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STUDIES IN AMERICAN TETTIGONIIDAE  
(Orthoptera)

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by

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James A. G. Rehn and Morgan Hebard

- I. A SYNOPSIS OF THE SPECIES OF THE GENUS SCUDDERIA.
- II. A SYNOPSIS OF THE SPECIES OF THE GENUS AMBLYCORYPHA FOUND IN AMERICA NORTH OF MEXICO.

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## II

A SYNOPSIS OF THE SPECIES OF THE GENUS *AMBLYCORYPHA* FOUND IN AMERICA NORTH OF MEXICO

The present study was prompted by the difficulty encountered by the authors in determining certain individuals of this genus from the eastern and southwestern states. While the desirability of such a study has been apparent to us for some years, it was only in the past few seasons that we were able to take up field work in the regions from which material of this genus was particularly desired. Much still remains to be done in more fully mapping out the range of the different forms and corroborative evidence on certain matters of relationship is still desired, but both of these matters require more information than present material and literature will supply. In consequence we do not present this paper as a monographic treatise, but we do feel that the systematic and general distributional problems have been studied with sufficient thoroughness and with the authority of enough material to be conclusive.

We here record 756 specimens of the genus from the area covered by our studies, these comprising the series in the collections of the Academy of Natural Sciences of Philadelphia, of the junior author, the United States National Museum, the Museum of Comparative Zoology, of Prof. A. P. Morse of Wellesley, Massachusetts, the Pennsylvania State Department of Zoology and the Georgia State Collection. Material bearing on certain points has been loaned by Mr. W. T. Davis of New Brighton, New York, and from the collection of the University of Kansas, while a considerable number of individuals which have previously been recorded by us have also been re-examined. The latter are not generally included in the total of specimens given above and under the specific treatments. We wish to tender our thanks to the authorities in charge of the above mentioned collections and the other fellow entomologists, who so generously have assisted our work by placing their very necessary material before us for study. Of the total number of specimens given above, 285 were

collected by the authors, these representing all but two of the forms.

Within the area covered by the present paper we find the genus *Amblycorypha* represented by one or more species over a considerable portion of the country. The most northern points from which it is known are the White Mountain region, New Hampshire; Montreal, Canada and Minnesota, while it ranges south to the Florida Keys (Big Pine Key), the Gulf Coast and across Texas into Mexico and westward to east central Colorado (Manitou) and north central (Oak Creek Canyon) and southern Arizona. It does not, as far as known, reach the Pacific Coast and apparently is absent from the whole northwestern portion of the United States and western Canada. Over the greater portion of the area covered by the genus it is represented by two species, in other sections by only one species, in some by three and within the boundaries of the state of Texas six forms occur. The latter, of course, do not all occur in any one region in the state, although four forms have been secured in the vicinity of Dallas.

In the present genus, as is occasionally true of certain other genera of this family, we find specimens, occurring with others of normal green coloration, which are of a uniform pinkish color. Several authors have reported such individuals and there has been some speculation regarding the possible cause of the same. We do not intend to go into this question further than to say it appears to be a manifestation of the widespread dichromatic tendency of the group. However, we wish to call attention to the fact that we have examined such pinkish individuals of the following forms of the genus:

*A. oblongifolia*. One ♂. Mosholu, New York.

*A. floridana*. One ♀. San Pablo, Florida.

*A. floridana carinata*. One ♀. Wood's Hole, Massachusetts.  
One ♂. Absecon, New Jersey. Two ♀. Cedar Springs, New Jersey.

*A. rotundifolia*. One ♀. No locality.

*A. rotundifolia iselyi*. One ♀. Iron Mountain, Missouri.

It is well to bear in mind that the females of this genus show considerable individual variation in the length (actual and relative) and relative depth of the ovipositor; in consequence this appendage is of diagnostic value chiefly through the general curve of the

margins and the extent and character of the armament of the same.

The North American species of the genus *Amblycorypha* fall quite naturally into two groups. Group I contains six forms of varying size, all having an elongate form with markedly elongate tegmina and distinctly projecting wing tips, individually subequal or longitudinal metasternal lobes, and a well marked humeral sinus. Certain features, as the form of the distal margin of the subgenital plate of the male and the character of the ovipositor margins, are of diagnostic value within the group, while the prominence of the lateral angles of the pronotal disk and the extent of the same show within the group the extremes of variation for the genus.

In the assemblage comprising group I certain affinities are evident which a linear arrangement cannot express. On the one hand *oblongifolia* and on the other *uhleri* are very distinct and isolated types, while the *floridana-huasteca-insolita* division is more homogeneous. *Insolita* is a desert representative of the *huasteca* type, while *floridana carinata* is distinctly divergent from *floridana floridana* in the direction of *oblongifolia*, to which, however, it is no way closely related. *Huasteca* and *floridana floridana* show quite a few features in common, but the differences in form of the ovipositor and of the male subgenital plate, as well as in the general shape of the stridulating field of the male tegmina prove their relationship to be by no means as close as would appear at first glance.

#### Forms of Group I

Forms of large size, slender build.	{ <i>oblongifolia</i> <i>floridana floridana</i> <i>floridana carinata</i> <i>huasteca</i> <i>insolita</i>
Forms of small size, slender build.	

Group II contains three forms which are all closely related and undoubtedly geographic races of the same species, for which the name of the first known form—*rotundifolia*—must be used. These are all of medium size, moderately or decidedly abbreviate form, with ovate tegmina, slightly or not at all projecting wing tips,

individually transverse metasternal lobes and broad lateral pronotal lobes, which also have the humeral sinus very shallow or subobsolete.

*Forms of Group II*

*rotundifolia rotundifolia*  
*rotundifolia parvipennis*  
*rotundifolia iselyi*

KEY TO THE FORMS

- A. Humeral sinus of lateral lobes of pronotum well impressed, at least rectangular. Caudal margin of pronotal disk decidedly arcuate. Individual metasternal lobes not transverse. (Tegmina at least three times as long as greatest width.)
- B. Size large. Caudal femora at most but slightly surpassing apices of tegmina. Ovipositor not deeper distad of the middle than at the base. (Subgenital plate of male with distal margin V-emarginate except in *huasteca*.)
- C. Stridulating field of male tegmina very ample, area of same very much exceeding that of pronotal disk. Ovipositor of female regularly arcuate, margins of the same with decided teeth. (Lateral angles of pronotum decided, continuously indicated. General form of tegmina elongate elliptical, sutural margin distad of anal field regularly and considerably arcuate. Subgenital plate of male with distal margin V-emarginate) . . . . . **oblongifolia** (DeGeer)
- CC. Stridulating field of male tegmina less ample, area of same not greatly exceeding that of pronotal disk. Ovipositor of female not as regularly arcuate as in alternative category, straighter proximad, margins of same with teeth or serrulations.
- D. Subgenital plate of male with distal margin V-emarginate. (Ovipositor elongate or of median length, when margins are serrulate the serrulations are closely placed. Lateral angles of pronotal disk continuously indicated or only so caudad.)
- E. Tegmina less elongate, distal half with margins more or less arcuate convergent and never as regularly narrowing as in opposite category. Caudal width of pronotal disk relatively narrower when compared with length of same. Fastigium distinctly more than twice as wide as proximal antennal joint. Ovipositor elongate, with decided teeth. **insolita** new species
- EE. Tegmina considerably elongate, distal half very distinctly and regularly narrowing, margins there straight converging. Caudal width of pronotal disk relatively broader when compared with length of same. Fastigium not more than twice as wide as proximal antennal joint. Ovipositor of medium length, with serrulations.

F. Disk of pronotum with lateral angles subcarinate and that only caudad, rounded cephalad. Stridulating vein of male tegmina proportionately narrower, sutural margin of tegmina distad of anal field in male and female straighter. Ovipositor shorter; when compared with caudal femora, weaker.....**floridana floridana** R. & H.

FF. Disk of pronotum with lateral angles more decided and angulate almost or quite continuously. Stridulating vein of male tegmina proportionately broader; sutural margin of tegmina distad of anal field in male and female more arcuate. Ovipositor longer; when compared with caudal femora, heavier.....**floridana carinata** new subspecies

DD. Subgenital plate of male with distal margin truncate or subtruncate, never V-emarginate. (Ovipositor elongate, serrulations well spaced. Lateral angles of pronotal disk subangulate caudad, broadly rounded cephalad).....**huasteca** (Saussure)

BB. Size small. Caudal femora always slightly and generally decidedly surpassing apices of tegmina. Ovipositor deeper distad of the middle than at base. (Subgenital plate of male with distal margin truncate).....**uhleri** Stål

AA. Humeral sinus of lateral lobes of pronotum less impressed (and not rectangular) or subobsolete. Caudal margin of pronotal disk much less arcuate. Individual metasternal lobes transverse. (Tegmina rarely over two and four-fifths times as long as greatest width.)

B. Form more elongate, slenderer. Wings somewhat surpassing apices of tegmina. Disk of pronotum relatively narrower. Lateral lobes of pronotum relatively narrower dorsad.

**rotundifolia rotundifolia** (Scudder)

BB. Form less elongate, more robust. Wings never surpassing apices of tegmina. Disk of pronotum relatively broader. Lateral lobes of pronotum relatively broader dorsad.

C. Form not decidedly robust. Tegmina more elongate, narrower and not decidedly coriaceous in texture. Dorsum of pronotum not unusually broad. Caudal femora quite elongate, moderately inflated proximad.....**rotundifolia parvipennis** Stål

CC. Form decidedly robust. Tegmina less elongate, broader and decidedly coriaceous in texture. Dorsum of pronotum unusually broad. Caudal femora not decidedly elongate, proximal inflation relatively weak..**rotundifolia iselyi** Caudell

**Amblycorypha oblongifolia** (DeGeer) (Pl. XI, fig. 32; pl. XII, figs. 41 and 49.)

1773. *Locusta oblongifolia* DeGeer, Mém. Hist. Ins., iii, p. 445, pl. xxxviii, fig. 2. [Pennsylvania.]

