Small species, allied to *Gryllus* ; with rather long hairs ; hind tibiæ with unequal spines.

Underside of abdomen with a testaceous stripe along the middle ; ovipositor very long.

Hind wings extending beyond the wing covers like tails, *N. fasciatus*.

Hind wing aborted. form *vittatus*.

Underside wholly testaceous beneath ; ovipositor short. *N. affinis*.

Anaxipha.

Small size ; antennæ exceedingly long ; spines of hind tibiæ equal in length ; ovipositor sabre-like.

Wholly pale testaceous ; abdomen black beneath. *A. exigua*.

Phylloscirtus.

Head broader than thorax ; last joints of palpi enlarged, spoon-like.

Head and thorax crimson red. *P. pulchellus*.

Ce canthus.

Hind leg slender, tibiæ with weak spines.

Antennæ with one black mark on the two basal joints :

Wing covers broad ; marks on antennæ in shape of small dots, *Ce. niveus*.

Wing covers narrow ; mark on first joint of antennæ long and hooked at base ; mark on second joint oblong, *Ce. angustipennis*.

Antennæ with two black marks on the first two basal joints :

Head, thorax, legs and antennæ usually black ; marks on first joint of antennæ generally connected at apex. *Ce. nigricornis*.



- Wholly pale greenish white, translucent; marks on antennæ elongate, parallel, distinct *Æ. 4-punctatus*.
 Head, thorax and legs testaceous; hind femora, veins of wings grass-green; inner marks on first joints of antennæ straight, the outer oblique; on second joint, parallel. *Æ. pini*.
 Antennæ without marks on underside of first two joints.
 Wing covers very broad; head and basal joints of antennæ pink *Æ. latipennis*.

Xabea.

Hind legs slender, tibiæ without spines.

- Pinkish brown; first joint of antennæ tuberculate beneath, *X. bipunctatus*.

LOCUSTIDÆ.—GRASSHOPPERS.

The species of this family, found in this vicinity, are divided into five subfamilies, which may be separated by the following characters:

Prosternum without spines.

- Wing covers broad; hind wings longer than wing covers; vertex not elongated into a cone or tubercle. PHANEROPTERINÆ.

Prosternum with long slender spines.

- Wing covers and wings very broad; concave PSEUDOPHYLLINÆ.

- Wing covers narrow, tapering towards the apex, shorter than the hind wings; head with a blunt tubercle or prominent cone, CONOCEPHALINÆ.

Wings and wing covers rudimentary.

- Pronotum extending over the first abdominal segment; prosternum with spines. DECTICIDINÆ.

Wings and wing covers absent.

- Pronotum not extending over the first abdominal segment; prosternum without spines. STENOPELMATINÆ.

PHANEROPTERINÆ.**Scudderia Stål.**

Head oval; eyes round and protruding, vertex pinched; antennæ longer than the wings, first joint cylindrical, stout; second joint smaller, remaining joints hair-like. Thorax longer than broad, narrower in front than behind; lateral carina sharply defined. Wing covers shorter than the wings and nearly of equal width throughout, apex rounded. Hind legs very long and slender. Male with the anal plates provided with two curved spines, the one from the supra-anal plate curved downward and notched at the end, and the one from the subanal curving upwards and grooved above. Female with the ovipositor short, broad, flat and turned upwards, with the apical portion very finely serrate.

The species of this genus may be known by their narrow wing covers and the singular anal processes of the male.

Scudderia curvicauda (*De Geer*).

PLATE VII, FIGS. 5 AND 6.

Wing covers, legs and thorax pale grass green; head and underside of body paler; pronotum much longer than broad, narrower in front than behind, and with a yellow line along the lateral carina. The notch of the supra-anal spine is square, with a minute median tooth, the lateral parts of the notch compressed.

Measurements.—Length of body, 22–25 mm.; wing covers, 33–37; posterior femora, 25–27 mm.

Common everywhere in this vicinity from August until late in the fall. The insect may be found clinging to tall grasses, weeds and low bushes in meadows, especially in damp places.

Scudderia furculata *Brunner*.

Very much resembles the preceding species, but may be separated from it by the notch of the supra-anal spine of the male being acute and the sides of notch rounded, flattened at the end and compressed beneath into a small flat process. The female is very difficult to separate, but lacks the black color at the basal fold of the ovipositor.

Measurements.—Male: Length of body, 20–23 mm.; wing covers, 34–38 mm.; posterior femora, 24–30 mm. Female: Length of body, 22 mm.; wing covers, 34 mm.; posterior femora, 27 mm.

Found in the same localities as *S. curvicauda*, from August until late in fall. Not common.

Scudderia furcata *Brunner*.

Grass green; wing cover narrow and of equal width throughout, apex rounded; lateral carina of pronotum without trace of a yellow line. The notch of the supra-anal spine of the male is very deep, and the lateral pieces very much swollen.

Measurements.—Male: Length of body, 16 mm.; wing covers, 31 mm.; posterior femora, 23 mm.; pronotum, 5 mm.; width of wing covers, 6 mm. Female: Length of body, 20 mm.; wing covers, 30 mm.; posterior femora, 22 mm.; ovipositor, 5 mm.

Very common from early in August until late in fall. Found on low bushes and grasses, especially in damp meadows and roadsides.

***Scudderia angustifolia* (Harris).**

Very closely allied to the preceding species, but somewhat smaller, and has the hind femora shorter, and the wing covers narrower; there is also a distinct yellow line along the lateral carina of the pronotum. In color it is the same as *S. furcata*.

Measurements.—Male: Length of body, 14–15 mm.; wing covers, 25–26 mm.; pronotum, 4 mm.; posterior femora, 19–20 mm. Female: Length of body, 19–21 mm.; wing covers, 25 mm.; ovipositor, 5.5 mm.

Common in the same localities as the preceding species. August until late in fall.

***Scudderia fasciata* Beutenmüller.**

Head green, with a white line on the face, and at the sides a yellowish mark; basal joint of antennæ green, following joints dark testaceous, becoming darker towards the apex; pronotum dark grass green, paler at the sides, and a rather broad yellow stripe along the lateral carina; wing covers dark grass green with a pale yellowish brown shade along the inner (dorsal) margin, preceded by a blackish line running from the base of the wing to the apex; another blackish line runs along the costal vein; hind wings transparent, veins green and a dark green apical patch shaded with blackish; sides of abdomen green, above purplish; underside with a white and purplish stripe on each side, and green along the middle; tip of anal spines of the male and ovipositor of female reddish brown; anterior legs green, femora testaceous at the base; middle legs entirely green; hind legs green, with the femora marked with black outside; tibiæ with black spines; tarsi of all the legs purplish brown.

Measurements.—Male: Length of body, 18 mm.; pronotum, 4 mm.; posterior femora, 18 mm.; wing covers, 25 mm.; expanse, 61 mm. Female: Length of body, 21 mm.; pronotum, 4 mm.; posterior femora, 17 mm.; wing covers, 21–23 mm.; expanse, 50 mm.

This species occurs on pine trees, and in color very much assimilates to the leaves of this tree. It has been found in Connecticut and near Ithaca, N. Y.

***Scudderia pistillata* Brunner.**

Apex of vertex concave; pronotum narrower in front than behind; wing covers very broad, wider at the middle than at the base and apex, with radiating veins; anterior margin curved, inner margin quite straight, apex rounded; supra-anal process notched at the apex, with short, rounded lobes; subanal process extending a little beyond the upper process.

Measurements.—Male: Length of body, 16–20 mm.; wing covers, 29–31 mm.; posterior femora, 21–23 mm. Female: Length of body, 18–20 mm.; wing covers, 27–30 mm.; posterior femora, 21–23 mm.

This species may be easily recognized by the broad wing covers. It is found in the same localities as *S. curvicauda*, but is rare. August and September.

***Scudderia truncata* Beutenmüller.**

Somewhat resembles *S. pistillata*, but is much smaller, the wings are narrower and almost of equal width, with the anterior margin curved and the inner margin somewhat concave, apex rounded; eyes protruding and larger than those of *S. pistillata*; pronotum narrower in front than behind, somewhat concave; supra-anal plate of male with no elongated spine, but is abruptly pointed with the apex truncate and minutely notched. The subanal process is long and slender, suddenly turned upwards, and much less curved than that of *S. pistillata*.

Measurements.—Male: Length of body, 15 mm.; wing covers, 26 mm.; posterior femora, 19 mm.

Very rare in this neighborhood. Taken at Vineland, N. J.

***Amblycorypha* Stål.**

Head with the vertex flat; eyes elliptical or oblong oval; antennæ thread-like, first joint large and thick, second joint but slightly smaller, third joint slender. Wing covers broad and rounded at the tip. Male with the supra-anal plate truncate; subanal plate short and broad at base, narrower at apex, with a deep triangular notch, each tip with a short blunt spine-like process. Female with a long, flat, curved ovipositor, deeply serrated towards the end.

Easily recognized by the broad oblong rounded wing covers.

***Amblycorypha rotundifolia* (Scudder).**

PLATE VI, FIG. 2.

Wing covers oblong oval, pale pea-green, body somewhat paler; hind wings transparent, with the veins and apical patch green; posterior femora with four or five small spines and reaching to the tip of the wing covers; ovipositor of female strongly curved upwards and strongly serrated at the apical portion.

Measurements.—Length of body, about 20 mm.; wing covers, 27 mm.; posterior femora, 23 mm.

Common in this vicinity from the latter part of July until late in September. It inhabits thickets, or is found on bushes and shrubbery in open places.

***Amblycorypha oblongifolia* (De Geer).**

Allied to *A. rotundifolia*, but is longer and broader. The wing covers extend beyond the posterior femora, and the anterior portion of the thorax is considerably narrower than the posterior. Color pale pea-green, sometimes wholly rose color. Lower carina of posterior femora with about ten strong teeth.

Measurements.—Length of body, 21 mm. ; wing covers, about 38 mm. ; posterior femora, 30 mm. Expanse of wings, 75 to 85 mm.

Rather common in this neighborhood during August and September until frost. Found in similar places with the preceding species. Instead of being green, this insect is sometimes entirely rose colored.

Microcentrum Scudder.

Larger and stouter than *Amblycorypha*. Vertex of head with a transverse furrow ; eyes oval, prominent ; pronotum a little longer than broad, anterior portion slightly narrower, lateral carina sharp. Wing covers broad, and gradually sloping from the middle towards the apex, which is rounded and quite pointed, thus making the outer portion of the wing covers, beyond the middle, somewhat triangular. Hind femora about half as long as the wing covers. Supra-anal plate triangular. Subanal plate of male forked at the tip, similar to that of *Amblycorypha*. Ovipositor of female quite short, broad and abruptly curved upwards, blunt at the tip.

***Microcentrum laurifolium* (Linn.).**

PLATE VI, FIG. 3.

Wing covers grass green, with the venation conspicuously marked, extreme anterior edge light brown ; hind wings transparent, with green veins ; body light green or clay colored.

Measurements.—Length of body, 28 mm. ; pronotum, 6 mm. ; wing covers, 46 mm. ; posterior femora, 26 mm. ; width of wing covers, 14 mm. ; pronotum, 5.5 mm. ; expanse of wings, 95 mm.

Quite rare in this vicinity, but more common in the Southern States. It may be easily recognized by its large size and leaf-like resemblance of the wing covers, especially when the wings are closed. It may also be known by its short posterior femora and tibiae, which in the two preceding species are much longer. The eggs are gray, oval and very flat, and laid on the edge of a leaf in single or double chain-like rows, the edges of the eggs overlapping one another.

PSEUDOPHYLLINÆ.

Cyrtophyllus *Burmeister.*

Head large and stout ; eyes hemispherical and comparatively small ; vertex spine-like ; antennæ almost twice as long as the wings ; pronotum as broad as long on top with two transverse furrows ; lateral carina well rounded, lobes of sides parallel, with angles acutely rounded ; wings concave ; wing covers longer than the hind wings, a little more than twice as long as broad, and of almost equal width, with the apex obtusely rounded. Anterior pairs of legs long and rather stout, and well adapted for climbing ; hind legs almost twice the length and also stout. Supra-anal plate longer than broad, and bluntly rounded at the tip ; subanal plate of male very long, paddle-shaped, and grooved on the upper side ; ovipositor of female quite long and curved upwards beyond the middle.

Cyrtophyllus concavus (*Harris*).

PLATE VI, FIG. I.

Wing covers and thorax bright green ; head, legs and body much paler ; hind wings transparent. When the insect is at rest the wing covers curve around the body, so that their edges touch above and beneath ; pronotum roughly punctured and somewhat wrinkled ; head smooth.

Measurements.—Length of body, 30–35 mm. ; wing covers, 33–36 mm. ; posterior femora, 19–21 mm.

This is the well-known Katydid. It may be readily known by its robust form and broad, concave wings. The insect is arboreal in habit, living on the branches in the dense foliage of the tops of trees. Common in this neighborhood during August and September until the colder weather.

CONOCEPHALINÆ.

Conocephalus *Serville.*

Head with the vertex more or less prolonged forward and upward into a cone, with a pointed tooth beneath ; face very oblique ; pronotum flat, narrower in front than behind ; lateral carina quite sharp, lobes of side curving obliquely backwards in front and well rounded behind. Wing covers narrow, broader at the base than the apex. Hind wings long and quite narrow. Cerci of male swollen, curved inwards and toothed. Ovipositor of female very long and straight.

The species of this genus are readily known by having the vertex prolonged into a cone-like process, and by the narrow wings.

Conocephalus robustus *Scudder.*

PLATE VI, FIG. 9.

Wholly bright green or pale brown, with the wing covers sometimes sparsely speckled with black. Cone of vertex pronounced and obtusely rounded at the apex, entirely green or with a slight touch of black at the apex, beneath; the tooth before the middle small and blunt; pronotum with a yellow stripe along the lateral carina and running along the head to the apex of the cone. Wing covers extending considerably beyond the posterior femora, quite broad at base in the male, with the singing apparatus well developed. The wing covers of the female are narrower, and the ovipositor somewhat longer than the posterior femora. Hind wings of both sexes almost as long as the wing covers.

Measurements.—Male: Length of body, 30 mm.; wing covers, 46 mm.; posterior femora, 24 mm.; expanse, 96 mm. Female: Length of body, 35 mm.; wing covers, 48 mm.; posterior femora, 25 mm.; ovipositor, 26 mm.; expanse, 96 mm.

This insect is very common in this vicinity, especially in the salt meadows of Long Island, Staten Island and New Jersey, amongst the tall grasses and rushes. Its song is exceedingly loud and shrill, and can be heard at a considerable distance; when the insect is near the sound is quite deafening. It is a continuous *bzzzzzzzz*, increasing and decreasing in volume. It somewhat resembles the song of the Harvest-fly (*Cicada canicularis*). August and September.

Conocephalus exiliscanorus *Davis.*

PLATE VII, FIGS. 1 AND 2.

Very much resembles *C. robustus*, but may be distinguished from it by the very long, sharp cone on the head, which projects upwards; the underside of the cone is shining black from the sharp-pointed tooth near the base to the apex. The wings are shorter than in *C. robustus*, but are equally as broad. The ovipositor of the female is much longer than the posterior femora, while in *C. robustus* it is about as long. The tooth on the underside of the cone of the head is also sharper and more prominent, and the head is longer and broader.

Measurements.—Male: Length of body, 34 mm.; wing covers, 39 mm.; posterior femora, 23 mm.; expanse, 85 mm. Female: Length of body, 40 mm.; wing covers, 43 mm.; posterior femora, 23 mm.; ovipositor, 38 mm.; expanse, 92 mm.

Found from the latter part of July until cold weather in the salt marshes and meadows of Staten Island. Its song is very different from that of *C. robustus*, instead of the loud, shrill buzz, it is much slower, being a continuous shrill *a-zip—a-zip—a-zip*, or *zit-zit-zit*, etc. Sings late in the afternoon and at night.

***Conocephalus ensiger* Harris.**

PLATE VI, FIG. 8.

Much smaller and more graceful than the two preceding species. The cone on the head is similar to that of *robustus*, but has a black line on each side beneath, running from about the middle of the apex.

Measurements.—Male : Length of body, 26–28 mm.; wing covers, 38–40 mm.; posterior femora, 18–20 mm. Female about the same size ; ovipositor, 25 mm.

Rather common from about the middle of July until October in damp fields amongst the tall grasses and weeds. It is also found in salt meadows. Its stridulation is very different from that of the other species of *Conocephalus*, being a continuous *ik-ik-ik-ik-ik-ik*, etc. Sings late in the afternoon and by night.

***Conocephalus dissimilis* Serville.**

PLATE VII, FIGS. 3 AND 4.

Similar in shape to *C. ensiger*, but the cone is much shorter, broader, obtusely rounded at the apex, and not pointed and elongated as in *C. ensiger*. The wings and wing covers are also shorter.

Measurements.—Length of body, 23–28 mm.; posterior femora, 17–20 mm.; wing covers, 28–34 mm.; ovipositor of female, 34 mm.

Found during August and September in the same localities as the preceding species.

***Orchelimum* Serville.**

Size small ; face oblique ; vertex with a blunt tubercle at the apex, and meeting a smaller and similar projection from beneath ; antennæ very long, thread-like ; first joint very stout and cylindrical ; second joint considerably smaller ; pronotum flat on top, lateral carina well rounded, lobes of sides almost parallel, then forming more or less of a triangle at the bottom. Wing cases of the male narrow, broad to about the middle, then suddenly but gradually narrowing ; stridulating organ well developed. In the female the wing cases are of almost

equal width ; cerci with a sharp tooth-like hook inside, directed inward ; ovipositor of female slightly curved, and terminating in a sharp point ; anterior pairs of tibiae with a number of spines.

Orchelimum vulgare Harris.

PLATE VI, FIGS. 4 AND 5.

Shining, grass green, with a broad, more or less distinct stripe on the head and thorax and back of abdomen. The legs are testaceous or partly green. Antennae twice as long as the body, testaceous. Wings extending beyond the tip of the abdomen.

Measurements.—Male: Length of body, 17–21 mm. ; Wing covers, 18–22 mm. ; posterior femora, 14–15 mm. Female: Length of body, 17–21 mm. ; wing covers, 15–20 mm. ; posterior femora, 15–17 mm.

Very abundant in this vicinity from about the middle of July until late in autumn. It is found in open fields, copses and along ditches, usually resting on leaves and stems of bushes and tall grasses. Dr. Scudder says : “ When about to sing on a hot sunny day, the male mounts a stalk of grass about a foot from the ground, where it clings with its four front legs, allowing its hind legs to dangle on either side the stalk, that they may not interfere with the wing covers. Beginning with a *ts* it changes almost instantly into a trill of *zr*. At first there is a crescendo movement which reaches its volume in half a second ; the trill is then sustained for a period varying from one to twenty seconds, but generally from six to eight seconds, and closes abruptly with *p*. This strain is followed by a series of very short staccato notes sounding like *jip*, *jip*, *jip*, repeated at half-second intervals ; the staccato notes and trill alternate *ad libitum*. The staccato notes may be continued almost indefinitely, but are very rarely heard more than ten times in direct succession ; it ordinarily occurs three or four times before the repetition of the phrase, but not more than two or three times when the phrase is not repeated.”

Orchelimum concinnum Scudder.

Green, with a broad, dark reddish brown longitudinal band along the middle of the thorax and head where the stripe narrows to the width of the tubercle on the vertex of the head, passing over this down the front to the mouth, expanding broadly in the middle of the face ; legs green or brownish green. Wing

cover greenish brown, shorter than the hind wing in the male, and as long or nearly so in the female; hind wings transparent, with dark veins; ovipositor of female slightly curved.

Measurements.—Length of body, 18 mm.; wing covers, 20 mm.; hind femora, 16 mm.; ovipositor, 8 mm.; expanse, 44 mm.

Quite rare in this vicinity. It frequents damp and marshy localities and lowlands. Found from July to late in the fall. It may be readily separated from *O. vulgare* by its being a much more slender and graceful insect with narrower wing covers.

***Orchelimum agile* (De Geer).**

Recorded from New Jersey and southward. Possibly will also be found in this vicinity.

Xiphidium Serville.

Very closely allied to the genus *Orchelimum*, from which it can hardly be separated. The species, however, are much smaller and more graceful, and the ovipositor of the female is straight instead of curved. Wings as long, longer, or shorter than the abdomen.

***Xiphidium fasciatum* (De Geer).**

PLATE VI, FIG. 7.

Pale green, with a broad reddish brown longitudinal band on its thorax, running to the top of the head, where it is considerably narrower; face entirely green; abdomen above reddish, green beneath. Wing covers and wings extending much beyond the body, reaching the tip of the ovipositor in the female. Hind wings somewhat longer than the wing covers.

Measurements.—Length of body, 13.5 mm.; wing covers, 17 mm.; hind femora, 11 mm.; ovipositor, 8 mm.

Common everywhere, in swampy meadows, from the latter part of June until late in the fall.

***Xiphidium brevipennis* Scudder.**

PLATE VI, FIG. 6.

Smaller and somewhat stouter than *X. fasciatum*. Color light green or pale brown, with the band on the thorax and head the same as in *fasciatum*. Wings almost as long as the body, and not extending beyond as in *fasciatum*. The ovipositor is also longer. Antennæ about three times as long as the body.

Measurements.—Length of body, 9–12 mm.; wing covers, 6–8 mm.; posterior femora, 11–12 mm.; ovipositor, 9–12 mm.

Very common in damp fields overgrown with tall grass and weeds, but especially abundant in salt meadows. Found from the latter part of July until late in autumn.

***Xiphidium nemorale* Scudder.**

Greenish brown; wing covers greenish with the front margin blackish, nearly as long as the abdomen in the male, somewhat shorter in the female; top of head and pronotum with a broad, very faint, reddish longitudinal stripe margined with a whitish line on each side; legs greenish with many red dots; wing covers with prominent cross-veins; ovipositor of female as long as the abdomen, slightly curved upwards apically.

Measurements.—Male: Length of body, 14 mm.; wing covers, 8 mm.; hind femora, 12 mm. Female: Length of body, 15 mm.; wing covers, 5.5 mm.; hind femora, 13 mm.; ovipositor, 9 mm.

This species may be found from about the middle of August until frost, resting on low shrubs and weeds along roadsides and the borders of dry upland woods. It is a western insect, and in this vicinity it occurs in New Jersey along the eastern slope of the Palisades.

***Xiphidium nigripleurum* Bruner.**

Reported from Ithaca, N. Y., and may possibly be taken in this vicinity.

DECTICIDINÆ.

***Atlanticus* Scudder.**

Head rounded; vertex compressed; pronotum flattened on top with the lateral carina sharp and abruptly bent down at the sides. The pronotum is narrower in front than behind, and slightly pinched before the middle; it also extends backwards over the first abdominal segment. Wing covers of female rudimentary and hidden under the pronotum; those of the male about half as long as the body; ovipositor of female stout at base, straight, flattened, and pointed obliquely upwards.

Atlanticus pachymerus (*Burmeister*).

PLATE VII, FIG. 7.

Grayish brown, with the wing covers of the male marked with black. The abdomen and femora are sprinkled with minute blackish dots. The extreme lateral edge of the pronotum with a yellowish border, preceded by a black streak at the posterior portion.

Measurements.—Male : Length of body, 20 mm. ; pronotum, 9 mm. ; wing covers, 8 mm. ; posterior femora, 15 mm. Female somewhat larger ; ovipositor, 20 mm.

Rare in this vicinity. It occurs in dry places, especially along hill sides. Found from about the middle of June until late in September.

Atlanticus dorsalis (*Burmeister*).

PLATE VII, FIG. 8.

Closely allied to the preceding species, but may be distinguished from it by being larger, and the legs and ovipositor considerably longer. The color is much the same as in *A. pachymerus*.

Measurements.—Length of body, 24 mm. ; pronotum, 10 mm. ; posterior femora, 25 mm. ; ovipositor, 30 mm.

Found in similar localities as the preceding species. Very rare.

STENOPELMATINÆ.

Ceuthophilus *Scudder*.

Wingless ; head large, oval, vertex not tuberculate ; last joint of palpi longer than the third, and grooved beneath at the apex ; antennæ very long, usually two or more times as long as the body ; pronotum not extending over the meta- and mesothorax as in *Atlanticus*, and well rounded on top ; abdomen arched ; legs long, slender, with a few spines ; hind femora swollen at the base, channelled beneath, and more or less spined ; hind tibia with more than four pairs of spurs, first tarsal joint almost as long as the rest together ; ovipositor of female straight, more or less swollen at the base.

The members of this genus live in dark, damp places in cavities, under stones, mole hills, and in cellars.

Ceuthophilus gracilipes *Scudder*.

Ground color of body varying from luteous to dark castaneous, very heavily marked with black, so that the latter is often or perhaps generally the prevailing

tint; the dark colors prevail always on the hinder half of all the segments. The black markings are irregular and much broken; outer sides of the posterior femora with blackish transverse streaks, more or less distinct. Antennæ about three to four times as long as the body. Legs very long. Hind femora as long or longer than the body, stout at base and about twice the length of the fore femora; outer carina of the hind femora of the male with about thirteen coarse spines; inner carina with the spines considerably shorter and more even; in the female the carina are almost unarmed; hind tibiæ longer than the femora, straight or slightly waved.

Measurements.—Male: Length of body, 19–22 mm.; antennæ about 75 mm.; pronotum, 5.75 mm.; fore femora, 10 mm.; hind femora, 20 mm.; hind tibiæ, 24.75 mm. Female slightly larger; ovipositor, 15.5 mm.

Found during July and August in dark cellars of houses and barns, in hollow places under stones, and in hollow trees. It is one of the largest of the species of *Ceuthophilus* found in this vicinity.

***Ceuthophilus grandis* Scudder.**

PLATE V, FIG. 17.

Allied to the preceding species; in color and markings it is almost the same, but differs from it in having the pronotum and legs somewhat longer; the hind femora are also longer and more robust.

Measurements.—Male: Length of body, 19 mm.; pronotum, 6.5 mm.; antennæ, 90 mm.; fore femora, 11 mm.; hind femora, 22 mm.; hind tibia, 25 mm. Female somewhat larger; ovipositor, 13.5 mm.

This insect has been taken at West Farms, New York City; heretofore it was only known from Tennessee. It is closely related to *C. gracilipes*, but is a heavier insect and the spines on the hind femora of the male are longer.

***Ceuthophilus uhleri* Scudder.**

Reddish brown or rufo-testaceous, heavily flecked with dark fuscous so as to produce a tolerably uniform mottled appearance; on the pronotum is a pale medio-dorsal streak; the flecking is made up of small more or less confluent dots; legs luteous more or less infuscated, especially the apical portion of the femora and the markings of the hind femora; antennæ about twice as long as the body; fore femora less than half as long as the hind femora, about one-third longer than the pronotum, and about one-fourth longer in the female; hind femora stout, about three and a third times as long as broad, with the

outer portion of the apical half and upper portion of the inner side with scabrous raised points, the outer carina armed with 7-8 unequal inequidistant coarse irregular spines, or almost unarmed but for some 3-4 raised points in the female, the inner carina with about 16 small spines or only a few slight ones on the apical fourth in the female; hind tibiæ longer than the femora.