1891. *Amblycorypha scudderæ* Bruner, Can. Ent., xxiii, p. 73. [Eastern Nebraska.]

It is quite evident from DeGeer's figure that the specimen in his possession belonged to the present species, the form of the ovi-

positor showing this to be the case. The possession of the type (♀; Omaha, Nebraska; September) of Bruner's *scudderæ* enables us to place it as a synonym of *oblongifolia*. This specimen and others from Nebraska are inseparable from Pennsylvania individuals. The characters mentioned by Bruner are valueless, as he in all probability compared his species with specimens of *Amblycorypha floridana floridana* or *f. carinata* and not eastern *oblongifolia*.

From the material before us this species is seen to range from southern New Hampshire (Seabrook), southern Quebec (Montreal), central Iowa (Dallas County) and Albion, Nebraska, south to Plum Point, Maryland, Weldon, North Carolina, New Orleans, Louisiana, and Doucette and San Antonio, Texas, west to Manitou, Colorado. Walker (Can. Ent., xxxvi, pp. 329 and 330) has doubted the correctness of Caulfield's record of this species from as far north as Montreal, Quebec, being convinced that it should refer to *Scudderia pistillata*, but we have examined in the Scudder series in the Museum of Comparative Zoology a male individual of the present species from Montreal collected by Caulfield. Allard's record of *oblongifolia* from Thompson's Mills, Georgia, refers to *Amblycorypha floridana carinata*, the material having been examined by us.

Of the record recently given by Fox<sup>1</sup> for this species all the New Jersey material recorded except that from Canton belongs to the herein described *Amblycorypha floridana carinata*, as examination of the material shows. The Canton record probably relates to the same form but we are unable to verify this by the examination of the material.

*Specimens Examined:* 119; 74 ♂, 45 ♀.

- Montreal, Quebec, Canada, (Caulfield), 1 ♂, [M. C. Z.].
- Seabrook, New Hampshire, (A. A. Eaton), 1 ♂, [U. S. N. M.].
- Woburn, Massachusetts, (J. Shute), 1 ♀, [M. C. Z.].
- Chelsea, Massachusetts, X, 7, 1866, 1 ♂, [M. C. Z.].
- Wollaston, Massachusetts, IX, 1895, (F. H. Sprague), 1 ♂, 3 ♀, [M. C. Z.].
- Vicinity of Boston, Massachusetts, (Scudder), 1 ♂, 1 ♀, [M. C. Z.].
- New Haven, Connecticut, (A. E. Verrill), 1 ♀, [U. S. N. M.].
- Lake Mahopac, New York, VIII, (T. D. O'Connor), 1 ♂, [Hebard Cln.].
- Dunwoodie, New York, VIII, (E. R. Casey), 2 ♂, 1 ♀, [Casey Cln.].

<sup>1</sup> Proc. Acad. Nat. Sci. Phila., 1914, p. 520.

- Mount Vernon, New York, (Miss C. M. Fitch), 1 ♂, [M. C. Z.]  
 Mosholu, New York, IX, 6, 1 ♂, [Hebard Cln.]  
 New York Botanical Garden, Bronx, New York, VIII, 15, 1907, (J. W. Rose), 1 ♀, [U. S. N. M.]  
 Orange, New Jersey, VIII, 1 ♂, [U. S. N. M.]  
 Cornwells, Pennsylvania, X, 1906, (R. & H.), 1 ♀; IX, 7, 1914, (Hebard; on shore of river in vines and bushes), 1 ♂, 1 ♀.  
 Ashbourne, Pennsylvania, IX, 30, 1906, (Bayard Long), 1 ♂, [A. N. S. P.]  
 Chestnut Hill, Pennsylvania, VIII, 15, 1911, IX, 22, 1903, X, 4, 1903, IX, 9, 1914, (H.; in vines and shrubbery), 9 ♂, 2 ♀, [Hebard Cln.]  
 Mount Airy, Pennsylvania, IX, 24, 1914, (H.; in honeysuckle vines), 1 ♀.  
 Tinicum, Pennsylvania, IX, 9, 1904, (H.), 1 ♀.  
 Harrisburg, Pennsylvania, IX, 5 (one specimen), 3 ♂, [Pa. St. Dept. Zool.]  
 Wetzel's Swamp, Harrisburg, Pennsylvania, VIII, 19 and IX, 12, 1 ♂, 1 ♀, [Pa. St. Dept. Zool.]  
 Highspire, Pennsylvania, VII, 28, 2 ♂, [Pa. St. Dept. Zool.]  
 Camphill, Pennsylvania, VIII, 18, 1909, IX, 22, 3 ♂, 2 ♀, [Pa. St. Dept. Zool.]  
 Eberly's Mill, Pennsylvania, VIII, 27, 1909, 2 ♂, [Pa. St. Dept. Zool.]  
 Shiremanstown, Pennsylvania, VIII, 24, 1 ♂, [Pa. St. Dept. Zool.]  
 Orrtanna, Pennsylvania, IX, 4, 1 ♀, [Pa. St. Dept. Zool.]  
 Delaware, 1 ♂, [A. N. S. P.]  
 Millington, Maryland, VIII, 23, 1913, (C. H. Blass), 1 ♂, [Casey Cln.]  
 Blythedale, Maryland, VIII, 29, 1904, (G. M. Greene), 1 ♂, [A. N. S. P.]  
 Chestertown, Maryland, VIII, 10 and 14, 1901, (E. G. Vanatta), 2 ♂, [A. N. S. P.]  
 Plum Point, Maryland, VIII, 25, 1912, 1 ♂, [U. S. N. M.]  
 Plummer's Island, Maryland, IX, 8, 1906, (W. L. McAtee), 1 ♀, [U. S. N. M.]  
 Washington, District of Columbia, VIII, 17 and IX, 23, 1 ♂, 1 ♀, [Hebard Cln.]  
 Virginia, VIII, 17 and X, 15, 1883, 2 ♀, [Hebard Cln.]  
 Virginia shore of Potomac River opposite Plummer's Island, Maryland, X, 6, 1912, (Hood), 1 ♂, [U. S. N. M.]  
 Mountains of Virginia, 1883, (A. Koebele), 1 ♂, [Hebard Cln.]  
 Weldon, North Carolina, VII, 24, 1913, (R. & H.; in low bushes), 1 ♂, 1 ♀.  
 Georgia, 1 ♂, [M. C. Z.]  
 Chillicothe, Ohio, V-VII, 1887, (Denton), 1 ♂, [Morse Cln.]  
 Agricultural College, Michigan, 1 ♂, [Morse Cln.]  
 Evanston, Illinois, (L. N. Johnson), 1 ♀, [U. S. N. M.]  
 Moline, Illinois, (McNeill), 1 ♂, [M. C. Z.]  
 Chattanooga, Tennessee, VIII, 24, 1903, (Morse), 1 ♂, [Morse Cln.]  
 Clarksville, Tennessee, VI, 28, 1912, (S. E. Crumb; feeding on tobacco), 1 ♂, [U. S. N. M.]  
 New Orleans, Louisiana, VI, 18, 1883, (Shufeldt), 1 ♂, 1 ♀, [U. S. N. M.]



Dallas County, Iowa, VIII-IX, 13, (Allen), 13 ♂, 5 ♀, [M. C. Z.].

Omaha, Nebraska, IX, 2 ♀, *type* and *paratype* of *Amblycorypha scudderæ*, [Hebard Cln.]; IX, 1 ♀, *paratype* of *A. scudderæ*, [M. C. Z.].

West Point, Nebraska, 1 ♀, *paratype* of *Amblycorypha scudderæ*, [Hebard Cln.]; 1 ♂, *paratype* of *A. scudderæ*, [M. C. Z.].

Weeping Water, Nebraska, IX, 24, 1909, (L. Bruner), 2 ♀, [Hebard Cln.].

Lincoln, Nebraska, VIII, 1, IX, 3, 1909, (C. H. Gable), 1 ♂, 2 ♀, [Hebard Cln.].

Albion, Nebraska, IX, 14, 1909, (L. Bruner), 1 ♀, [Hebard Cln.].

Manitou, Colorado, VIII, 1889, 1 ♀, [Hebard Cln.].

Ashdown, Arkansas, VII, 27, 1905, (Morse), 1 ♀, [Morse Cln.].

Magazine Mountain, Arkansas, elevation 2600 feet, VIII, 29, 1905, (Morse), 1 ♂, [Morse Cln.].

South McAlester, Oklahoma, VIII, 7, 1905, (Morse Cln.), 1 ♂, [Morse Cln.].

Wister, Oklahoma, VII, 4, 1 ♂, [U. S. N. M.].

Dallas, Texas, (Boll), VI, 5 ♂, 2 ♀, [M. C. Z.].

Doucette, Texas, VII, 24, 1912, (H.), 1 ♂, 1 ♀.

San Antonio, Texas, VIII, 15 to 16, 1912, (R. & H.), 1 ♀.

***Amblycorypha floridana floridana*** Rehn and Hebard (Pl. XI, fig. 33; pl. XII, figs. 42 and 50.)

1905. *Amblycorypha floridana* Rehn and Hebard, Proc. Acad. Nat. Sci. Phila., 1905, p. 42, pl. i, fig. 5. [Chokoloskee and Miami (type locality), Florida.]

Our previously expressed belief that this form was but a southern geographic race of *oblongifolia*<sup>2</sup> we are now in a position to disprove, sufficient material being in hand to show the proper relationship of these two and other forms. The specimens from Thomasville; Georgia, then supposed to be intermediate between *floridana* and *oblongifolia* are intermediates, but not between those forms, instead connecting true *floridana* with a northern subspecies of the same stock, which in its turn is perfectly distinct from *oblongifolia*. This northern race we are here describing as *A. floridana carinata*. Both it and *oblongifolia* occur typically at localities where the ranges of the two forms overlap. The differential characters of *A. f. carinata* are given under that race.