Measurements.—Male: Length of body, 15 mm.; pronotum, 5 mm.; hind femora, 17.75 mm.; hind tibiæ, 18.5 mm.; fore femora, 7.35 mm. Female: Length of body, 15 mm.; pronotum, 4.6 mm.; hind femora, 13 mm.; hind tibiæ, 18.5 mm.; fore femora, 5.75 mm.; ovipositor, 8.25 mm.

Rather scarce, living under stones.

***Ceuthophilus neglectus* Scudder.**

Castaneous, more or less infuscated, especially above sides luteous; a broad more or less and often very obscure mediodorsal rufo-luteous stripe on the pronotum, sometimes extended farther back but then generally broken; the side of the pronotum and to a lesser extent the meso- and metathorax are more or less blotched with luteous, and the abdomen is more or less but generally feebly maculated with luteous; the legs are generally luteo-castaneous, the tips of all the femora dark, sometimes almost black, the hind femora with scalariform fuscous markings; antennæ two to three times as long as the body; the legs are rather slender and moderately short; fore femora much less than half as long as the hind femora and but little longer than the pronotum; hind femora stout, the upper and lower margins almost equally arcuate, almost three times as long as broad, the inner surface with a few raised points next or at the upper margin beyond the middle, scarcely visible or absent in the female; both carina minutely, closely and uniformly serrulate, through all but the basal third, the inner carina a feebler repetition of the outer. In the female the serrulations are sometimes almost imperceptible; hind tibiæ scarcely as long or not longer than the femora. Ovipositor half as long as the hind tibiæ.

Measurements.—Male: Length of body, 12.5 mm.; pronotum, 4.4 mm.; fore femora, 5 mm.; hind femora, 12 mm.; hind tibiæ, 12 mm. Female about the same size; ovipositor, 6 mm.

This is one of the smallest species of *Ceuthophilus* found in this vicinity. It is not common.

***Ceuthophilus maculatus* (Harris).**

Glabrous, mottled with luteous and blackish, the darker markings predominating; on the pronotum a luteous, mediodorsal stripe, also traces of such a stripe along the dorsum of the meta- and mesothorax; the hind femora are strongly infuscated outside and inside; the anterior pairs of femora infuscated

at the apex and all the tibiæ at the base; posterior tibiæ infuscated along the upper side; fore femora a little more than a fourth longer than the pronotum, and much less than half as long as the hind femora; hind femora as long as the body, three and a half times as long as broad, moderately stout at base, and with no raised points on the upper or inner surface, outer carina with about thirteen unequal coarse spines in the male, and minute distant inconspicuous spinules in the female; inner carina with similar but uniform spines, none so large as on the outer carina (male) or with a few minute spinules on the apical half (female), the intervening sulcus not very broad. Hind tibiæ feebly undulate in the basal half in the male. Ovipositor nearly two-thirds as long as the hind femora.

Measurements.—Male: Length of body, 14 mm.; pronotum, 5 mm.; fore femora, 6.6 mm.; hind femora, 15.25 mm.; hind tibiæ, 16.25 mm. Female slightly larger; ovipositor, 10 mm.

Found in woods under stones, in hollow trees and under loose bark.

***Ceuthophilus terrestris* Scudder.**

Recorded from northern New York, the New England States and Maryland, and will doubtless also be found in this vicinity.

***Ceuthophilus lapidicolus* (Burmeister).**

Recorded from Pennsylvania and southward; may be found in this vicinity.

***Ceuthophilus blatchleyi* Scudder.**

Recorded from New York, and possibly will also be found in this neighborhood. It is closely allied to *C. uhleri*, but differs by having slightly different and weaker armature of the carina of the hind femora, by the slenderer hind femora, and the narrower inferior sulcus of the same.

***Ceuthophilus latens* Scudder.**

Recorded from Ithaca and Endfield Falls, N. Y., and south-westward to Texas. It will possibly be found also in this vicinity.

*Synopsis of Species of Locustidæ.***Scudderia.**

Wing covers long and narrow, grass green.

Anal segment of male with one decurved spine above and one recurved spine below ; ovipositor curved upwards.

Notch of supra-anal spine square, with a minute median tooth ; sides of notch slender and compressed at tip.....*S. curvicauda*.

Notch of supra-anal spine acute ; sides of notch rounded, lower margin thinner.....*S. furculata*.

Notch of supra-anal spine very deep and rounded, with the sides much swollen, forming a thick, fork-like process.

Grass green ; length of hind femora, 19-20 mm.....*S. angustifolia*.

Grass green ; length of hind femora, 22-23 mm.....*S. furcata*.

Wing covers with black streaks ; hind femora 17-18 mm., *S. fasciata*.

Wing covers broad ; stridulating organ large ; pronotum almost as broad as long on top.

Supra-anal spine of male similar to that of *furculata*, but not compressed at the apex.....*S. pistillata*.

Supra-anal plate of male truncate, spine absent.....*S. truncata*.

Amblycorypha.

Wing covers oblong broad, somewhat expanded in the middle and well rounded at the apex.

Supra-anal plate truncate ; subanal plate furcate, with two short spines ; ovipositor of female long, recurved.

Hind femora reaching the tip of the wing covers....*A. rotundifolia*.

Hind femora shorter, not reaching the tip of the wing covers,
A. oblongifolia.

Microcentrum.

Wing covers broad in the middle, tapering suddenly towards the apex ; ovipositor very short, recurved.

Hind femora short, about half as long as the wing covers, *M. laurifolium*.

Cyrtophyllus.

Wing covers very broad and concave.

Legs stout ; subanal plate of male elongated, paddle-like ; ovipositor of female recurved, long.....*C. concavus*.

Conocephalus.

Head with a cone-like projection ; wing covers narrow ; ovipositor very long and straight.

Cone of head long, bluntly pointed, with a slight touch of black at the apex.....*C. robustus*.

Cone of head very long, rather sharply pointed, black beneath to about the middle.....*C. exilis*.

Smaller species : Cone of head pointed, bordered beneath with black from about the middle to the apex.....*C. ensiger*.

Cone of head broad, not pointed, obtusely rounded at apex.. *C. dissimilis*.

Orchelimum.

Pronotum with lateral carina rounded ; vertex with blunt tubercle ; ovipositor slightly curved.

With broad brown stripe on top of head and pronotum.....*O. vulgare*.

With broad stripe on face, top of head and pronotum.....*O. concinnum*.

Xiphidium.

Small species, more slender and graceful than *Orchelimum* ; ovipositor straight.

Wings and wing covers extending beyond the abdomen.

Green; with a broad reddish brown stripe on top of the head and pronotum..... *X. fasciatum*.

Wings and wing covers shorter than the abdomen.

Green; with a broad reddish brown stripe on the top of head and pronotum..... *X. brevipennis*.

Greenish brown, stripe on head indistinct, margined by two white lines; legs with small red dots..... *X. nemorale*.

Atlanticus.

Pronotum extending over the first abdominal segment; male with short wing covers, female wingless.

Legs long; hind femora 27 mm.; ovipositor 30 mm. long..... *A. dorsalis*.

Legs shorter; hind femora 22 mm.; ovipositor 20 mm. long, *A. pachymerus*.

Ceuthophilus.

Body stout; arcuate above, wingless.

Large size: Legs very long; fore femora of male from one-half to two-thirds as long again as the pronotum.

Hind femora of male much less than four times as long as broad; hind tibiae very long, sometimes sinuous at base,

C. gracilipes.

Hind femora of male much more than four times as long as broad; hind tibiae scarcely longer than the hind femora,

C. grandis.

Medium size: Legs shorter; fore femora but little longer, if any, than the pronotum; hind tibia waved.

Hind femora of male three and a half times as long as broad;

no large spines on the outer carina..... *C. maculatus*.

Small species: fore femora a little longer than the pronotum.

Hind femora stout; outer carina of male with minute spines, *C. neglectus*.

ACRIDIDÆ.—LOCUSTS.

The members of this family found in this vicinity are divided into four sub-families, which may be characterized as follows:

Prosternum smooth or with an indistinct tubercle; hind angle of pronotum truncate or nearly so.

Head more or less pyramidal, face oblique, antennæ flattened, TRUXALINÆ.

Prosternum entirely smooth.

Hind margin of pronotum acute-angled..... CÆDIPODINÆ.

Prosternum with a long tubercle.

Hind margin of pronotum obtusely angled..... ACRIDIDINÆ.

Pronotum extending back over the abdomen to its extremity or beyond it; very small species.

Wing covers rudimentary..... TETTIGINÆ.

TRUXALINÆ.

Truxalis Linnæus.

Head slightly ascending on top; vertex projecting, horizontal and rounded in front. Face very oblique, with the median carina sulcate, lateral carina

straight, more or less distinct, reaching the corners of the face; eyes oblong, oblique, and placed well forward; antennæ about as long as the head, flattened at the base and rounded towards the tip; pronotum twice as long as broad, sides perpendicular, flat and almost parallel; top of pronotum flat with lateral and median carina, and three indistinct transverse incisions; wing covers long and narrow, obliquely truncate at apex; prosternum smooth; all the wings extend somewhat beyond the posterior femora, which are flattened and longer than the tibiæ. The male is similar to the female, but is very much smaller.

***Truxalis brevicornis* Linnæus.**

PLATE VIII, FIGS. 1 AND 2.

Pale green, somewhat dotted with brown over the wing covers; lateral carina of pronotum and antennæ and edge of vertex brown; mouth parts and front legs pinkish brown. Hind wings transparent, with the veins greenish. The male is usually entirely pinkish brown, with the fore wings much paler along the inner margin. Some individuals have the top of head, face, the two front pairs of legs and the inner margin of the fore wings green. Hind wings dusky, greenish at the base.

Measurements.—Male: Length of body, 19–21 mm.; wing covers, 19–20 mm.; posterior femora, 12–13 mm.; expanse, 39–43 mm. Female: Length of body, 35 mm.; wing covers, 31 mm.; posterior femora, 20 mm.; expanse, 63 mm.

Rare in this neighborhood. It is found during August and in early September in damp or swampy places overgrown with grass and weeds. The insect is local in habit.

Opomala Serville.

Head pyramidal, and very large in the female, and much longer than the pronotum, face very oblique, antennæ flattened, enlarged at the base; top of head with a distinct median carina in the female and less distinct in the male; prosternum with a minute tubercle; pronotum twice as long as wide, sides perpendicular, top parallel truncate in front and behind, carina somewhat indistinct; wing covers lanceolate, reaching a little beyond the middle of the abdomen in the male, shorter in the female; hind wings abbreviated; hind legs slender, femora reaching the tip of the abdomen. The male is considerably smaller and more graceful than the female.

***Opomala brachyptera* Scudder.**

Light brown, sometimes streaked with dark brown; knees of hind legs black; wing covers much shorter than the abdomen.

Measurements.—Male : Length of body, 23 mm. ; wing covers, 10 mm. ; posterior femora, 12 mm. Female : Length of body, 28 mm. ; wing covers, 8 mm. ; posterior femora, 12 mm.

Very rare in this vicinity. Found during July. In general appearance the female of this insect very much resembles the pupa of *Truxalis brevicornis*.

***Syrbula admirabilis* (Uhler).**

This species was described from Maryland, and has also been recorded from New Jersey, but at present we have no knowledge of its occurrence in this vicinity.

Chloëaltis Harris.

Female : Top of head rounded, vertex produced into a short, blunt pyramid; face oblique, with the median carina broad, slightly sulcate, and a rather sharp lateral carina ; eyes large, extended forward, and pointed at the apex ; pronotum parallel with three carina ; sides perpendicular, compressed ; wing covers half as long as the abdomen ; hind wings somewhat shorter. The wings in the var. *punctulata* are as long as the abdomen. The male is much smaller, with the face more oblique, and the wings nearly reaching the tip of the abdomen.

***Chloëaltis viridis* Scudder.**

PLATE VII, FIG. 10.

Female grass green or dirty brown, with a blackish line beginning behind the eye and running along the lateral carina of the pronotum. Hind tibiae brown. The male is green on top of the head and pronotum, upper half of wing cases and middle pair of legs ; face pale yellowish brown, remaining parts dirty brown. Hind wings smoky in both sexes.

Measurements.—Male : Length of body, 16 mm. ; wing cases, 8 mm. ; posterior femora, 10 mm. Female : Length of body, 25 mm. ; wing covers, 9 mm. ; posterior femora, 14 mm.

Very common from the latter part of July until late in the fall, in dry grassy fields, meadows and hillsides.

***Chloëaltis viridis* var. *punctulata* Scudder.**

Differs from the preceding by having the wings extending to the tip of the abdomen. Wing covers green and marked with scattered, small blackish-brown spots. Hind wings smoky and about as long as the wing covers.

Found in the same localities as *C. viridis*, but is quite rare in this vicinity.

***Chloëaltis conspersa* Harris.**

PLATE VII, FIG. 9, MALE.

Wholly dirty brown with minute darker brown dots, except the underside of abdomen orange yellow and the posterior tibiae red; hind femora with one or two rather large light brown patches outside. Wings about half as long as the abdomen. The male is much narrower than the female; the wing covers are broad and extend nearly to the tip of the abdomen; hind wing very small; the antennae are considerably longer than those of the female. In color it is yellowish brown; sides of pronotum glossy black, as are also the first few abdominal segments; hind femora with two light-colored spots outside; hind tibiae red, black at base and apex.

Measurements.—Male: Length of body, 20 mm.; wing covers, 10 mm.; posterior femora, 13 mm. Female: Length of body, 23 mm.; wing covers, 7 mm.; posterior femora, 13 mm.

Found in dry grassy places on hillsides, fields, and in open woods, during the latter part of July until October. Not common. It may be easily recognized by the light-colored spots on the outside of the posterior femora, and red hind tibiae.