The typical race of this species ranges from Big Pine Key and Detroit, southern Florida, as far north typically as Jacksonville, Fernandina and Atlantic Beach, in the same state, westward as far as eastern Texas (Dickinson and Virginia Point), intergrading, in the Atlantic coast region at least, into the northern subspecies (*carinata*) over an extensive area covering from southern Georgia

<sup>2</sup> Proc. Acad. Nat. Sci. Phila., 1907, p. 301.

(Billy's Island, Okeefenoke Swamp, Thomasville and Spring Creek) to eastern South Carolina (Ashley Junction and Yemassee).

*Specimens Examined*: 109; 49 ♂, 59 ♀, 1 ♀ n.

Fernandina, Florida, (W. H. Finn), 1 ♂, [U. S. N. M.].

Atlantic Beach, Florida, VIII, 24 to 25, 1911, (R. & H.), 7 ♂, 7 ♀.

Jacksonville, Florida, VIII, 1885, (Ashmead), 1 ♂, 1 ♀; (Priddey), 2 ♂, [Hebard Cln.].

Hastings, Florida, 1 ♂, [Morse Cln.].

Sanford, Florida, (S. B. Frazer), 2 ♂, 6 ♀, [M. C. Z.].

Enterprise, Florida, V, 21, 1 ♂, 1 ♀, [U. S. N. M.].

Biscayne Bay, Florida, V, 13, 1 ♂, [U. S. N. M.].

Virginia Point, Texas, VII, 21, 1912, (H.; in tall grass on edge of salt marsh), 1 ♀.

Dickinson, Texas, VIII, 20, 1912, (H.; in pine woods), 1 ♂, 1 ♀.

We have previously recorded this form from Miami, Chokoloskee, Homestead, Detroit, Big Pine Key, La Belle, Citrus Center, South Bay of Lake Okeechobee, Gainesville, San Pablo and Pablo Beach, Florida.

Intermediates between *A. f. floridana* and *A. f. carinata*.

Jacksonville, Florida, VIII, 1885, (Ashmead), 1 ♂, [Hebard Cln.].

Billy's Island, Okeefenoke Swamp, Georgia, VI and VII, 1912, IX, 1 to 5, 1913, (J. C. Bradley), 13 ♂, 3 ♀, 1 ♀ n, [Cornell University].

Honey Island, Okeefenoke Swamp, Georgia, VI, 1, 1912, (J. C. Bradley), 4 ♂, [Cornell University].

Thomasville, Georgia,<sup>3</sup> VII, 29, VIII, 4 to 26, 1903, 2 ♂, 2 ♀, [Hebard Cln. and A. N. S. P.].

Spring Creek, Georgia, V, (J. C. Bradley), 1 ♂, 2 ♀, [Ga. St. Cln.].

Isle of Hope, IX, 3, 1911, (R. & H.; in heavy undergrowth in gray-bark pine woods), 1 ♀.

Yemassee, South Carolina, IX, 4, 1911, (R. & H.), 2 ♀.

Ashley Junction, South Carolina, VIII, 15, 1913, (R.; beaten in pine woods), 1 ♀.

***Amblycorypha floridana carinata*** new subspecies (Pl. XI, fig. 34; pl. XII, fig. 51.)

1886. (?) *A[mblycorypha] saussurei* Bruner, Bull. Washb. Coll. Labor. Nat. Hist., i, p. 196.<sup>4</sup>

Differing from *floridana floridana* in the lateral margins of the pronotal disk being more angulate and carinate almost or quite continuously, in the stridulating field of the male tegmina being proportionately broader, in the sutural margin of the tegmina distad of the anal field being more arcuate and in having a longer and heavier ovipositor.

<sup>3</sup> Recorded as *A. oblongifolia*, Proc. Acad. Nat. Sci. Phila., 1904, p. 795.

<sup>4</sup> This name is based on a description of several words, of one character, which would fit the majority of the forms of the genus. In our opinion it is unrecognizable.

*Type*.—♂; Stafford's Forge, Ocean County, New Jersey. July 16, 1911. (Rehn.) [Acad. Nat. Sci. Phila., type no. 5240.]

*Allotype*.—♀; same data.

*Differential Characters*. Pronotum with the lateral margins of disk regularly indicated, rectangulate in transverse section, never broadly rounded cephalad; disk of pronotum decidedly and regularly expanding caudad (resembling *oblongifolia* in this respect). Stridulating field of male tegmina broader, more expanded, as wide as the caudal margin distad of anal or stridulating vein more transverse; sutural margin distad of anal or stridulating field gently arcuate, distal portion and apex of tegmina appreciably broader than in typical *floridana*. Caudal femora less elongate than in *floridana floridana*. Ovipositor elongate, almost or quite equal to half the length of the caudal femur, less arcuate than in *floridana floridana*, relative depth of ovipositor not as great as in the typical form.

*Measurements (in millimeters)*

	Length of body	Length of pronotum	Greatest (caudal) width of pronotum	Length of tegmen	Length of caudal femur	Length of ovipositor
<i>f. floridana</i>						
♀ Miami, Florida. <i>Type</i> .....	21	7	4.5	32.5	28.5	11
♂ Homestead, Florida.....	25.8	6.7	4.5	35.8	30.4	
♀ Homestead, Florida.....	24.8	7.4	4.9	36.8	32.6	11.4
♂ Atlantic Beach, Florida.....	25	6.6	4.7	34.6	28.7	
♀ Atlantic Beach, Florida.....	28.3	7.2	4.7	32	32	11.5
♀ Atlantic Beach, Florida.....	27.2	7.3	4.9	33.6	32	12.2
Intermediates						
♂ Billy's Island, Georgia.....	22.5	6.2	4.3	33.5	28	
♂ Billy's Island, Georgia.....		7.5	5.4	39	34.4	
♀ Billy's Island, Georgia.....	26.2	7.6	5.2	36.7	33	13.3
♀ Billy's Island, Georgia.....	23.5	7.5	5	36.3	34.8	13.6
♀ Isle of Hope, Georgia.....	26.7	7.1	4.8	36	33.3	13.8
♀ Yemassee, South Carolina.....	25.2	6.8	4.9	32.7	30	13
♀ Yemassee, South Carolina.....	27	7	4.5	31	29.5	12.8
♀ Ashley Junction, S. C.....	27.6	7	4.3	31.6	31.6	12.8
<i>f. carinata</i>						
♂ Silver Lake, Georgia.....	22.9	6.5	4.5	37.5	31.8	
♂ Petersburg, Virginia.....	24	6.3	4.3	33	29	
♀ Petersburg, Virginia.....	27.2	7	5	35.5	32.6	14.5
♀ Washington, D. C.....	22	7	4.8	34	32	14.1
♂ Stafford's Forge, N. J. <i>Type</i> ....	20.8	7	4.9	35.5	29.4	
♀ Stafford's Forge, N. J. <i>Allotype</i>	21	6.9	5	33.2	29.5	14.5
♀ Stafford's Forge, N. J. <i>Paratype</i>	23.4	6.1	4.5	30	26.7	12.3
♀ Atsion, N. J. <i>Paratype</i> .....	25	7.4	4.9	33.6	31.2	13.3

It will be seen from this table that these forms present considerable individual variation, but when the relative proportions are considered the diagnostic size features hold true.

We have indicated as paratypes two males and two females taken at Stafford's Forge, New Jersey, on August 18 and September 5, 1908 (Rehn) and four males and two females taken at Atsion, New Jersey, on August 2, 1901 (Rehn) and July 30, 1911 (R. & H.).

This form ranges typically from north-central Georgia (Silver Lake and Thompson's Mills) and eastern North Carolina (New Berne) northward over southeastern Virginia and southern New Jersey to southern Massachusetts (Woods Hole and Nantucket), westward as far as known only to the fall line in Virginia (Petersburg and vicinity of Washington) and Pennsylvania (Philadelphia), but occurring typical in the Tennessee Valley drainage at Sand Mountain, Georgia, and southward passing into *f. floridana* as stated above. For records belonging to this form but recorded by Fox as *A. oblongifolia* see comments under the latter species.

*Specimens Examined*: 87; 44 ♂, 41 ♀, 2 ♀ n.

Woods Hole, Massachusetts, (Dr. Chas. Schäffer), 1 ♀, [A. N. S. P.]; (Mrs. S. F. Smith), 1 ♀, [M. C. Z.].

Nantucket, Massachusetts, (Scudder), 4 ♂, [M. C. Z.].

Cornwells, Pennsylvania, IX, 7, 1914, (H.; along river in vines and bushes), 1 ♂.

Philadelphia, Pennsylvania, (S. F. Gross), 1 ♂, [Hebard Cln.].

Stafford's Forge, New Jersey, VII, 16, 1911, VIII, 18 and IX, 1908, (R.; in high weeds on moist ground), 3 ♂, 3 ♀, *type*, *allotype* and *paratypes*, [A. N. S. P. and Hebard Cln.].

Atsion, New Jersey, VIII, 2, 1901, (R.), VII, 30, 1911, (R. & H.), 4 ♂, 2 ♀, *Paratypes*, [A. N. S. P. and Hebard Cln.].

Cedar Grove, New Jersey, VIII, 29, 1904, (R.), 1 ♂, [A. N. S. P.].

Tuckerton, New Jersey, VIII, 31, (W. T. Davis), 1 ♀, [Davis Cln.].

Mullica River meadows near New Gretna, New Jersey, VIII, 24, 1914, (H.; on edge of marsh), 1 ♀.

Reega, New Jersey, VII, 20, VII, 31, VIII, 10, VIII, 16, VIII, 29, 1914, (H.; in pine barrens, one colony in clump of vines and bushes), 11 ♂, 16 ♀, 2 ♀ n.

Absecon, New Jersey, 1 ♂, [A. N. S. P.].

Cedar Springs, New Jersey, VIII, 26, 1914, (H.; in marsh), 4 ♀.

Greenfield, New Jersey, X, 1, 1910, (H. Fox), 2 ♀, [A. N. S. P.].

Sea Isle Junction, New Jersey, (H. Fox), 1 ♀, [A. N. S. P.].

Ocean View, New Jersey, VIII, 15, 1910, (H. Fox), 1 ♀, [A. N. S. P.]; VII, 27, 1914, (H.; on edge of salt marsh), 1 ♂.

Swainton, New Jersey, VIII, 21, 1914, (H.; in marshy meadow), 1 ♂.

Wildwood Junction, New Jersey, VII, 27, VIII, 8, 1914, (H.; huckleberry bushes in oak woods), 4 ♂, 2 ♀.

Dias Creek, New Jersey, VII, 20, 27, 1914, (H.; in deciduous forest on sandy soil), 1 ♂, 2 ♀.

Dorsey, Maryland, VIII, 20, 1914, (Miss R. Jones), 1 ♂, [U. S. N. M.].

Washington, District of Columbia, IX, 1883, 1 ♀, [Hebard Cln.].

Falls Church, Virginia, VIII, 4, (A. N. Caudell), 1 ♂, [U. S. N. M.].

Clarendon, Virginia, VIII, 1913, (H. A. Allard), 1 ♂, [U. S. N. M.].

Petersburg, Virginia, VII, 23, 1913, (R. & H.; in grasses and low bushes in wet place near woods), 1 ♂, 3 ♀.

Bayville, Virginia, VIII, 19, 1908, (R.), 1 ♂, [A. N. S. P.]<sup>5</sup>

Raleigh, North Carolina, VII, 8, 1903, (Morse), 3 ♂, [Morse Cln.].

New Berne, North Carolina, VIII, 24, 1908, (R.), 1 ♂, [A. N. S. P.]<sup>5</sup>

Sand Mountain near Trenton, Georgia, VII, 9, 1905, (Morse), 1 ♂, [Morse Cln.].

Thompson's Mills, Georgia, (H. A. Allard), 1 ♂, [U. S. N. M.].

Silver Lake, Georgia, VIII, 10, 1913, 1 ♂, [Ga. St. Cln.].

**Amblycorypha huasteca** (Saussure) (Pl. XI, fig. 35; pl. XII, figs. 43 and 52.)

1859. *Ph[aneroptera] huasteca* Saussure, Revue et Magasin de Zoologie, 2e ser., xi, p. 205. [Tampico,<sup>6</sup> Mexico.]

1862. *P[hylloptera] caudata* Scudder, Boston Journ. Nat. Hist., vii, p. 445. [Texas.]

We have been able to examine the single type specimen of Scudder's *caudata* and find it to be inseparable from Tampico topotypes of *huasteca*. The type of *caudata* is a large female with a heavy ovipositor, but it is readily matched in the numerous Texan individuals before us. The measurements of the type of *caudata* are as follows: length of body exclusive of ovipositor, 25.5 mm.; length of pronotum, 8; greatest (caudal) width of disk of pronotum, 5; length of tegmen, 39.3; greatest width of tegmen, 10.5; length of caudal femur, 35.5; length of ovipositor, 21.

Examination of the available series of this species shows that the distal margin of the subgenital plate of the male varies somewhat in the exact degree of truncation, this rarely being arcuate emarginato-truncate, the vast majority, however, having the margin straight truncate. In no specimen is there any approach to the v-emargination of the related forms.

The distribution of this species is seen to cover an area extending from northeastern (Fairmount) and central-southern (Barber

<sup>5</sup> Previously recorded by us as *A. oblongifolia*, Proc. Acad. Nat. Sci. Phila., 1910, p. 637.

<sup>6</sup> Vide Brunner, Monogr. der Phaneropt., p. 267.

County and Wichita) Kansas, south to at least Tampico, Mexico, reaching to the Gulf Coast at a number of Texan localities, having been reported from as far east as Louisiana, and extending as far west as Clarendon and Uvalde, Texas.

*Specimens Examined:* 98; 50 ♂, 45 ♀, 1 ♂ n., 2 ♀ n.

Wichita, Kansas, VII, 20, 1 ♀, [U. S. N. M.].

Barber County, Kansas, (F. W. Cragin), 1 ♀, [Hebard Cln.].

Cache, Oklahoma, VIII, 23 to 25, 1905, (Morse), 2 ♂, 4 ♀, [Morse Cln.].

Dallas, Texas, 1 ♀, [U. S. N. M.]; VI, 8, VII, 16, (Boll), 2 ♂, 6 ♀, 1 ♀ n., [M. C. Z.].

Weatherford, Texas, IX, 23, 1912, (R. & H.), 1 ♂.

Wichita Falls, Texas, VIII, 17, 1905, (Morse), 1 ♂, [Morse Cln.].

Clarendon, Texas, VIII, 18, 1905, (Morse), 1 ♂, [Morse Cln.].

Shovel Mount, Texas, VI, 20 to 29, VII, 3 to 21, 1901, (F. W. Schaupp), 8 ♂, 2 ♀, [A. N. S. P.].

Kerrville, Texas, VII, 17 to 18, 1912, (R. & H.; in ground vegetation on summit of hills), 1 ♂, 2 ♀.

Uvalde, Texas, VII, 21 to 22, 1912, (R. & H.), 1 ♂, 1 ♀.

San Antonio, Texas, VI, 16, (M. Newell), 3 ♂, [Hebard Cln.]; VII, 15 to 16, 1912, (R. & H.; in low, heavy and spiny bush), 1 ♂.

Flatonia, Texas, VIII, 19 to 20, 1912, (R. & H.), 5 ♂, 1 ♀.

Dickinson, Galveston County, Texas, VII, 20, 1912, (H.; edge of pine woods), 1 ♂.

La Marque, Galveston County, Texas, VII, 22, 1912, (H.; on wet prairie land), 1 ♂, 2 ♀.

Virginia Point, Galveston County, Texas, VII, 21, 1912, (H.; in tall grasses on edge of salt marsh), 1 ♀.

Galveston, Texas, VII, 19 to 21, 1912, (H.; occasional in low grass and weeds), 3 ♂, 3 ♀.

Columbus, Texas, 1 ♂, [U. S. N. M.].

Victoria, Texas, VII, 26 to 27, 1912, (H.; occasional on broad leaved plants in field), 4 ♂, 5 ♀; VI, (A. N. Caudell), 3 ♂, [U. S. N. M.].

Beeville, Texas, VII, 28, 1912, (H.; in weeds near low bushes), 2 ♂, 6 ♀.

Gregory, Texas, VII, 30, 1912, (H.), 2 ♂, 4 ♀.

Lyford, Texas, VIII, 6 to 7, 1912, (R. & H.), 2 ♂, 1 ♀.

Laguna del Gato, Hidalgo County, Texas, VIII, 6, 1912, (R. & H.), 1 ♂ n.

Brownsville, Texas, VII, 31 to VIII, 5, 1912, (H.), 1 ♂, 2 ♀, 1 ♀ n.; VI, 2, 1904, (H. S. Barber; on cotton), 1 ♂, [U. S. N. M.].

Piper Plantation, Cameron County, Texas, VIII, 3, 1912, (R. & H.), 2 ♂, 1 ♀.

Texas, (A. Agassiz), 1 ♀, [M. C. Z.]. *Type of Phylloptera caudata* Scudder.

Matamoros, Tamaulipas, Mexico, (L. B. Couch), 1 ♀, [M. C. Z.].

Tampico, Tamaulipas, Mexico, XII, 5; 1909, (F. C. Bishopp), 1 ♂, [U. S. N. M.].

**Amblycorypha insolita** new species (Pl. XI, fig. 40; pl. XII, figs. 44 and 54.)

1905. *Amblycorypha huasteca* Rehn (not of Saussure, 1859), Trans. Kansas Acad. Sci., xix, p. 226. [Southern Arizona.]

1907. (?) *Amblycorypha huasteca* Snow (not of Saussure, 1859), Ibid., xx, pt. 2, p. 163. [Oak Creek Canyon, Arizona.]

1909. *Amblycorypha huasteca* Rehn and Hebard (not of Saussure, 1839), Proc. Acad. Nat. Sci. Phila., 1909, p. 168. [Dry Canyon, Sacramento Mountains, New Mexico.]

This striking form is a development of the *huasteca* type, carrying some of the features of that species to a greater extreme and at the same time differing in other purely diagnostic characters. The pronotum has the lateral margins of the disk as broadly rounded cephalad as in *huasteca*, but caudad they are more decided than in that species, the tegmina and wings are much more elongate, appreciably surpassing the tips of the caudal femora, although of the same general form. The lateral lobes of the pronotum have the angles more rounded and the humeral sinus much more decidedly indicated. The stridulating vein of the male tegmina is rather short and very broad and heavy, while the distal margin of the subgenital plate of the same sex is V-emarginate instead of truncate as in *huasteca*. The ovipositor is of the same general form as in *huasteca*, but is relatively deeper with the teeth larger and much more distinct.

*Type*.—♂; Quitman Mountains, El Paso County, Texas. Elevation, 5200 feet. September 14, 1912. (Hebard.) [Hebard Collection.]