Stenobothrus Fischer.

Body elongate, rather narrow. Face oblique with the carina as in *Chloëaltis*, as also the vertex. Pronotum more or less constricted about the middle, with the three carina usually distinct; wing covers narrow, as long, longer or shorter than the abdomen.

This genus is closely allied to *Chloëaltis*, but may be distinguished from it by the constricted pronotum, and the narrower and more elongate body.

***Stenobothrus maculipennis* Scudder.**

PLATE VIII, FIG. 4.



FIG. 7.
Head of *S.*
maculipennis.
(Female.)

Head and pronotum green or brown, or pinkish brown with black markings; on each side of the pronotum is a velvety-black stripe, broken in the middle by the lateral carina, which are whitish or pinkish. Wing covers narrow, and extending beyond the abdomen, green or brown with a row of square spots along the middle and scattered over the outer portion; hind wings almost as long as the wing covers. Legs green or brown, hind femora sometimes with a reddish tinge.

Measurements.—Female: Length of body about 20 mm.; wing covers, 18 mm.; posterior femora, 12 mm.; pronotum, 3 mm. Male: Length of body, 16 mm.; wing covers, 14 mm.; posterior femora, 9 mm.; pronotum, 2.5 mm.

Common in dry grassy places, especially on sandy soil. Found during July until October. It is somewhat variable in color, some individuals being wholly green or brown, or any mixture of the two, but green males are the least common of any of the forms. Some specimens show considerable rose-red, or may be very largely blackish fuscous throughout.

***Stenobothrus olivaceus* Morse.**



FIG. 8.
Head of *S.*
olivaceus.
(Male.)

Closely allied to *S. maculipennis*, but differs in having the vertex more nearly horizontal, more acute, more angulate with the front in profile; more narrowed between the eyes. The face is more oblique; the antennæ are shorter, more flattened toward the base and more finely pointed. The pronotum is longer and less constricted, thus making the space between the lateral carina broader, and the carina in straight lines rather than curves. In color it varies from brown to olivaceous. Size same as that of *S. maculipennis*.

Has been taken at Stamford and Greenwich, Conn.; also at Sandy Hook, N. J. It is found during August and September in salt marshes near the seashore. It will probably also be found on Long Island and at other places in this vicinity.

***Stenobothrus æqualis* Scudder.**



FIG. 9. Head
of *S. æqualis*.
(Female.)

Resembles *S. maculipennis* and *S. olivaceus*, from which it may be distinguished by the shorter and blunt vertex; the disk of the anterior portion of the pronotum is broader and the wing covers only extend to the tip of the abdomen. It is also somewhat smaller. The variety *bilineatus* has two broad black bands running from behind the eyes, inside the lateral carina, to the end of the pronotum.

Common everywhere in this vicinity in dry places covered with short, stubby grass. It is also variously colored, being either green or brown, or both. The males are rarely green.

***Stenobothrus curtipennis* (Harris).**

Head and thorax pale yellowish brown, olive gray or dirty grass green; wing covers light or dark yellowish brown; underside of body bright yellow; legs

yellowish; hind femora black at apex; hind tibia black at the knee, rest pale reddish or yellow; behind the eyes is a shining black stripe, which extends to the end of the pronotum; this stripe is usually more or less distinct, but sometimes almost absent; antennæ black-brown at the base, sometimes wholly black; wing covers shorter than the abdomen. In the variety *longipennis* the wings are as long or longer than the abdomen.

Measurements.—Male: Length of body, about 15 mm.; wing covers, 9–15 mm.; posterior femora, 11 mm.; antennæ, 10 mm. Female: Length of body, 20–25 mm.; wing covers, 9–15 mm.; posterior femora, 13 mm.; antennæ, 7 mm.

Found from the latter part of July until October, in swampy meadows. Rather common.

CEDIPODINÆ.

Chortophaga Saussure.

Body compressed; legs remote; antennæ somewhat flattened, short; pronotum acutely angled behind, median carina elevated into a keel-shaped ridge; sides almost parallel.

Chortophaga viridifasciata (De Geer).

PLATE VIII, FIG. 9.

Head and thorax bright green; abdomen yellowish green; hind femora green with black bands inside; hind tarsi lead color with a white band near the base; wing covers wholly green or green along the costal margin to beyond the middle with the remaining part semi-transparent, dusky; hind wings transparent, yellowish green at base, smoky towards the outer portion; antennæ reddish.

Measurements.—Male: Length of body, 21 mm.; wing covers, 20 mm.; hind femora, 12 mm. Female: Length of body, 25 mm.; wing covers, 22 mm.; hind femora, 14 mm.

Chortophaga viridifasciata var. *infuscata (Harris).*

In this variety the head, thorax and wing covers are dusky brown, the latter with a few darker patches. The hind femora are pale brown and whitish inside with black bands. The hind wings and hind tarsi are the same color as in the preceding form. Size also the same.

Found everywhere in this vicinity in open pastures from the latter part of April until frost. Double brooded. The variety *infuscata* is less abundant, but more common in the South.

Encoptolophus Scudder.

Head somewhat swollen, cheeks and face rounded, the latter with the median carina sulcate, lateral carina distinct; vertex broad, somewhat concave, triangular in front; pronotum pinched at the sides; median carina elevated, distinct, and cut in the middle by a distinct notch; lateral carina indistinct; hind angle triangular; wing covers of equal width except at the base; hind wings broad and almost as long as the wing covers; both reaching a little beyond the abdomen; hind femora rather flat and broad.

Encoptolophus sordidus (Burmeister).

PLATE X, FIG. 2.

Dusky brown, varied with lighter and darker shades; pronotum with a pinkish buff X-shaped mark on top; hind femora with blackish and buff-colored bands; hind tibiae blackish with a sordid white band near the base; wing covers fuscous, semitransparent, with two distinct pale transverse fasciae, and other small pale spots scattered over the wings; hind wings transparent, yellowish at base and the outer portion smoky.

Measurements.—Male: Length of body, about 19 mm.; wing covers, 19 mm.; hind femora, 13 mm. Female: Length of body, 28 mm.; wing covers, 24 mm.; hind femora, 15 mm.

Common everywhere in this neighborhood in pastures and gardens. It occurs during the months of September and October.

Camnula pellucida Scudder.

Occurs in Connecticut and northward, and probably also may be found in this vicinity.

Arphia Stål.

Head large; pronotum keel-shaped, arcuate, granulated, notched or entire, and more or less angled behind; lateral carina wanting; wing covers long and narrow; hind wings broad; hind femora compressed and dilated.

Arphia sulphurea (Fabricius).

PLATE VIII, FIG. 10.

Vertex of head triangular in front; pronotum obtusely angled in front and behind; median carina prominent, slightly curved; head, thorax, wing covers, abdomen and legs dark brown; hind femora outside also dark brown, inside black with white bands; hind tarsi black, or sometimes blackish lead color.

with a white band near the base ; hind wings yellow on basal half, outer part blackish, with dash of the same color below the costa, running for some distance in the yellow color.

Measurements.—Male : Length of body, 20 mm. ; wing covers, 21 mm. ; hind femora, 13 mm. Female : Length of body, 30 mm. ; wing covers, 24 mm. ; hind femora, 15 mm.

Found from about the middle of May until the middle of July in dry, open grassy places.

***Arphia xanthoptera* (Burmeister).**

PLATE VIII, FIG. 11.

Closely allied to *A. sulphurea*, but is a larger and heavier insect. The pronotum is acute in front and very acutely pointed behind ; the median carina is keel-shaped and arched. In color and markings it is similar to the preceding species.

Measurements.—Male : Length of body, 24 mm. ; wing covers, 25 mm. ; posterior femora, 15 mm. Female : Length of body, 32 mm. ; wing covers, 29 mm. ; posterior femora, 18 mm.

Occurs in similar localities as *A. sulphurea*, but especially on dry sandy places and hillsides. Found during the latter part of August and until the latter part of September.

Hippiscus Saussure.

Form robust ; pronotum granulate, median carina distinct and slightly notched before the middle ; sides of pronotum somewhat compressed in the middle and above on each side of the carina ; truncate in front and acute angled behind, vertex flattened and continuous with the median carina of the face ; wings extending beyond the abdomen.

***Hippiscus tuberculatus* (Pal. de Beauv.).**

PLATE X, FIG. 3.

Ashy lead color, darker above, abdomen beneath yellowish brown ; antennæ ochreous at base, piceous toward the apex ; head uniform in color ; pronotum with a dark brown streak along the middle of the lateral lobes ; posterior edge of pronotum ochreous ; wing covers like the body in color, with fuscous blotches and with the axillary fold yellowish brown ; hind wings coral red at the base, with an arcuate blackish band and the apex nearly transparent ; hind femora ashen brown with two blackish dashes more or less distinct, inside black or prussian blue at base, then ochreous with a black or blue band ; hind tibiae ochre yellow.

Measurements.—Male: Length of body, 25–30 mm. ; wing covers, 25–30 mm. ; hind femora, 15–17 mm. Female: Length of body, 40 mm. ; wing covers, 33 mm. ; hind femora, 21 mm.

This species makes its appearance early in May and is found until July. It occurs in dry pastures or open fields covered with a growth of low bushes.

***Hippiscus phœnicopterus* (Germar).**

PLATE IX, FIG. 4.

Head ashen gray with darker shades ; pronotum grayish brown tinged with olive green, with a more or less distinct angular band on each side ; abdomen pale ochre yellow ; wing covers marked with large black spots, apex semitransparent with the spots smaller ; hind wings at base deep orange red, outside of this and just beyond the middle the wings are crossed by a curved black band, running from the costa to the anal angle, apex transparent ; hind femora yellowish brown with three indistinct bands, inside deep blue and with a yellow ring near the apex ; hind tibiae yellowish, tinged with orange in some specimens.

Measurements.—Male: Length of body, 30 mm. ; wing covers, 30 mm. ; posterior femora, 17 mm. Female: Length of body, 43 mm. ; wing covers, 39 mm. ; posterior femora, 21 mm.

Very rare in this vicinity, but more common in the Southern States. It is found during June and July in dry pastures and waste places.

***Hippiscus rugosus* (Scudder).**

Recorded from the New England States, and may possibly also be found in this vicinity. The basal portion of the hind wings are yellow instead of red, as in the two preceding species.

***Dissosteira* Scudder.**

Size large ; head prominent ; median carina of the pronotum high, compressed and notched near the middle, arched on the posterior lobe and almost straight on the anterior lobes ; wings and wing covers extending about one-third their length beyond the abdomen.

***Dissosteira carolina* (Linneus).**

PLATE X, FIG. 6.

Varies in color from almost sepia brown to rusty brown, with small dusky dots ; wing covers more or less covered with spots ; hind wings black with a

pale yellow outer border, dusky at the apex with a few black spots ; hind femora whitish inside, black at base to about the middle, apex black and a black band between ; hind tibia dirty white with a more or less distinct black and white annulus at the base.

Measurements.—Male : Length of body, 27 mm. ; wing covers, 30 mm. ; posterior femora, 14 mm. Female : Length of body, 35–37 mm. ; wing covers, 40 mm. ; posterior femora, 18 mm.

This is one of the most common Grasshoppers we have in this vicinity. It is found everywhere, in open fields, meadows and dusty roads, and often seen in the city streets. It is distributed from the Atlantic to the Pacific coasts.

Trimerotropis Stål.

Vertex continuous with the median sulcus of the face ; body covered with very short hairs ; pronotum compressed before the middle, narrower in front than behind ; slightly angled in front and acutely angled behind ; median carina slight and broken by two wide notches before the middle ; lateral carina distinct on the posterior lobe and broken on the anterior lobes ; wing covers long and narrow ; hind wings narrowing to a point at the apex.

Trimerotropis maritima (Harris).

PLATE X, FIG. 5.

Head, pronotum, legs and posterior femora white, sprinkled with minute atoms and dots of black and brown ; eyes ochraceous ; inside of hind femora with two black spots ; hind tibiæ light yellow, spines tipped with black ; wing covers also whitish, sprinkled more or less with black and brown atoms and spots, apex transparent ; hind wings at base semi-transparent, pale yellow followed by an arcuate, narrow black band, more or less broken by the veins, outer third of wing transparent.

Measurements.—Male : Length of body, 23 mm. ; wing covers, 24 mm. ; posterior femora, 13 mm. Female : Length of body, 32 mm. ; wing covers, 33 mm. ; posterior femora, 16 mm.

Very common on the seashores of Long Island, Staten Island and New Jersey. The insect may be readily known by its white color. Found from the latter part of July until about the middle of September.

Spharagemon Scudder.

Body pubescent; top of head somewhat swollen; vertex broad, tapering rapidly, and continuous with the median sulcus of the face; pronotum compressed before the middle, disk somewhat flattened; more or less acutely angled behind; median carina compressed, more or less keel-shaped, and divided by a deep furrow, the front portion being a little shorter; lateral carina almost obsolete. Wings extending beyond the tip of the abdomen; wing covers almost of equal width throughout; hind wings subtriangular.

Spharagemon bollii Scudder.

PLATE X, FIG. I.

Brownish fuscous, somewhat variable in color; face grayish, with minute blackish dots; hind femora grayish or brown, pale dirty yellow inside with black bands, which are indistinct outside; hind tibiae coral red, black at base, and followed by a dirty white and black band occupying almost half the tibiae; wing covers earthen-brown with many darker minute spots, and three more or less distinct blackish brown transverse fasciae; hind wings pale yellow at base, with a median, arcuate black band; outer portion of the wing transparent, sometimes dusky at the apex, especially in the male.

FIG. 10.
Side and top of pronotum of
S. bollii.

FIG. 11.