*Description of Type*.—Size large; form elongate, moderately compressed; surface of head and pronotum moderately polished. Head with greatest width ventrad of eyes contained one and one-half times in depth of head; occiput rounded, steeply declivent to the nearly vertical fastigium, latter somewhat constricted at the paired ocelli, interfastigial suture sinuate, greatest width of fastigium subequal to that of eye; antennae reaching to tips of wings; eyes moderately prominent, elliptical in outline, faintly pointed dorsad and ventrad. Pronotum deplanate, disk decidedly expanding caudad and with its greatest width contained about one and one-third times in length; lateral margins of disk broadly rounding into lateral lobes cephalad, distinctly angulate caudad; cephalic margin of disk shallowly arcuato-emarginate, caudal margin of disk strongly arcuate, transverse sulcus forming a faint obomegoid figure on the middle of the disk; lateral lobes of pronotum with depth slightly greater than greatest width, cephalic margin faintly arcuato-emarginate, ventro-cephalic angle rounded obtuse-angulate, ventral margin short, nearly straight, oblique, broadly round-

ing into the arcuate caudal margin, which passes rather regularly to the strongly indicated rectangulate humeral sinus. Tegmina surpassing tips of caudal femora by length of pronotum, elongate, lanceolate, greatest width (at proximal third) contained slightly more than four times in length; costal margin arcuate proximad, straight distad; sutural margin distad of stridulating field straight, obliquely converging to the roundly oblique-truncate apex; marginal field broad mesad, humeral trunk sinuate, much thickened and flattened proximad, median vein with its two distal rami reaching oblique portion of apical margin; stridulating field almost twice length of pronotal disk, greatest width about three-fourths of length of pronotal disk, general form similar to that of *huasteca* but more elongate, stridulating vein short, very thick, depressed. Wings surpassing apices of tegmina by about length of pronotal disk. Mesosternal lobes less elongate than in *huasteca*, distal section obliquely truncate mesad; metasternal lobes with proximo-lateral angle more decided and distal margin more arcuate than in *huasteca*. Cerci more elongate and regularly tapering than in *huasteca*, distal section less abruptly denticulate at apex; subgenital plate V-emarginate distad with lateral, articulate, brief and tapering styles. Cephalic femora with at most but three spines on ventro-cephalic margin. Median femora unarmed ventrad. Caudal femora similar in form to those of *huasteca* but with at most but three minute teeth on ventro-internal margin.

*Allotype*.—♀; Montelovez, Coahuila, Mexico. September 20. (E. Palmer.) [Hebard Collection.]

*Description of Allotype*.—When compared with female individuals of *huasteca* that sex of the present species differs in the characters given as diagnostic for the species and in those features possessed by both sexes which are detailed in the description of the male. The ovipositor is slightly more than two-fifths of the tegminal length, quite deep, arcuate, more strongly so distad; teeth on distal half of dorsal margin and distal fourth of ventral margin, decided, well spaced. Subgenital plate trigonal.

*Color Notes*.—General color course green to biscay green, occasionally paling to light chalcedony yellow on the abdomen (type) and always becoming lettuce green to light bice green on the head and pronotum, the exposed portion of the wings and distal extremity of the tegmina rarely (one specimen) washed with old gold. Eyes of the general color, lineate with yellowish to hazel. Pronotum with lateral margins of disk more or less completely lineate, distad with raw sienna, faintly bordered laterad, dorsad of humeral sinus, by clove brown, cephalad with ochraceous buff. Tegmina with stridulating field charnois to cartridge-buff, with an oblique irregular maculation extending from base of field to distal section of free margin and a weak edging of same margin proximad



clove brown, stridulating vein occasionally raw sienna; discoidal field of tegmina with numerous small to medium-sized scattered ocelliform false fungous areas of clove brownish, sutural margin of same rarely weakly washed with same color. Tibiae more or less pinkish on dorsal surfaces, as strong as pompeian red on cephalic and median tibiae and flesh pink on caudal tibiae.

These notes have been made from only the individuals which show the best preserved coloration and have not been immersed in liquid preservative. Certain specimens of the latter character are of an entirely buffy color.

*Measurements (in millimeters)*

	♂ Quitman Mountains, Texas <i>Type</i>	♂ Dry Can- yon, New Mexico <i>Paratype</i>	♂ Comacho, Zacatecas, Mexico <i>Paratype</i>	♀ Southern Arizona	♀ Montelovez, Coahuila, Mexico <i>Allotype</i>
Length of body.....	27	24.5	19	20.2	24
Length of pronotum .....	6.4	8	6.1	7.2	7.6
Greatest dorsal width (caudad) of pronotal disk.....	5.1	5.2	4.6	5.2	5.6
Length of tegmen.....	42.3	42.7	37.7	39	41.6
Greatest width of tegmen.	10.3	10.4	8.8	10.3	11.4
Length of caudal femur...	29.8	31.7	27.7	30.5	31.5
Length of ovipositor.....				16.5	16.3

*Distribution.*—As far as known this most interesting species occurs only in the Sonoran desert areas of the southwestern United States and northern Mexico, extending from western Texas (Chisos Mountains, Sierra Blanca and Quitman Mountains) west to Southern Arizona (exact locality unknown), south to at least the state of Coahuila and the northern part of the state of Zacatecas (Comacho), Mexico and northward to southern New Mexico (Dry Canyon). It is practically certain that the material recorded by Snow from Oak Creek Canyon, central Arizona, belongs to this form, but all efforts to locate the specimens have failed.

In addition to the type and allotype we have examined a paratyptic male taken in Dry Canyon, Sacramento Mountains, Otero County, New Mexico, 5200 feet elevation, VII, 13, 1907 (R. & H.), another paratype of the same sex from Comacho, Zacatecas,

Mexico, taken by Bruner, XI, 1887, in the Hebard Collection, a paratypic male and female bearing the same data as the allotype, in the collection of the Museum of Comparative Zoology and one paratypic male from the Chisos Mountains, Texas, VI, 10 to 12, 1908, in the United States National Museum. A female from the collection of the University of Kansas bearing the locality "Southern Arizona," another of the same sex labelled "Chihuahua, Mexico," in the collection of the Museum of Comparative Zoology and an immature female taken at Sierra Blanca, El Paso County, Texas, 4524 feet elevation, IX, 13 to 14, 1912 (R. & H.), have also been examined. Several of these specimens have been immersed in alcohol and their coloration either entirely or in large part destroyed in consequence. The female nymph is in the instar preceding maturity and the characters of the species are fairly well indicated. The Comacho and Chisos Mountains males are appreciably smaller than the type, while the Montelovez male is similar to the latter size. The females show considerable individual variation in bulk, the southern Arizona representative being appreciably smaller than the others of that sex, which among themselves show less decided variation.

On the Quitman Mountains the species was taken in grasses near small oaks and junipers, the Sierra Blanca nymph was beaten from black brush (*Flourensia cernua*) and in Dry Canyon the insect was beaten from a small green tree growing in the piñon and juniper zone.

*Specimens Examined:* 10; 5 ♂, 4 ♀, 1 ♀ n.

Chisos Mountains, Brewster County, Texas, VI, 10 to 12, 1908, (Mitchell and Cushman), 1 ♂, [U. S. N. M.], *Paratype*.

Sierra Blanca, El Paso County, Texas, 4524 feet elevation, IX, 13 to 14, 1912, (R. & H.), 1 ♀ n.

Quitman Mountains, El Paso County, Texas, 5200 feet elevation, IX, 14, 1912, (H.), 1 ♂, *Type*.

Dry Canyon, Sacramento Mountains, Otero County, New Mexico, 5200 feet elevation, VII, 13, 1907, (R. & H.), 1 ♂, *Paratype*.

Southern Arizona, VIII, 1902, (F. H. Snow), 1 ♀, [Univ. of Kansas].

Montelovez, Coahuila, Mexico, IX, 20, (E. Palmer), 1 ♂, 2 ♀, [M. C. Z.].

*Allotype and paratypes.*

Chihuahua, Mexico, 1 ♀, [M. C. Z.].

Comacho, Zacatecas, Mexico, XI, 1887, (Bruner), 1 ♂, [Hebard Cln.], *Paratype*.

**Amblycorypha uhleri** Stål (Pl. XI, fig. 36; pl. XII, figs. 45 and 53.)

1876. *A[mblycorypha] uhleri* Stål, Bihang till K. Svenska Vet.-Akad. Handl., iv, no. 5, p. 57. [Texas.]

This species is very plastic, varying considerably in size, both individually and geographically, and appreciably in the proportionate width of the tegmina and in the length and relative depth of the ovipositor. The area in which the species reaches greatest size is southern Georgia and northern Florida, but even in the material from that region there is much individual variation. In consequence of the lack of a sufficient representation of material from the coast region of Alabama, Mississippi, Louisiana and the Mississippi valley it seems best to give only a few measurements of average pairs and the extreme individuals of the species seen. The depauperate condition of the Uvalde minimum female is remarkable, the other specimens from that locality being distinctly above the average in size.

The range of this species extends from southern New Jersey, south to southern Florida, in the east extending as high as 1600 to 1800 feet elevation (Murphy, North Carolina, and Currahee Mountain, Georgia), west to eastern Oklahoma and west-central Texas (Uvalde), ranging north in the Mississippi valley region as far as Minnesota and central Indiana and Illinois, and south in Texas as far as Victoria. In Arkansas the species ranges as high as 2600 feet (Rich Mountain) and has been captured as high as 1700 feet in Texas (Kerrville).

	Length of pronotum	Length of tegmen	Greatest width of tegmen	Length of caudal femur	Length of ovipositor
♂ Parkdale, New Jersey..	4.8	24.2	7	21	
♂ Weldon, N. C.....	5.3	27.2	8.5	24.2	
♂ Yemassee, S. C.....	5.5	26.2	8	24.7	
♂ Toccoa, Georgia.....	5	25	7.1	22	
♂ Spring Creek, Georgia..	6	29.8	9	26.7	
♂ Jacksonville, Florida...	5.6	26	7.9	22.7	
♂ Homestead, Florida....	5.8	26.5	8.1	26	
♂ Doucette, Texas.....	5	22.9	6.8	23.7	
♂ Rosenberg, Texas.....	6	26.5	7.2	24.6	
♂ Uvalde, Texas.....	6.2	26.5	7.6	27.8	

	Length of pronotum	Length of tegmen	Greatest width of tegmen	Length of caudal femur	Length of ovipositor
♀ Atsion, New Jersey....	5.7	21.7	6.5	23.2	8.1
♀ Weldon, N. C.....	5.7	21.5	6.5	23.5	7.7
♀ Yemassee, S. C.....	5.6	22.2	6.7	23.5	8
♀ Toccoa, Georgia.....	5.3	21.2	6.5	22.7	7.7
♀ Spring Creek, Georgia..	5.9	28	8.6	27	10
♀ Jacksonville, Florida...	6.4	29	8.9	27.2	9.7
♀ Homestead, Florida....	7	26.3	7.5	28.5	9.1
♀ Doucette, Texas.....	5.3	25.7	7.3	25.5	7.8
♀ Rosenberg, Texas.....	6	24.5	6.7	26	7.4
♀ Uvalde, Texas.....	6.5	25.7	7	27.8	7.8
♀ Uvalde, Texas.....	5.2	19.3	5.3	21	6.2

*Specimens Examined:* 215; 127 ♂, 85 ♀, 2 ♂ n., 1 ♀ n.

Parkdale, New Jersey, VII, 30, 1911, (R. & H.; undergrowth in pine barrens), 1 ♂.

Atsion, New Jersey, VII, 30, 1911, (R. & H.; undergrowth in pine barrens), X, 8, 1903, (H.), 1 ♂, 1 ♀.

Reega, New Jersey, VIII, 10 (nymphs), VIII, 29, 1914, (H.; undergrowth in pine woods), 2♂, 2 ♀ n.

Sea Isle Junction, New Jersey, IX, 5, 1909, (Fox; field), 2 ♂, [A. N. S. P.].  
Delaware, 1 ♂, [A. N. S. P.].

Chestertown, Maryland, VIII, 12, 1901, VIII, 21, 1899, (E. G. Vanatta), 2 ♂, [A. N. S. P.].

Washington, District of Columbia, VIII, 1883, X, 3, (Pergande), 2 ♂, [Hebard Cln.]; VIII, 1909, 1 ♂, [U. S. N. M.].

Analostan Island, District of Columbia, IX, 6, 1912, 1 ♂, [U. S. N. M.].  
Clarendon, Virginia, VIII, 1913, (Allard), 1 ♂, [U. S. N. M.].

Fredericksburg, Virginia, VII, 20, 1913, (R. & H.; in meadow land near woods), 1 ♂.

Murphy, North Carolina, VIII, 22, 1903, (Morse), 1 ♀, [Morse Cln.].

Weldon, North Carolina, VII, 24, 1913, (R. & H.; in low heavy bushes near forest), 3 ♂, 1 ♀.

Goldsboro, North Carolina, VII, 25, 1913, (R. & H.; in green grasses and weeds in damp spots in short-leaf pine woods), 2 ♂, 3 ♀.

Lake Waccamaw, North Carolina, IX, 8, 1911, (R. & H.), 1 ♂.

Charlotte, North Carolina, late VII, 1907, (F. Sherman), 1 ♀, [U. S. N. M.].

Columbia, South Carolina, VII, 28, 1913, (R. & H.), 1 ♂.

Denmark, South Carolina, VIII, 15, 1903, (Morse), 3 ♀, [Morse Cln.].

Port Royal, South Carolina, (Fowler), 1 ♂, [M. C. Z.].

Yemassee, South Carolina, IX, 4, 1911, (R. & H.; in undergrowth in pine woods), 8 ♂, 5 ♀.

Sand Mountain, near Trenton, Georgia, VIII, 25, 1903, (Morse), 1 ♂, 1 ♀, [Morse Cln.].

Currahee Mountain, Georgia, 1700 feet elevation, VIII, 5, 1913, (H.), 1 ♂, 1 ♀ n.

Toccoa, Georgia, VIII, 4 to 5, 1913, (H.; in grasses, vines and oak sprouts in clearings), 2 ♂, 4 ♀.

Jasper, Georgia, 1550 feet elevation, VIII, 5, 1913, (R.; beaten from scrub), 1 ♂.

Thompson's Mills, Georgia, X, 1909, (Allard), 1 ♂, 1 ♀, [U. S. N. M.].

Buckhead, Georgia, VIII, 2, 1913, (R. & H.; in weeds and vines in low spot in oak and pine woods), 3 ♂.

Stone Mountain, Georgia, IX, 12, 1913, 1 ♂, [Ga. State Cln.].

Augusta, Georgia, VII, 29, 1913, (R. & H.; in sandy scrub oak area), 2 ♀.

Macon, Georgia, VII, 30 to 31, 1913, (R. & H.; in undergrowth of short-leaf pine woods), 2 ♂.

Savannah, Georgia, VIII, 14, 1903, (Morse), 1 ♂, [Morse Cln.].

Isle of Hope, Georgia, IX, 3, 1911, (R. & H.; in undergrowth of gray-bark pine woods), 2 ♂.

Sandfly, Georgia, IX, 3, 1911, (R. & H.; in undergrowth of gray-bark pine woods), 1 ♀.

Brunswick, Georgia, VIII, 30, 1911, (H.; taken under green bushes in wet place), 1 ♀.

Albany, Georgia, VIII, 1, 1913, (R. & H.; in undergrowth in pine woods), 4 ♂, 1 ♀.

Spring Creek, Georgia, VII, 1912, VIII, 26 to 28, (J. C. Bradley), 3 ♂, 7 ♀, [Ga. State Cln.].

Bainbridge, Georgia, 1 ♀. [Ga. State Cln.].

Jacksonville, Florida, VIII, 1885, (Ashmead), 3 ♀, (Hebard Cln.); VIII, 25, 1911, (R. & H.), 1 ♂, 2 ♀.

Live Oak, Florida, VIII, 10, 1903, (Morse), 2 ♀, [Morse Cln.].

Crescent City, Florida, VII, 7, (on orange trees), 1 ♂, [U. S. N. M.].

Sanford, Florida, (G. B. Frazer), 1 ♂, [M. C. Z.].

Fort Barrancas, Florida, VIII, 3, 1903, (Morse), 1 ♀, [Morse Cln.].

Wyandotte, Indiana, VIII, 1905, (A. N. Caudell), 1 ♂, [U. S. N. M.].

Kentucky, (Garman), 1 ♂, [M. C. Z.].

Lookout Mountain, Tennessee, VIII, 23, 1903, (Morse), 1 ♂, [Morse Cln.].

Clarksville, Tennessee, X, 3, 1912, (S. E. Crumb; feeding on cotton), 1 ♀, [U. S. N. M.].

Hattiesburg, Mississippi, VII, 17, 1905, (Morse), 1 ♂, 1 ♀, [Morse Cln.].

Nugent, Mississippi, VII, 20, 1905, (Morse), 1 ♀, [Morse Cln.].

Bushberg, Missouri, IX, 14, 1877, 1 ♀, [U. S. N. M.].

St. Louis, Missouri, (Dr. George Engelmann), 1 ♀, [M. C. Z.].

Winslow, Arkansas, IX, 3, 1905, (Morse), 2 ♂, [Morse Cln.].

Magazine Mountain, Arkansas, 2000 feet elevation, VIII, 29, 1905, (Morse), 2 ♀, [Morse Cln.].

Rich Mountain Station, Arkansas, VIII, 2, 1905, (Morse), 1 ♂, [Morse Cln.].

Summit of Rich Mountain, Arkansas, 2600 feet, VIII, 1, 1905, (Morse),  
 1 ♂, [Morse Cln.].  
 Mena, Arkansas, VII, 30, 1905, (Morse), 4 ♂, 1 ♀, [Morse Cln.].  
 Eagleton, Arkansas, VIII, 3, 1905, (Morse), 2 ♂, [Morse Cln.].  
 De Queen, Arkansas, VII, 29, 1905, (Morse), 1 ♂, [Morse Cln.].  
 Ashdown, Arkansas, VII, 27, 1905, (Morse), 1 ♀, [Morse Cln.].  
 South McAlester, Oklahoma, VIII, 7, 1905, (Morse), 1 ♂, [Morse Cln.].  
 Howe, Oklahoma, VIII, 4, 1905, (Morse), 1 ♂, 2 ♀, [Morse Cln.].  
 Caddo, Oklahoma, VIII, 9, 1905, (Morse), 6 ♂, 4 ♀, [Morse Cln.].  
 Plano, Texas, VII, (E. S. Tucker), 1 ♂, 1 ♀, [U. S. N. M.].  
 Pittsburg, Texas, VII, 19, 1907, (F. C. Bishopp), 1 ♂, [U. S. N. M.].  
 Dallas, Texas, 1 ♂, [U. S. N. M.]; (Boll), 9 ♂, 5 ♀, [M. C. Z.].  
 Denison, Texas, VIII, 12, 1905, (Morse), 1 ♀, [Morse Cln.].  
 Doucette, Texas, VII, 24, 1912, (H.; common in open in low bushes),  
 5 ♂, 2 ♀.

Webster, Texas, VII, 19, 1912, (H.; occasional in clumps of weeds), 5 ♂,  
 1 ♀.

Rosenberg, Texas, VII, 25 to 26, 1912, (H.; very common in park-like  
 country), 14 ♂, 8 ♀.

Columbus, Texas, VI, 6, 1879, 1 ♀, [U. S. N. M.].

Lavaca County, Texas, VI, 21, 1 ♂, 1 ♀, [U. S. N. M.].

Victoria, Texas, VI, (A. N. Caudell), 4 ♂, [U. S. N. M.]; VII, (J. D.  
 Mitchell), 1 ♀, [U. S. N. M.].

Granjeno, Texas, V, 24, 1895, 1 ♀, [U. S. N. M.].

Kerrville, Texas, 1525 feet elevation, VIII, 17 to 18, 1912, (R. & H.; beaten  
 from vines in river bottom), 1 ♀.

Uvalde, Texas, VIII, 21 to 22, 1912, (R. & H.), 2 ♂, 3 ♀.

We have previously recorded this species from Lucaston and Sea Isle  
 Junction, New Jersey, Raleigh and Winter Park, North Carolina, Talla-  
 poosa, Toccoa and Thomasville, Georgia and Gainesville and Homestead,  
 Florida.