Measurements.—Male: Length of body, 20–22 mm.; wing covers, 22–25 mm.; posterior femora, 12.5–13.5 mm. Female: Length of body, 27–33 mm.; wing covers, 23–28 mm.; posterior femora, 12.5–17 mm.

This species is found on dry sandy soil, in pastures, near the edges of woods, and on almost any ground of barren character. It is of local distribution, and occurs from the latter part of July until late in October.

Spharagemon saxatile Morse.

Pronotum stout, slightly compressed anteriorly, broad posteriorly; front margin of disk slightly angulated, hind margin right angled, the apex blunt; median carina low, severed before the middle by a vertical incision, the anterior portion of the carina being higher than the posterior half. Body stout and less compressed than in *S. bollii*; blackish fuscous in spots and bands on an ash-gray ground color, abdomen somewhat yellowish; pronotum with an ash-gray X-shaped mark on the disk; hind femora ash gray and sprinkled with black outside, yellowish inside with four transverse black bands, which are less

FIG. 12.
Side and top of pronotum of
S. saxatile.

FIG. 13.

distinct outside; hind tibiae coral red, black at base, followed by a whitish annulus; wing covers ashen gray sprinkled with black and with three rather broad blackish bands; hind wings sulphur yellow at base, followed by an arcuate median black band; apical third of wings transparent, apex more (male) or less (female) fuscous.

Measurements.—Male: Length of body, 20–24 mm.; wing covers, 21.5–25.5 mm.; posterior femora, 11–14 mm. Female: Length of body, 32–39 mm.; wing covers, 25–31 mm.; posterior femora, 14–17 mm.

This species has been taken at Greenwich and New Haven, Connecticut, and at New Foundland, New Jersey. The insect is found in unsettled, somewhat wooded districts of a rocky, often elevated character. The color of the insect so harmonizes with the tints of the lichen-covered rocks that it is quite difficult to distinguish it when at rest. It is allied to *S. bollii* and *æquale*, but differs in shape of the median carina and hind angles of the pronotum. In color it very much resembles *Circotettix verruculatus*, which is found in similar haunts.

Spharagemon æquale (Say).

PLATE IX, FIG. 5.

Pronotum with median carina high and strongly compressed on the posterior lobe with a deep oblique incision, the dorsal edge of the carina arched on both



FIG. 14.
Side and top of pronotum of
S. æquale.



FIG. 15.

lobes; front margin of pronotum angulate, hind margin acute, sharp pointed, and excavate at the sides; head, thorax and wing covers light rusty brown, granulated and spotted with lighter brown flecks; hind femora with four transverse bands more or less distinct; disk of pronotum sometimes with a paler indistinct X-shaped mark; hind tibiae coral red sprinkled with fuscous at the base, and sometimes with indications of a pale an-

nulus near the base; hind wings pale yellow at base, followed by a black arcuate band reaching the anal angle.

Measurements.—Male: Length of body, 21–23 mm.; wing covers, 23–24.5 mm.; posterior femora, 13–14 mm. Female: Length of body, 27–29 mm.; wing covers, 25.5–28.5 mm.; posterior femora, 14–16.5 mm.

This species may be found in open fields, on sandy soil, from about the middle of July until October. Very rare and local in this vicinity, but not rare, locally, in the sandy districts of Staten Island, New Jersey and Connecticut.

Circotettix Scudder.

Eyes somewhat prominent ; vertex channelled, and continuous with the median sulcus of the face ; head somewhat broader than the anterior lobes of the pronotum ; posterior lobe of pronotum broader and acute angled behind ; median carina slightly elevated, with two rather deep notches before the middle ; lateral carina indistinct on the posterior lobe, but not prominent. Wings and wing covers longer than the body ; the latter are of equal width throughout, with the apex oblique ; the former are rather broad.

Circotettix verruculatus (Kirby).

PLATE IX, FIG. 6.

Ash gray, heavily mottled with black and gray ; sometimes the black almost obscuring the entire head, thorax and wing cases, thus giving the insect a very black appearance ; abdomen black ; hind femora with four more or less distinct black bands ; hind tibiæ yellowish with a black band at the base, a broader one at the extremity and one before the middle ; hind wings semitransparent, light yellow at the base and followed by a narrow, black, arcuate band ; apex transparent tipped with black ; sometimes the transparent space is black, but of a lighter shade than the band.

Measurements.—Male : Length of body, 22 mm. ; wing covers, 24 mm. ; posterior femora, 11 mm. Female : Length of body, 30 mm. ; wing covers, 28 mm. ; posterior femora, 13 mm.

This is a mountain insect, and it mimics the dark gray rocks covered with lichens. The nearest locality for the occurrence of the insect in this vicinity, as far as we are aware, is Delaware Water Gap, but it is not unlikely that it will also be found in the mountainous districts of New Jersey, nearer by. August and September. It is common in the mountains of New York, in New England, and westward. When flying, it produces a clicking noise.

Psinidia Stål.

Head large ; antennæ flattened ; pronotum granulated, acute angled behind, very much compressed before the middle ; median carina distinct with two notches ; lateral carina distinct on posterior lobe, broken on the anterior lobes ; wing covers narrow, hind wings broad, both extending beyond the body.

***Psinidia fenestralis* (Serville).**

PLATE VIII, FIG. 3.

Ash colored, variegated with gray and dark brown ; body beneath yellowish buff ; hind femora grayish outside, black at base inside, a band beyond the middle and black at the apex, these bands are repeated outside ; hind tibiæ whitish, with a black ring at each end, and one of the same color before the middle ; wing covers ashen gray, variegated with brown and black, transparent at the apex ; hind wings pinkish red, salmon color or pale orange yellow at the base, then a rather broad arcuate smoky black band ; apex transparent in the female, more or less tipped with black in the male, the dark color usually connecting with the black band and enclosing a transparent patch.

Measurements.—Male: Length of body, 15 mm.; wing covers, 19 mm.; posterior femora, 10 mm. Female: Length of body about 25 mm.; wing covers, 23 mm.; posterior femora, 13 mm.

Common near the sea beaches of Long Island, Staten Island, New Jersey and Connecticut, from the latter part of July until October.

Scirtettica Bruner.

Allied to the genus *Psinidia*, but differs in having the pronotum less elevated and with a single notch in the middle ; the pronotum is also less acute angled behind. The hind wings are broader and more rounded.

***Scirtettica marmorata* (Harris).**

PLATE X, FIG. 4.

Head and pronotum ashen gray, mottled more or less with darker markings, the pronotum sometimes with a pale, more or less distinct X-shaped mark on the disc ; hind femora gray with three black bands ; yellowish inside with the bands repeated ; hind tibiæ coral red with a blackish ring at the base, and followed by a whitish, and an indistinct black ring ; wing covers marbled with ashen gray and dark brown blotches, transparent at apex ; hind wings sulphur yellow at base, followed by a black arcuate band, apex transparent, tipped with black.

Measurements.—Male: Length of body, 15 mm.; wing covers, 17 mm.; posterior femora, 10 mm. Female: Length of body, 25 mm.; wing covers, 22 mm.; posterior femora, 12 mm.

Found in the same localities as *Psinidia fenestralis*, and also in open places in the pine districts of New Jersey, but is less common. August and September.

ACRIDIDINÆ.

Acridium Burmeister.

Large size; vertex concave; median carina of pronotum distinct; lateral carina rounded; prosternum provided with a long, stout, blunt spine; wings well developed, as long or longer than the body. Last segment of male not swollen.

Acridium alutaceum Harris.

PLATE IX, FIG. 2.

Dirty olive brown or green, with a rather broad, bright yellow longitudinal stripe on the top of the head and pronotum; wing covers brown, sometimes marked with darker dots; along the inner margin is a bright yellow stripe which becomes lost near the apex; hind wings transparent, yellowish at the base and becoming brownish towards the apex.

Measurements.—Male: Length of body, 28–32 mm.; wing covers, 25–27 mm.; hind femora, 16–20 mm. Female: Length of body, 48 mm.; wing covers, 39 mm.; hind femora, 24 mm.

Occurs in places covered with low bushes, especially *Myrica cerifera* and Sweet Fern, on which the insect usually rests. Common locally along the borders of marshy places. August and September.

Acridium rubiginosum Harris.

PLATE IX, FIG. 1.

Head and thorax leathery or rusty brown; wing covers of the same color, sometimes sprinkled with small, darker colored spots; hind wings transparent; yellowish at base and brownish towards the apex.

Size of preceding species, from which it differs by its redder color and by the absence of the yellow stripe on the head, pronotum and wing covers. It also inhabits similar places.

Acridium americanum Drury.

PLATE IX, FIG. 3.

Head with piceous and flesh-colored stripes; top of head with a broad yellowish longitudinal stripe running from the vertex to the end of the pronotum; pronotum pitchy brown with three yellow stripes on each side; abdomen pale

yellow; wing covers semitransparent with a yellow stripe along the inner margin; remaining part thickly covered with large and distinct, dark semitransparent brown spots; costal margin at base yellow; wings transparent, yellowish; posterior femora buff inside and below, outside white with oblique transverse stripes meeting at the black stripe which runs along the middle; hind tarsi bright red, spines white, tipped with black.

Measurements.—Male: Length of body, about 43 mm.; wing covers, 45 mm.; posterior femora, 24 mm. Female: Length of body, 52 mm.; wing covers, 54 mm.; posterior femora, 28 mm.

Found from early in May until early in July, and again during the latter part of September until early in November. The flight of this insect is rapid and long; it often flies up into trees to escape capture. Quite rare in this vicinity, but common in the Southern States. It is the largest Grasshopper found in this vicinity.

Paroxya Scudder.

Body straight, subcylindrical; head rather larger; eyes prominent; antennæ longer in the male than in the female; pronotum twice as long as broad, median carina slight, lateral carina rounded, posterior lobe punctured; wings and wing covers of the male slightly shorter than the abdomen, in the female much shorter; hind femora reaching the tip of the abdomen; prosternum with a prominent subcylindrical spine.

Paroxya atlantica Scudder.

PLATE VIII, FIG. 5.

Top of head, pronotum and wing covers light or dark olive brown; face and sides of head bright yellow; behind the eyes commences a broad black band which also runs along the sides of the pronotum; lower part of pronotum bright yellow; abdomen yellow; anterior legs olivaceous; posterior femora outside olivaceous, inside yellow, black at apex; hind tibiae lead-colored.

Measurements.—Male: Length of body, 23 mm.; wing covers, 13 mm.; posterior femora, 12 mm.; antennæ, 13 mm. Female: Length of body, 33 mm.; wing covers, 24 mm.; posterior femora, 17 mm.; antennæ, 10 mm.

Found in swampy places from July until early in October.

Paroxya floridana Thomas.

Recorded from New Jersey, and possibly will be found in this neighborhood.

[November, 1894.]



Melanoplus Stål.

Head rounded on top; vertex continuous with the median sulcus of the face, with the portion between the eyes channelled; face with the lateral carina sharply defined; eyes prominent, nearly straight in front and rounded behind; antennæ slender, extending to the tip of the pronotum in the female, and beyond in the male; pronotum with a distinct median carina, the lateral carina obtuse and the transverse incisions more or less distinct. Wing covers long and narrow, as long, longer or shorter than the abdomen; hind wings somewhat shorter than the wing covers; first joint of hind tarsi as long as the last joint; pulvilli between the claws large; last joint of abdomen of the male much swollen.

Melanoplus femur-rubrum (De Geer).

PLATE VIII, FIG. 7.

Yellowish green, with a black patch behind the eyes and at the sides of the pronotum. Sides of thorax with an oblique yellow line; underside of abdomen and thorax bright yellow; hind femora yellowish green, shaded with black; hind tibiæ and tarsi coral red; wing covers olivaceous or fuscous, sometimes with a row of blackish spots along the middle; hind wings pellucid; cerci of male broad at base and pointed at the tip.

Measurements.—Male: Length of body, 20 mm.; wing covers, 18 mm.; posterior femora, 12 mm. Female: Length of body, 25 mm.; wing covers, 20 mm.; posterior femora, 15 mm.

Exceedingly common everywhere, from about the latter part of July until frost. It is sometimes very destructive to field crops, gardens, shrubs and young trees.

Melanoplus atlanis (Riley).

Very closely related to *M. femur-rubrum*, but may be separated by the following characters: The cerci of the male are broad, equal, and rounded at the tip and about twice as broad as long; tip of last abdominal segment notched. In the female the median carina on the anterior lobe of the pronotum is wholly wanting or very indistinct. In size and color like *M. femur-rubrum*.

Rather common in fields, from August until frost.

Melanoplus collinus (Scudder).

Head gray, pronotum grayish brown with a shining black patch on each side; hind femora beneath and inside yellow; outside grayish brown with three black

bands encircling about half the femora above; hind tarsi red; wing covers reaching the tip of the abdomen. Cerci of male forked at the apex.

Measurements.—Male: Length of body, 19 mm.; wing covers, 13 mm.; posterior femora, 11 mm. Female: Length of body, 22–25 mm.; wing covers, 15 mm.; posterior femora, 12–14 mm.

Not uncommon during August and September in dry grassy fields. It may be easily known by the distinct black bands on the hind femora, its gray color and the forked cerci of the male.

***Melanoplus punctulatus* (Scudder).**

Olive yellow; sides of pronotum with a black patch; hind femora with deep wine-red and olive-yellow bands, underside of femora crimson; tibiae dirty red with a yellowish band at the base; tarsi with last joint tipped with black; wing covers olive brown with scattered black spots; hind wings pellucid, yellowish at base, dusky toward the apex; cerci of male flat, basal half narrow, outer half suddenly expanding, especially on one side; antennae of male quite long.

Measurements.—Male: Length of body, 20–23 mm.; wing covers, 19–21 mm.; posterior femora, 11 mm. Female: Length of body, 25–29 mm.; wing covers, 17–18 mm.; posterior femora, 12–13 mm.

The habits of this species are very different from those of the other members of the genus. Instead of being an active creature, and living on the ground amongst the grass like other species of *Melanoplus*, it inhabits pine trees, and is sometimes found in numbers on the same tree. It is quite sluggish, and may be easily taken without making any or much effort to escape capture. Found during August and September. It is quite scarce in this vicinity, but rather common in certain parts of Connecticut and New York in the pine woods.

***Melanoplus minor* (Scudder).**

Head and thorax grayish or brown; legs/dirty yellow; hind femora brownish outside with traces of darker bands, underside orange; hind tibiae lead color, or dull reddish in some individuals. Underside of body pale yellow; wing covers brown with a few small black spots along the middle; hind wings dusky at the apex, cinereous towards the base. Wing covers reaching the tip of the abdomen; cerci of male quadrate at base, somewhat compressed, longer than broad. outer portion rounded at tip, narrower than basal part, bent upward and grooved at the apex.

Measurements.—Male: Length of body, 17 mm.; wing covers, 12.5 mm.; posterior femora, 11 mm. Female: Length of body, 22 mm.; wing covers, 18 mm.; posterior femora, 12 mm.

Found during June and in July in dry grassy places, along the Palisades and in Westchester County, N. Y. Common locally. It may be readily known by its lead-colored hind tibiae.

Melanoplus borealis (*Fieber*).

This species very much resembles *M. femur-rubrum*, but the wings and wing covers are much shorter than the body; the transverse furrow of the anterior lobe of the pronotum is indistinct, and upper half of the divergent lobes much darker than the pale lower half. Cerci of male nearly equal throughout.

Measurements.—Male: Length of body, 16 mm.; wing covers, 9 mm.; hind femora, 9 mm. Female: Length of body, 21 mm.; wing covers, 10 mm.; posterior femora, 12 mm.

Taken on the cranberry bogs at Jamesburg, N. J., during July and August.

Melanoplus bivittatus (*Say*).

PLATE VIII, FIG. 8.

Yellowish green or grayish green, upper side of head and pronotum deep brown, the former with two yellow lines on top, continued along upper sides of the pronotum and extending to nearly the tip of the wing cases; underside of abdomen yellow; wings extending to the tip of the abdomen; femora marked with black outside, hind tarsi red; antennae rufous.

Measurements.—Male: Length of body, 28 mm.; wing covers, 20 mm.; hind femora, 15 mm. Female: Length of body, about 38 mm.; wing covers, 24 mm.; hind femora, 20 mm.

This is the largest and clumsiest species of *Melanoplus* found in this vicinity. It may be readily known by the two yellowish stripes along the back. It inhabits damp or swampy meadows, covered with weeds and tall grass. Common from July to October.

Pezotettix *Burmeister*.

Allied to *Melanoplus*, but the wings and wing covers are absent or abbreviated.

Pezotettix scudderi *Uhler.*

PLATE VIII, FIG. 6.

Fusco-ferruginous; wing covers extending a little beyond the second abdominal segment; posterior femora yellow on the underside; hind tibia red with a black ring near the base.

Measurements.—Male, 16–17 mm. Female, 22–23 mm.

Not common in this neighborhood. Found from the latter part of August until the latter part of October, in dry places.

TETTIGINÆ.

Tettix *Latreille.*

Size small; form slender; head small, eyes globular, protruding; antennæ 13–14-jointed; pronotum compressed anteriorly, median carina distinct, hind portion extending back over the abdomen to or beyond its extremity, and terminating in a long narrow point; wing covers very short; wings fan-like, well developed, almost as broad as long, and as long or longer than the abdomen; lower anterior angle of sides of pronotum angulated and bent inward.

Tettix granulatus (*Kirby*).

Wholly grayish brown, and finely granulated; narrow, slender; pronotum much longer than the abdomen; vertex prominent, advancing in front of the eyes, with the front border angulated.

Measurements.—Length of body, 11 mm.; pronotum, 13 mm.; hind femora, 6 mm.

Found along roadsides, usually in damp places, from April to September.

Tettix cucullatus (*Burmeister*).

Resembles *T. granulatus*, but the vertex is narrower and does not project beyond the eyes; the front of the vertex is cut square and is not angulated as in *T. granulatus*. The pronotum is also broader and the median carina less distinct.

Measurements.—Length of body, 10 mm.; pronotum, 12 mm.; posterior femora, 6 mm.

Found in similar localities as the preceding species.

***Tettix ornatus* (Say).**

Smaller than *T. cucullatus*, with various styles of ornamentations. Vertex slightly advancing beyond the eyes, with the front border rounded and the median carina projecting; pronotum extending beyond the abdomen. In color it is cinereous, with yellowish and black markings.

Measurements.—Length of body, 10 mm.; pronotum, 11 mm.; posterior femora, 5 mm.

Found from April until September.

***Tettix triangularis* (Scudder).**

Allied to *T. ornatus*, but differs by having the pronotum slightly extending beyond the tip of the abdomen, and not prolonged into a long slender point as in *T. ornatus*.

Measurements.—Length of body, 9 mm.; pronotum, 9 mm.; posterior femora, 5 mm.

It is considered as a variety of *T. ornatus*, and is found in the same localities.

***Tettigidea* Scudder.**

Size small; form robust and clumsy; head large and broad, with the front less sloping and with median ridge of the face more prominent than in the genus *Tettix*; antennæ 21–22-jointed; lower anterior angle of sides of pronotum rounded and not bent inward as in *Tettix*; front border of the pronotum thrust forward and partly concealing the head; median carina straight, somewhat curved anteriorly; lateral carina less prominent than in *Tettix*, and not so strongly bent inward in advance of the broader portion of the pronotum.

***Tettigidea lateralis* (Say).**

PLATE X, FIG. 7.

Head and sides of body blackish brown; hind femora with a rather large ochraceous spot outside about the middle; underside of body dirty yellow; top of pronotum light or dark testaceous, sometimes the same color as the sides of the body, with a testaceous border. In the male the face and lower anterior portion of the pronotum are yellow. Wings and pronotum extending beyond the abdomen, wings somewhat longer than the pronotum.

Measurements.—Male: Length of body, 10 mm.; pronotum, 11 mm.; posterior femora, 6 mm. Female: Length of body, 14 mm.; pronotum, 15 mm.; posterior femora, 7.5 mm.

Found from April until September.

Tettigidea polymorpha (*Burmeister*).

PLATE X, FIG. 8.

Closely allied to *T. lateralis* in color and form, but the pronotum extends to the tip of the abdomen, and the wings are somewhat shorter.

Found in the same places and time as *T. lateralis*.

Batrachidea *Serville*.

Head somewhat enlarged and the space between the eyes distant; antennæ 12-jointed; pronotum reaching the extremity of the abdomen, with the median carina very high and arched; legs stout.

Batrachidea cristata (*Harris*).

PLATE X, FIG. 9.

Vertex projecting beyond the eyes, front border well rounded, a little angulated; median carina sharp, prominent, and sloping backwards; the pronotum is finely granulated, usually with two black spots on each side near the anterior portion above, otherwise the insect is wholly fuscous.

Measurements.—Length of body, 10 mm.; posterior femora, 5.5 mm.

Found from April to October. *B. carinata* is considered a long-winged variety of *B. cristata*.

. *Synopsis of Species of Acrididæ.***Truxalis.**

Face very oblique; vertex in form of a long, blunt cone or pyramid; antennæ flattened.

Color, green and brown; wings and wing covers extending beyond the abdomen.....*T. brevicornis*.

Opomala.

Head as in *Truxalis*.

Color, light brown; wings and wing covers much shorter than the abdomen.....*O. brachyptera*.

Chloëaltis.

Top of head rounded; vertex produced into a short, blunt pyramid; pronotum parallel.

Green or brown; wings shorter than the abdomen (female) or nearly as long (male).....*C. viridis*.

Wings of female extending to the tip of the abdomen....var. *punctulatus*.

Grayish brown speckled with black; hind femora with two light patches outside; sides of pronotum marked with black (female) or wholly black (male).....*C. conspersa*.

Stenobothrus.

- Pronotum constricted before the middle; head similar to *Chloëaltis*;
body slender and narrow.
Green and brown; wings and wing covers extending beyond the
abdomen *S. maculipennis*.
Nearly like *maculipennis*, with the vertex more angulate with front
in profile. *S. olivaceus*.
Wings and wing covers extending to tip of the abdomen. *S. æqualis*.
Wing covers yellowish, shorter than the abdomen; hind tibiæ red,
knees black. *S. curtispennis*.
Wings and wing covers as long or longer than the abdomen,
var. *longipennis*.

Chortophaga.

- Pronotum acutely angled behind; median carina elevated.
Grass green; wing covers sometimes with brown stripe; hind wings
yellowish green at base, translucent. *C. viridifasciata*.
Dusky brown, wing covers with darker patches. var. *infuscata*.

Encoptolophus.

- Head swollen; pronotum constricted at the sides, triangular behind,
median carina cut in the middle by a distinct notch.
Dusky brown; wing covers with lighter fasciæ *E. sordidus*.

Arphia.

- Pronotum keel-shaped, arcuate, acutely angled behind.
Brown; hind wings at base bright sulphur yellow; pronotum sharply
angled behind. *A. xanthoptera*.
Smaller species, color like *xanthoptera*, pronotum triangular behind,
A. sulphurea.

Hippiscus.

- Robust species; pronotum very broad, rugose; median carina distinct,
slightly notched before the middle.
Ashy lead color; wing covers with fuscous blotches, axillary fold
yellowish; hind wings coral red at base. *H. tuberculatus*.
Ashen gray with darker shades, pronotum tinged with olive green;
wing covers with many large dark spots; hind wings orange
red at base. *H. phanicopterus*.

Dissosteira.

- Median carina of pronotum notched, arched on the posterior lobe,
straight on anterior lobe.
Varies from sepia to rusty brown; hind wings black with a yellow
outer border. *D. carolina*.

Trimerotropis.

- Median carina of pronotum not very distinct, and broken by two wide
notches.
White, with fine black atoms; hind wings pale translucent, yellow
at base. *T. maritima*.

Spharagemon.

- Head tumid; vertex broad; pronotum acute angled behind; median
carina elevated, compressed and notched.
Light or dark brownish fuscous, with darker markings; hind wings
pale yellow at base; hind tibiæ coral red with a broad black
and white band at base. *S. bollii*.
Ashen gray, profusely marked with black; hind tibiæ coral red with
a white band near the base. *S. saxatile*.
Brown, mottled with fuscous; hind tibiæ red with an obsolete white
ring near the base. *S. æquale*.

Circotettix.

Pronotum flattened on top, acute angle behind; median carina with two notches before the middle.

Ashen gray, profusely marked with black; hind wings pale yellow at base; hind tarsi yellowish, with three indistinct black bands.....*C. verruculatus.*

Psinidia.

Small species: Head large; antennæ flattened; pronotum granulated, much compressed before the middle, median carina with two notches.

Ash colored, variegated with gray and brown. Hind wings pink or yellow at base.....*P. fenestralis.*

Scirtettica.

Small species: Pronotum less elevated than *Psinidia*; median carina with one notch before the middle.

Ashen gray, marbled with darker markings; hind wings sulphur yellow at base; hind tibiæ red with black ring at base followed by a white and black ring.....*S. marmorata.*

Acridium.

Large and robust species; pronotum obtuse angled behind, median carina distinct, lateral carina rounded.

Yellowish green, with a distinct yellow line running from the head to the tip of wing covers, which are brown.....*A. alutaceum.*

Leathery brown, without the yellow stripe.....*A. rubiginosum.*

Piceous, with flesh-colored and yellow stripes on the head and pronotum; wing covers covered with dark brown spots.....*A. americanum.*

Paroxya.

Small species; pronotum twice as long as broad, slightly rounded behind, smooth, posterior lobe punctured.

Olive brown, face and sides yellow; behind the eyes a black stripe running to the end of the pronotum.....*P. atlantica.*

Melanoplus.

Allied to *Paroxya*; pronotum shorter, with the lateral carina on the anterior lobes indistinct; anal segment of male swollen.

Yellowish; wing covers fuscous; hind tibiæ red; cerci of male broad at base, pointed at the tip.....*M. femur-rubrum.*

Similar to *femur-rubrum*; cerci of male about twice as long as broad, rounded at tip.....*M. atlantis.*

Grayish; hind femora with three distinct black bands above; hind tibiæ red; cerci of male forked at the tip.....*M. collinus.*

Olive yellow; wing covers olive gray; hind femora with wine-red and yellow bands; cerci of male flat, basal half narrow, outer half expanded on one side.....*M. punctulatus.*

Grayish brown; hind tibiæ lead colored, rarely dull reddish; cerci of male quadrate at base, longer than broad, outer portion rounded at tip and narrower than basal part, bent upwards and grooved at the apex.....*M. minor.*

Like *femur-rubrum*, but the wings and wing covers much shorter than the abdomen; cerci of male nearly equal throughout, *M. borealis.*

Robust; yellowish green, with two yellow lines running from behind the eyes to the end of the pronotum and along the wing covers, *M. bivittatus.*

Pezotettix.

Allied to *Melanoplus*; wing covers abbreviated.

Fusco-ferrugineous; hind tibiæ red with a black ring at base, *P. scudderi.*

Tettix.

Minute species: Pronotum extending back over the abdomen to or beyond its extremity.

Grayish brown, finely granulated; pronotum extending much beyond the abdomen; vertex angulated, advancing in front of the eyes.....*T. granulatus.*

Vertex narrower, not projecting beyond the eyes; not angulated,
T. cucullatus.

Pronotum shorter than in the two preceding species; fuscous, with various styles of ornamentation.....*T. ornatus.*

Like *T. ornatus*, but the pronotum not extending beyond the abdomen ..*T. triangularis.*

Tettigidea.