**Amblycorypha rotundifolia rotundifolia** (Scudder) (Pl. xi, fig. 37; pl.  
 xii, figs. 46 and 55.)

1862. *P[hylloptera] rotundifolia* Scudder, Boston Journ. Nat. Hist.,  
 vii, p. 445. [Massachusetts; Vermont; Connecticut; Rhode Island; Illinois.]

A careful search through the material of this species in the col-  
 lection of the Museum of Comparative Zoology has failed to  
 bring to light any of the original specimens on which the species  
 was founded. The Rhode Island specimen was in the Harris  
 Collection according to Scudder and in consequence it was in all  
 probability destroyed with the other Orthoptera belonging to that  
 series. The other specimens were probably given away or ex-  
 changed when individuals of the species with more exact data  
 were obtained. The identification of the form is, however, so

easy that the examination of the type material was only desired to fill out the record of types studied.

This form is typical over southern New England, the eastern mountain, Piedmont and northern Coastal Plain regions, extending westward over the central Mississippi Valley region, also occurring typical on the summit of Rich Mountain in the Ozark Mountains of western Arkansas. The most northern definite locality from which the form has been recorded is the White Mountain region, while the most western in the Mississippi region is Moline, Illinois. The most southern localities from which we have seen typical *rotundifolia rotundifolia* are Spartanburg, South Carolina; Toccoa, Tuckoluge Creek and Blue Ridge, Georgia, and the summit of Rich Mountain, Arkansas. In northwestern and central Georgia and in the southern portion of the Coastal Plain we find the specimens of this species having an abbreviation of the wings, accompanied by a reduction of the humeral sinus and broadening of the dorsal section of the lateral lobes of the pronotum, thus approximating *rotundifolia parvipennis*. We have examined individuals exhibiting this intermediate condition from Winter Park, North Carolina; Macon, Warm Springs and Sand Mountain, Georgia, and Valley Head and Cheawha Mountain, Alabama.

Measurements (in millimeters) of average individuals of *rotundifolia rotundifolia*, *rotundifolia iselyi* and *rotundifolia parvipennis*, with certain measurements of the last mentioned two from other authors, are as follows:

	Length of pronotum	Greatest caudal width of pronotum	Greatest width of dorsal section of lateral lobes of pronotum	Length of tegmen	Greatest width of tegmen	Length of caudal femur	Length of ovipositor
<i>A. rotundifolia rotundifolia</i>							
♂ Parkdale, New Jersey.....	5.5	3.7	4	25.2	8.9	24	
♂ Beatty, Westmoreland County, Pennsylvania...	5.3	3.9	4.2	25.7	9.2	23.2	
♀ Orange, Virginia.....	5.6	4	4	25.5	8.5	22.5	
♂ Mt. Pisgah, N. C.....	5.5	3.9	4.2	24	8.2	21.8	
♂ Currahee Mountain, Ga...	5.9	4	4.6	27	9	25.5	
♂ Franklin County, Ind.....	5.2	3.7	3.9	24.5	9	23	

	Length of pronotum	Greatest caudal width of pronotum	Greatest width of dorsal section of lateral lobes of pronotum	Length of tegmen	Greatest width of tegmen	Length of caudal femur	Length of ovipositor
<i>A. rotundifolia rotundifolia</i>							
♀ Lyme, Connecticut . . . . .	6.5	4.2	5	27	9.5	26	10.3
♀ Stafford's Forge, N. J. . . . .	6	4	4.6	24.3	8.4	24.8	10.8
♀ Beatty, Westmoreland County, Pennsylvania . . . . .	6.2	4	5	24.3	8	24.6	9.3
♀ Orange, Virginia . . . . .	6	4	4.6	26	9	25.7	10
♀ Jones' Knob, N. C. . . . .	6.4	4.2	5.1	24.6	8.6	23.5	10
♀ Spartanburg, S. C. . . . .	6	3.8	4.5	24	7.7	24.8	8.8
♀ Toccoa, Georgia . . . . .	5.8	4	5	23.7	8.1	25	9.6
♀ Fulton County, Indiana . . . . .	6	4.1	5	24.5	9.4	25.8	9.8
<i>A. rotundifolia rotundifolia</i> x <i>A. r. parvipennis</i>							
♀ Winter Park, N. C. . . . .	7.4	4.8	5.8	28	9.6	28	10.7
♀ Macon, Georgia . . . . .	6.3	4	5	24.8	8	25	9
♀ Warm Springs, Georgia . . . . .	6.2	4	4.8	25.2	8.5	25	9.5
<i>A. rotundifolia parvipennis</i>							
♂ Texas . . . . . (Ex Stål)				24	7	26	
♂ Texas . . . . . (Ex Brunner)	6.8			23	8	28	
♂ Dallas, Texas . . . . .	7.5	4.8	6.2	26.4	8.5	29.1	
♀ Texas . . . . . (Ex Stål)				26	8	28	15
♀ Texas . . . . . (Ex Brunner)	8			24	8	29	15
♀ Dallas, Texas . . . . .	7.4	4.9		23.4	8		13.9
♀ Lavaca County, Texas . . . . .	9	5.7	7.8	29.6	9.8	32.4	12.5
♀ Rich Mountain Sta., Ark. . . . .	7.2	5.1	6.1	28.1	9.3	29	10
<i>A. rotundifolia iselyi</i>							
♂ Little Rock, Iowa . . . . .	6.5	4.4	5.2	22.7	8.2		
♂ Ames, Iowa . . . . .	6.7	4.5	5.5	22.5	9	23.2	
♂ Wichita, Kan. <i>Paratype</i> . . . . .	6.5	5	5.3	22.7	8.7	25.3	
♀ Ames, Iowa . . . . .	6.6	5	5.5	21.2	8	23.2	10.3
♀ Iron Mountain, Missouri . . . . .	6.9	4.7	5.5	23.5	8.5	25.4	11.5
♀ Wichita, Kan. (Ex Caudell) <i>Type</i> . . . . .	8	5		25	9	26	10 <sup>7</sup>

*Specimens Examined:* 102; 57 ♂, 45 ♀, 1 ♂ n., 1 ♂ n.

Milton, Massachusetts, VIII, 28, 1897, (F. H. Sprague), 4 ♂, 1 ♀ n.; X, 8, 1897, (F. H. Sprague), 1 ♀, [M. C. Z.].

<sup>7</sup> Measured to ventro-proximal point, as in our other measured specimens, the ovipositor of this individual shows 11.8 mm.



- Wollaston, Massachusetts, VIII-IX, 1895, (F. H. Sprague), 3 ♀, [M. C. Z.).
- Walpole, Massachusetts, VIII, 1 and 2, 1897, (F. H. Sprague), 3 ♂, [M. C. Z.].
- Cambridge, Massachusetts, 1 ♂, [M. C. Z.].
- Lyme, Connecticut, VIII, 21, 1910, (B. H. Walden), 2 ♀, [Hebard Cln.].
- Ithaca, New York, VIII, 5-22, 1890-1891, 3 ♂, 1 ♀, [Morse Cln.].
- Marlboro, New York, IX, 1 ♂, [Bklyn. Inst. A. & S.].
- West Creek, New Jersey, VIII, 28, 1914, (R.; in undergrowth in oak woods), 3 ♀.
- Parkdale, New Jersey, VII, 30, 1911, (R. & H.; in oak scrub), 2 ♂; VII, 30, 1911, (A. N. Caudell), 3 ♂, [U. S. N. M.].
- Reega, New Jersey, VII, 31, VIII, 16, VIII, 29, 1914, (H.; under pines and oaks, males stridulating at night), 2 ♂, 3 ♀.
- Wildwood Junction, New Jersey, VIII, 27, VIII, 8, 1914, (H.; in huckleberry bushes, etc., in oak woods), 1 ♂, 2 ♀.
- White Mills, Wayne County, Pennsylvania, VIII, 7 to 9, 2 ♂, [Bklyn. Inst. A. & S.].
- Rockville, Pennsylvania, VII, 22 to 29, VIII, 7 to 18, 2 ♂, 2 ♀, [Pa. St. Dept. Zool.].
- Beatty, Westmoreland County, Pennsylvania, (Brugger), 1 ♂, 1 ♀, [A. N. S. P.].
- Plummer's Island, Maryland, IX, 2, (A. N. Caudell), 1 ♂, 1 ♀, [U. S. N. M.].
- Glen Echo, Maryland, VII, 10, 1914, (H.; undergrowth in openings along edge of pine woods), 9 ♂, 1 ♀.
- Arlington, Virginia, VII, 9, 1914, (H.), 8 ♂, 7 ♀, 1 ♂ n.
- Glencarlyn, Virginia, VIII, 12, 1 ♀, [U. S. N. M.].
- Peaks of Otter, Virginia, (Wm. Palmer), 1 ♀, [U. S. N. M.].
- Cranberry, North Carolina, 1896, 1 ♀, [U. S. N. M.].
- Jones' Knob, near Balsam, North Carolina, VIII, 19, 1903, (Morse), 1 ♂, [Morse Cln.].
- Governor's Island, North Carolina, VIII, 20, 1903, (Morse), 1 ♂, [Morse Cln.].
- Topton, North Carolina, 3000 to 4000 feet, VII, 21, 1903, (Morse), 1 ♀, [Morse Cln.].
- Spartanburg, South Carolina, VIII, 6, 1913, (H.), 1 ♀.
- Tuckoluge Creek, Rabun County, Georgia, VII, 1910, (Davis), 3 ♂.
- Toccoa, Georgia, 1094 feet elevation, VIII, 4 to 5, 1913, (H.; in scant undergrowth of huckleberry bushes in dense forest of pine saplings), 1 ♀.
- Currahee Mountain, Georgia, 1700 feet elevation, VIII, 5, 1913, (H.), 2 ♂.
- Blue Ridge, Georgia, VII, 25, 1903, (Morse), 1 ♂, [Morse Cln.].
- Fulton County, Indiana, VII, 31, 1903, (W. S. Blatchley), 1 ♀, [A. N. S. P.].
- Franklin County, Indiana, (W. S. Blatchley), 1 ♂, [A. N. S. P.].
- Crawford County, Indiana, VII, 10, 1899, (W. S. Blatchley), 1 ♀, [U. S. N. M.].