Minute species: Allied to *Tettix*; robust; lower anterior angle of sides of pronotum rounded and not bent inward as in *Tettix*.

Hind femora with a rather large pale spot outside; top of pronotum light or dark brown, extending beyond the abdomen.....*T. lateralis.*

Allied to *T. lateralis*; pronotum reaching the tip of the abdomen,
T. polymorpha.

Batrachidea.

Median carina much elevated, arcuate, extending to the tip of abdomen or beyond.

Fuscous, with two black spots on each side on top of the pronotum,
B. cristata.

EXPLANATION OF PLATES.

PLATE V.

- Fig. 1.—*Anisolabis maritima* Bon. Female.
 Fig. 2.—*Stylopyga orientalis* (Linn.). Male.
 Fig. 3.— “ “ “ Female.
 Fig. 4.—*Periplaneta americana* (Linn.). Female.
 Fig. 5.—*Gryllotalpa columbia* Scudder. Female.
 Fig. 6.—*Gryllus pennsylvanicus* Burm. Male.
 Fig. 7.— “ “ “ Female.
 Fig. 8.— “ *domesticus* Linn. Male.
 Fig. 9.—*Nemobius fasciatus* (De Geer). Male.
 Fig. 10.— “ *vittatus* (Harr.). Female.
 Fig. 11.— “ *affinis* Beut. Female.
 Fig. 12.—*Æcanthus niveus* (De Geer). Male.
 Fig. 13.— “ “ “ Female.
 Fig. 14.—*Xabea bipunctata* (De Geer). Female.
 Fig. 15.—*Tridactylus terminalis* Scudder. Female.
 Fig. 16.—*Phylloscirtus pulchellus* (Uhler). Male.
 Fig. 17.—*Ceuthophilus grandis* Scudder. Female.

PLATE VI.

- Fig. 1.—*Cyrtophyllus concavus* (Harris). Male.
 Fig. 2.—*Amblycorypha rotundifolia* (Scudder). Female.
 Fig. 3.—*Microcentrum laurifolium* (Linn.). Female.
 Fig. 4.—*Orchelimum vulgare* Harris. Male.
 Fig. 5.— “ “ “ Female.
 Fig. 6.—*Xiphidium brevipennis* Scudder. Female.
 Fig. 7.— “ *fasciatum* (De Geer). Female.
 Fig. 8.—*Conocephalus ensiger* Harris. Male.
 Fig. 9.— “ *robustus* Scudder. Female.

PLATE VII.

- Fig. 1.—*Conocephalus exiliscanorus* Davis. Male.
 Fig. 2.— “ “ “ Female.
 Fig. 3.— “ *dissimilis* Serville. Male.
 Fig. 4.— “ “ “ Female.
 Fig. 5.—*Scudderia curvicauda* (De Geer). Male.
 Fig. 6.— “ “ “ Anal spines.
 Fig. 7.—*Atlanticus pachymerus* (Burm.). Male.
 Fig. 8.— “ *dorsalis* (Burm.). Female.
 Fig. 9.—*Chloëaltis conspersa* Harris. Male.
 Fig. 10.— “ *viridis* Scudder. Female.

PLATE VIII.

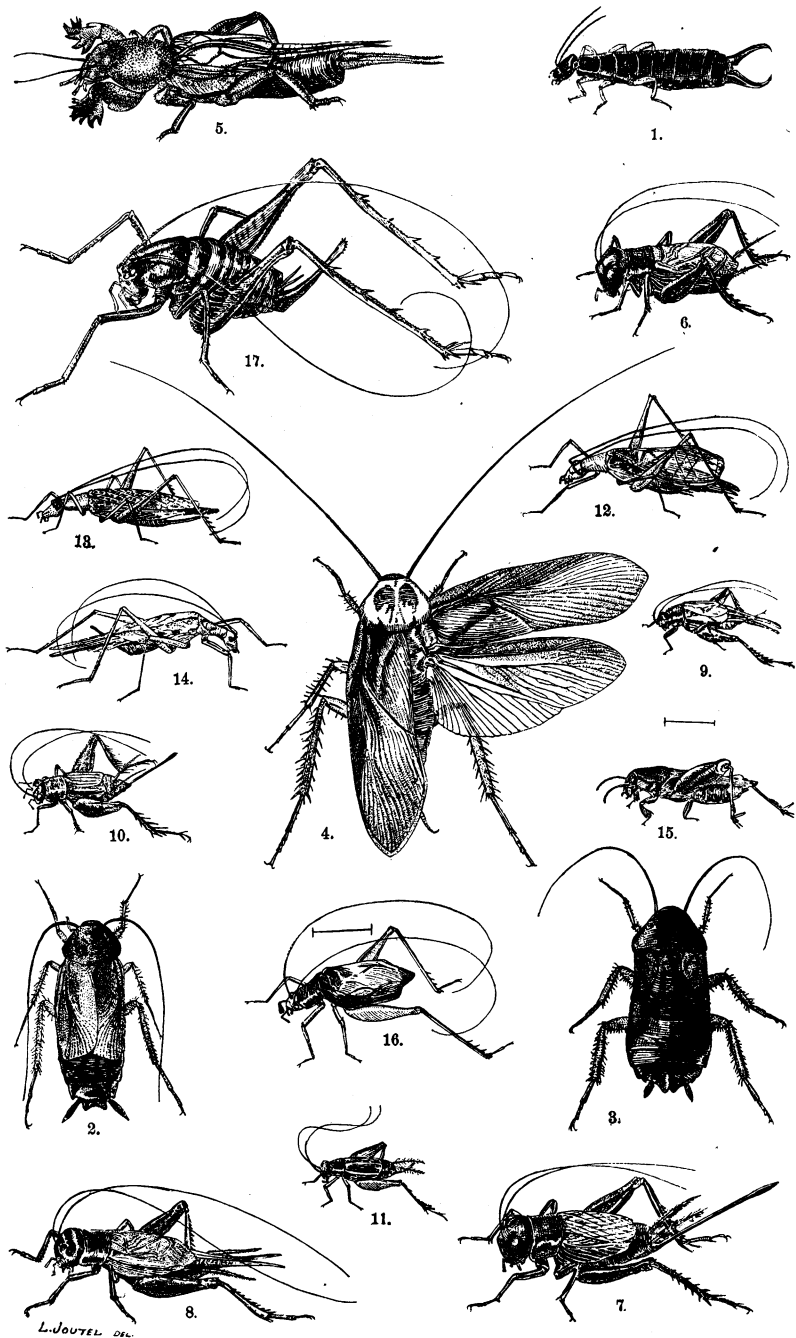
- Fig. 1.—*Truxalis brevicornis* Linn. Male.
 Fig. 2.— “ “ “ Female.
 Fig. 3.—*Psinidia fenestralis* Serville. Female.
 Fig. 4.—*Stenobothrus maculipennis* Scudder. Female.
 Fig. 5.—*Paroxya atlantica* Scudder. Female.
 Fig. 6.—*Pezotettix scudderi* Uhler. Female.
 Fig. 7.—*Melanoplus femur-rubrum* (De Geer). Female.
 Fig. 8.— “ *bivittatus* (Say). Female.
 Fig. 9.—*Chortophaga viridifasciata* (De Geer). Female.
 Fig. 10.—*Arphia sulphurea* (Harris). Male.
 Fig. 11.— “ *xanthoptera* (Germar). Male.

PLATE IX.

- Fig. 1.—*Acridium rubiginosum* Harris. Female.
 Fig. 2.— “ *alutaceum* Harris. Female.
 Fig. 3.— “ *americanum* (Drury). Female.
 Fig. 4.—*Hippiscus phænicopterus* (Germar). Male.
 Fig. 5.—*Spharagemon æquale* (Say). Female.
 Fig. 6.—*Circotettix verruculatus* (Kirby). Female.

PLATE X.

- Fig. 1.—*Spharagemon bollii* Scudder. Male.
 Fig. 2.—*Encoptolophus sordidus* (Burm.). Female.
 Fig. 3.—*Hippiscus tuberculatus* (Pal. de Beauv.). Male.
 Fig. 4.—*Scirtettica marmorata* (Harris). Male.
 Fig. 5.—*Trimerotropis maritima* (Harris). Female.
 Fig. 6.—*Dissosteira carolina* (Linn.). Female.
 Fig. 7.—*Tettigidea lateralis* (Say). Female.
 Fig. 8.— “ *polymorpha* (Burm.). Female.
 Fig. 9.—*Batrachidea cristata* (Harris). Female.
 Fig. 10.—*Diapheromera femorata* (Say). Female.

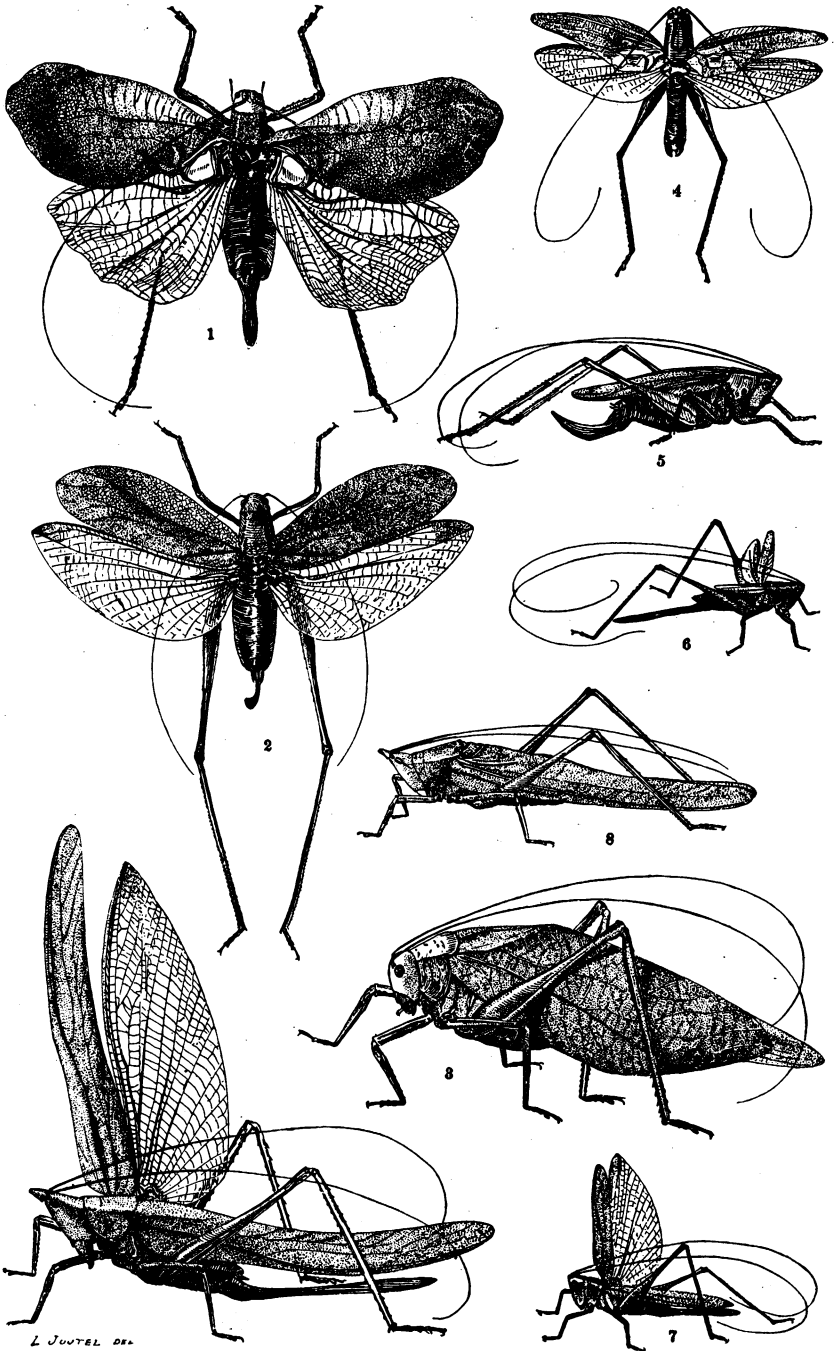


1. *Anisolabis maritima*.
2. *Stylopyga orientalis*.
3. " "
4. *Periplaneta americana*.
5. *Gryllotalpa columbiana*.
6. *Gryllus pennsylvanicus*.

7. *Gryllus pennsylvanicus*.
8. " domesticus.
9. *Nemobius fasciatus*.
10. " vittatus.
11. " affinis.
12. *Æcanthus niveus*.

13. *Æcanthus niveus*.
14. *Xabea bipunctata*.
15. *Tridactylus terminalis*.
16. *Phylloscirtus pulchellus*.
17. *Ceuthophilus grandis*.

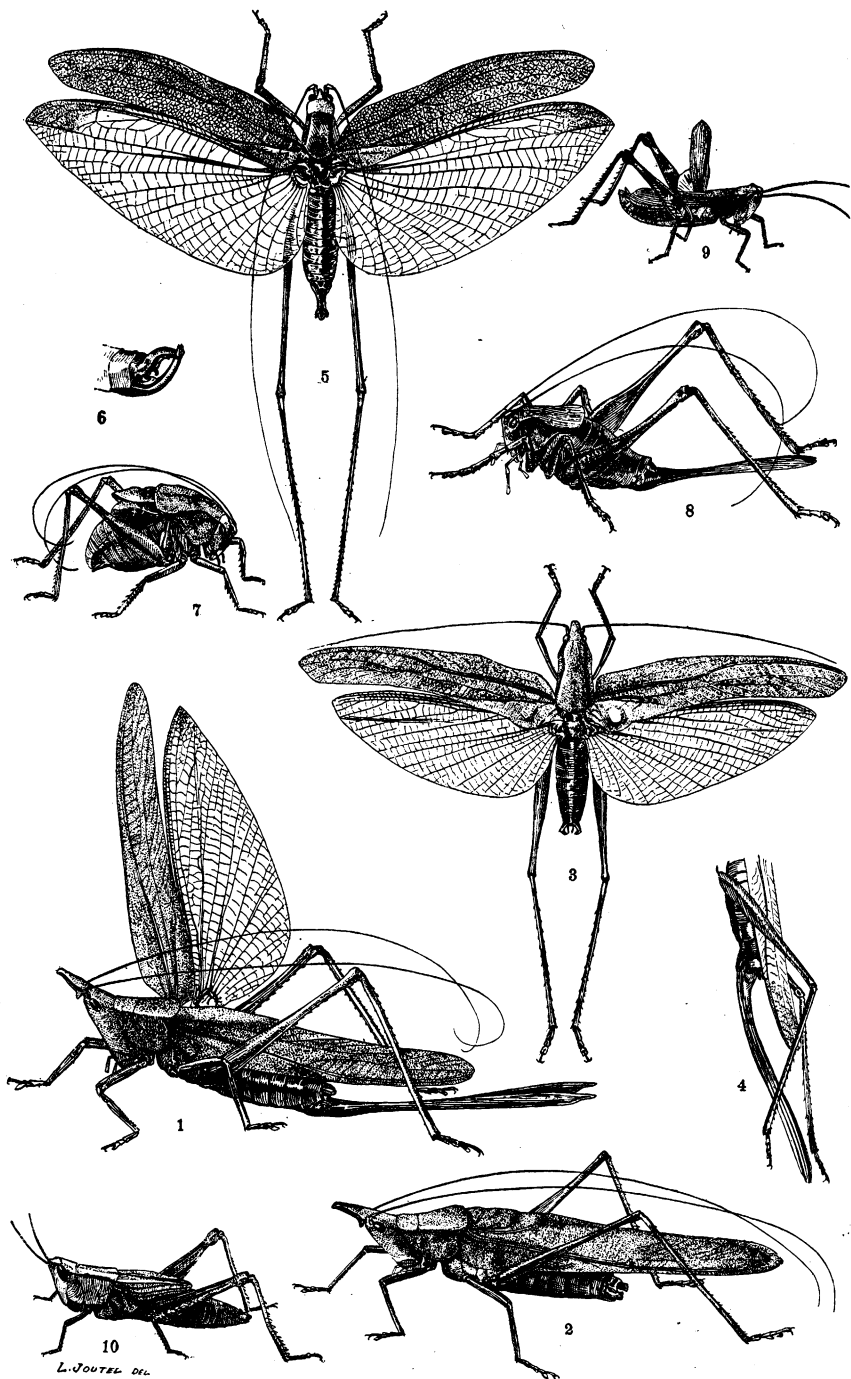




1. *Cyrtophyllus concavus*.
2. *Amblycorypha rotundifolia*.
3. *Microcentrum laurifolium*.
4. *Orchelimum vulgare*.
5. " "

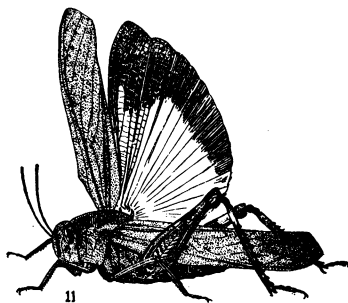
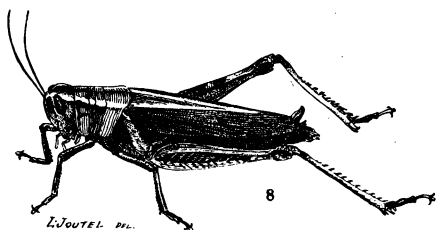
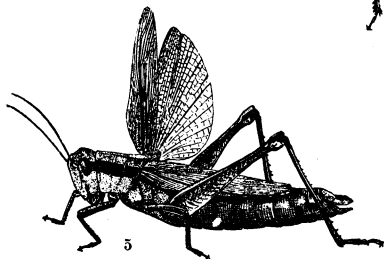
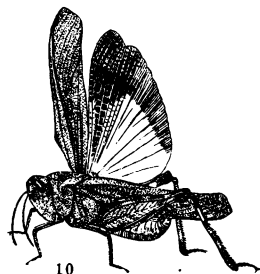
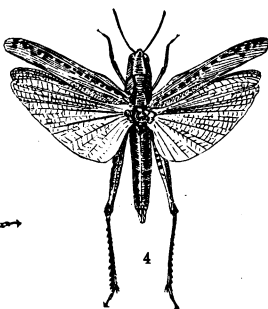
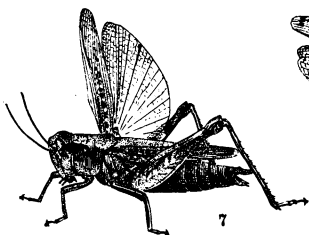
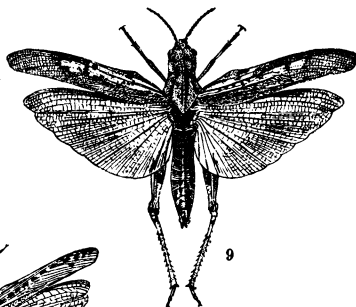
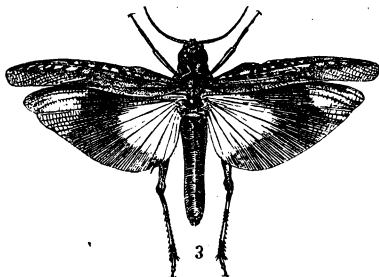
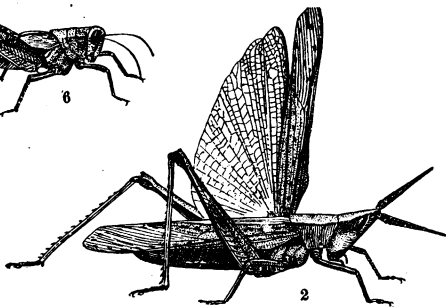
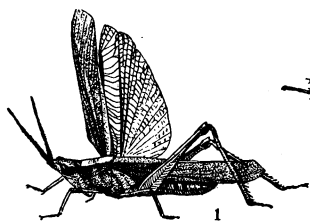
6. *Xiphidium brevipennis*.
7. " *fasciatum*.
8. *Conocephalus ensiger*.
9. " *robustus*.

L. JOUDEL DEL.



1. *Conocephalus exiliscanorus*.
2. " "
3. " *dissimilis*.
4. " "
5. *Scudderia curvicauda*.

6. *Scudderia curvicauda*, anal spines.
7. *Atlanticus pachymerus*.
8. " *dorsalis*.
9. *Choealtis conspersa*.
10. " *viridis*.



L. JOUTEL DEL.

1. *Truxalis brevicornis*.

2. " "

3. *Psinidia fenestralis*.

4. *Stenobothrus maculipennis*.

5. *Paroxya atlantica*.

6. *Pezotettix scudderi*.

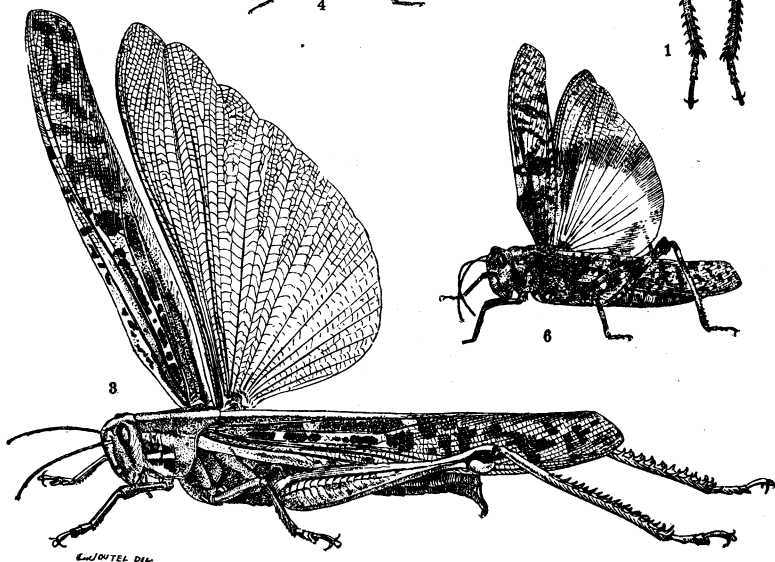
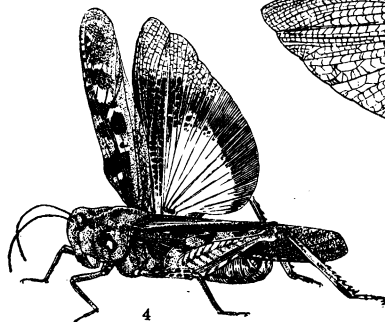
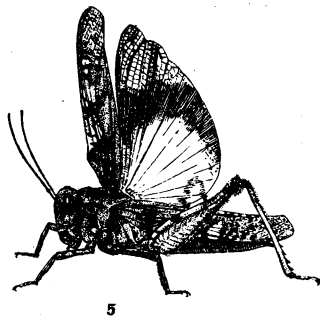
7. *Melanoplus femur-rubrum*.

8. " *bivittatus*.

9. *Chortophaga viridifasciata*.

10. *Arphia sulphurea*.

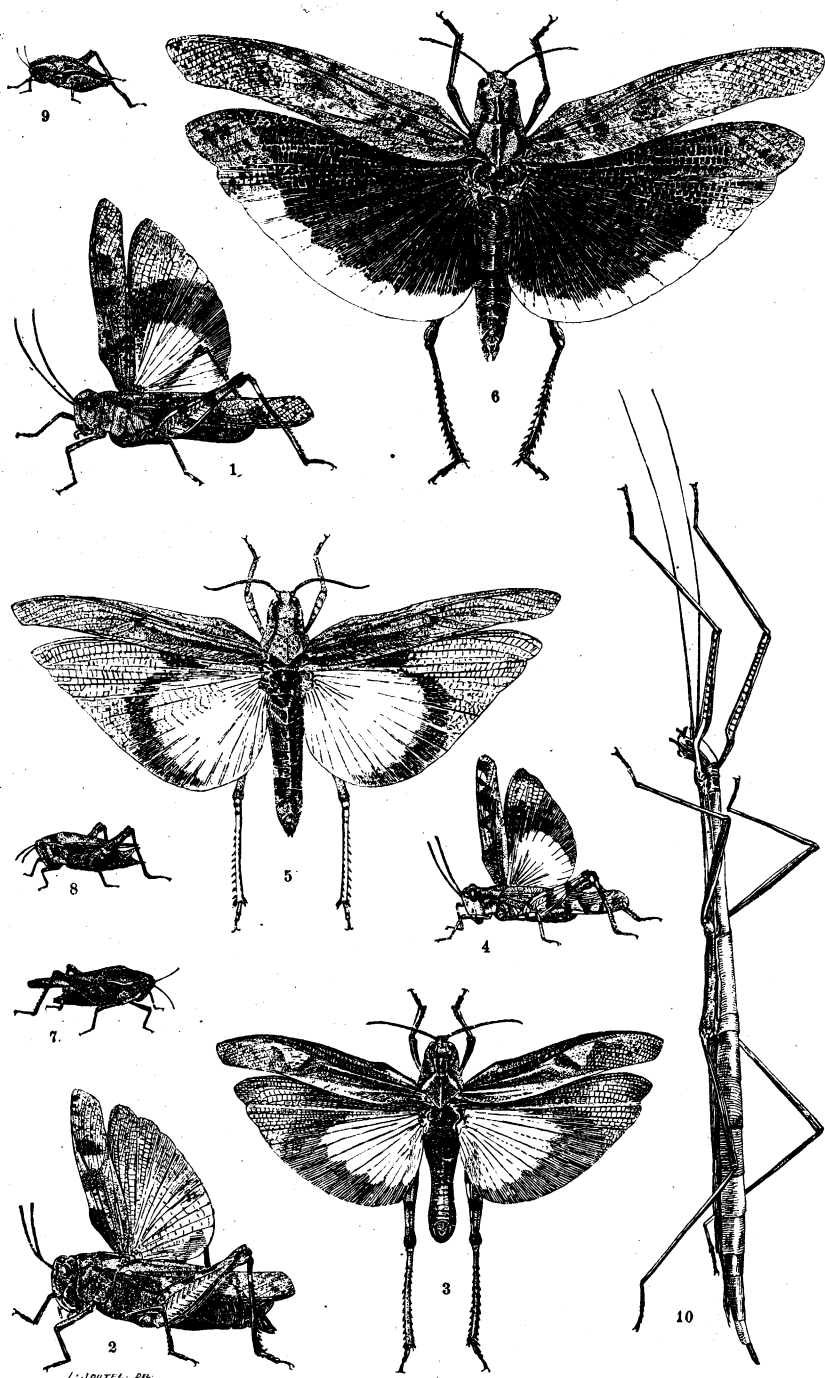
11. " *xanthoptera*.



1. *Acridium rubiginosum*.
2. " *alutaceum*.
3. " *americanum*.

4. *Hippiscus phoenicopterus*.
5. *Spharagemon æquale*.
6. *Circotettix verruculatus*.





1. *Spharagemon bollii*.
2. *Encoptolophus sordidus*.
3. *Hippiscus tuberculatus*.
4. *Scirtettica marmorata*.
5. *Trimerotropis maritima*.

6. *Dissosteira carolina*.
7. *Tettigidea lateralis*.
8. " *polymorpha*.
9. *Batrachidea cristata*.
10. *Diapheromera femorata*.