Michigan, 1 ♀, [M. C. Z.].

Green River, Illinois, VIII, 20, 1 ♀, [M. C. Z.].

Moline, Illinois, VIII, 4, 1 ♂, [M. C. Z.].

Bee Spring, Kentucky, VI, 14 to 15, 1874, (F. G. Sanborn), 1 ♀, [M. C. Z.].

Summit of Rich Mountain, Arkansas, 2600 feet, VIII, 1, 1905, (Morse), 2 ♂, [Morse Cln.].

Intermediate between *A. r. rotundifolia* and *A. r. parvipennis*.

Winter Park, North Carolina, IX, 7, 1911, (R.; in wire grass in pine woods), 1 ♀.

Sand Mountain, Georgia, VII, 8, 1903, (Morse), 1 ♀, [Morse Cln.].

Macon, Georgia, VII, 30 to 31, 1913, (R. & H.), 1 ♀.

Warm Springs, Georgia, 850 to 1200 feet elevation, VIII, 9 to 10, 1913, (R.; in pine and oak woods), 1 ♀.

Valley Head, Lookout Mountain, Alabama, VII, 11, 1905, (Morse), 1 ♀, [Morse Cln.].

Chehaw Mountain, Alabama, 2600 feet, VII, 13, 1905, (Morse), 2 ♂, 2 ♀, [Morse Cln.].

We have also examined and reported *A. rotundifolia rotundifolia* from Jones' Knob, 6000 feet elevation, and Mt. Pisgah, 5740 feet elevation, North Carolina.

***Amblycorypha rotundifolia parvipennis*** Stål (Pl. xi, fig. 38; pl. xii, figs. 47 and 56.)

1876. *A[mblycorypha] parvipennis* Stål, Bihang till K. Svenska Vet.-Akad. Handl., iv, no. 5, p. 58. [Texas.]

The present form is clearly a derivative of the *rotundifolia* stock inhabiting the southern prairie region, extending eastward and intergrading with *r. rotundifolia* in the southeastern states, for information regarding which see above under *A. r. rotundifolia*. Intergradation with *A. r. iselyi* has been assumed on the relatively minor importance of the characters separating the two forms, and more collecting in the proper regions will in all probability establish this affinity as clearly as our present material demonstrates that existing between *A. r. rotundifolia* and *A. r. parvipennis*.

The heavier form, abbreviate wings and robust pronotum, which latter has the humeral sinus much reduced and the lateral lobes broader dorsad, are the chief characters which separate *A. r. parvipennis* and *A. r. iselyi* from *A. r. rotundifolia*. In all the specimens seen of typical *parvipennis* and *iselyi* the wings are never evident when the tegmina are closed.

The two related forms (i.e. *r. parvipennis* and *r. iselyi*) can be best separated by the slenderer general form and more elongate

and narrower, as well as less coriaceous, tegmina of *parvipennis*, the generally narrower dorsum of the pronotum and the more elongate, yet relatively more inflated, caudal femora of the same race. There is some individual variation in the length and robustness of the styles of the male subgenital plate and also of the ovipositor in both forms.

The distribution of this race covers an area extending from the lower country of western Arkansas (Rich Mountain Station) and south central Oklahoma (Ardmore), south to at least Lavaca County, Texas. We have no information as to the eastern and western limits of typical *parvipennis*, but as shown under *r. rotundifolia* intermediates showing a great tendency toward *r. parvipennis* occur in the southeastern states.

*Specimens Examined*: 7; 4 ♂, 2 ♀, 1 ♀ n.

Rich Mountain Station, Arkansas, VIII, 2, 1905, (Morse), 1 ♀, [Morse Cln.].

Ardmore, Oklahoma, VI, 1, (C. R. Jones), 1 ♂, [U. S. N. M.].

Texas, (Belfrage), 2 ♂, [M. C. Z.].

Dallas, Texas, (Boll), 1 ♂ n., [M. C. Z.]; 1 ♂, [U. S. N. M.].

Lavaca County, Texas, VI, 21, 1 ♀, [U. S. N. M.].

***Amblycorypha rotundifolia iselyi*** Caudell (Pl. XI, fig. 39; pl. XII, figs. 48 and 57.)

1904. *Amblycorypha iselyi* Caudell, Journ. New York Entom. Soc., xiii, p. 50. [Wichita, Kansas.]

The relationship of *r. iselyi* to *r. parvipennis* and *r. rotundifolia* is very evident to anyone examining the series of specimens of the three forms studied by us. As stated above the direct relationship of *r. iselyi* and *r. parvipennis* is close, although we have no positive proof of the assumed intergradation. We have given above under *r. parvipennis* the important differential characters separating this form from its relatives.

The range of *rotundifolia iselyi* extends from northwestern (Little Rock) and central (Dallas County) Iowa, south to eastern Missouri (Iron Mountain) and south-central (Wichita) Kansas.

*Specimens Examined*: 7; 4 ♂, 3 ♀.

Little Rock, Iowa, VII, 16, 1893, (E. D. Ball), 1 ♂, [A. N. S. P.].

Ames, Iowa, (E. D. Ball), 1 ♂, 2 ♀, [A. N. S. P. and Hebard Cln.].

Dallas County, Iowa, VIII, 20 to 23, (Allen), 1 ♂, [M. C. Z.].

Wichita, Kansas, VII, 29, 1904, (F. B. Isely), 1 ♂, *Paratype*, [Hebard Cln.].

Iron Mountain, Missouri, 1 ♀, [Hebard Cln.].

*These figures are all one-half  
the dimensions cited.*

## EXPLANATION OF PLATES

## Plate IX

- FIG. 1.—*Scudderia furcata furcata*. Disto-dorsal abdominal segment of male from dorsum. Shasta County, California. (× 12)
- “ 2.—*Scudderia furcata furcata*. Disto-dorsal abdominal segment of male from dorsum. Lake Mahopac, New York. (× 12)
- “ 3.—*Scudderia cuneata*. Disto-dorsal abdominal segment of male from dorsum. Florence, South Carolina. (× 12)
- “ 4.—*Scudderia mexicana*. Disto-dorsal abdominal segment of male from dorsum. Baboquivari Mountains, Arizona. (× 12)
- “ 5.—*Scudderia texensis*. Disto-dorsal abdominal segment of male from dorsum. Rosenberg, Texas. (× 12)
- “ 6.—*Scudderia strigata*. Disto-dorsal abdominal segment of male from dorsum. Jacksonville, Florida. (× 12)
- “ 7.—*Scudderia curvicauda curvicauda*. Disto-dorsal abdominal segment of male from dorsum. Rockville, Pennsylvania. (× 12)
- “ 8.—*Scudderia pistillata*. Disto-dorsal abdominal segment of male from dorsum. Pequaming, Michigan. (× 12)
- “ 9.—*Scudderia curvicauda borealis*. Disto-dorsal abdominal segment of male from dorsum. Aweme, Manitoba. *Allotype*. (× 12)
- “ 10.—*Scudderia curvicauda laticauda*. Disto-dorsal abdominal segment of male from dorsum. Billy's Island, Georgia. (× 12)
- “ 11.—*Scudderia hemidactyla*. Lateral outline of *type*. Caparo, Trinidad. (× 2)
- “ 12.—*Scudderia curvicauda laticauda*. Lateral outline of female. Billy's Island, Georgia. (× 2)
- “ 13.—*Scudderia strigata*. Outline of tegmen of male. Jacksonville, Florida. (× 12)
- “ 14.—*Scudderia septentrionalis*. Disto-dorsal abdominal segment of male from dorsum. West Point, Nebraska. (× 12)
- “ 15.—*Scudderia hemidactyla*. Disto-dorsal abdominal segment of male from dorsum. Caparo, Trinidad. *Type*. (× 12)
- “ 16.—*Scudderia hemidactyla*. Disto-dorsal abdominal segment of male in lateral outline. Caparo, Trinidad. *Type*. (× 12)
- “ 17.—*Scudderia hemidactyla*. Disto-dorsal abdominal segment of male from venter. Caparo, Trinidad. *Type*. (× 12)

## Plate X

Care should be taken in comparing material with these figures, as the plane of the basal axis is not the same in all cases.

- FIG. 18.—*Scudderia strigata*. Outline of ovipositor. Jacksonville, Florida.  
(Greatly enlarged.)
- “ 19.—*Scudderia furcata furcata*. Outline of ovipositor. Saunders-  
town, Rhode Island. (Greatly enlarged.)
- “ 20.—*Scudderia furcata furcifera*. Outline of ovipositor. Chisos  
Mountains, Texas. (Greatly enlarged.)
- “ 21.—*Scudderia cuneata*. Outline of ovipositor. Miami, Florida.  
(Greatly enlarged.)
- “ 22.—*Scudderia hemidactyla*. Outline of ovipositor. *Allotype*. Ca-  
paro, Trinidad. (Greatly enlarged.)
- “ 23.—*Scudderia texensis*. Outline of ovipositor. La Marque, Texas.  
(Greatly enlarged.)
- “ 24.—*Scudderia pistillata*. Outline of ovipositor. Great Cranberry  
Island, Maine. (Greatly enlarged.)
- “ 25.—*Scudderia curvicauda laticauda*. Outline of ovipositor. Billy's  
Island, Georgia. (Greatly enlarged.)
- “ 26.—*Scudderia curvicauda curvicauda*. Outline of ovipositor. Rock-  
ville, Pennsylvania. (Greatly enlarged.)
- “ 27.—*Scudderia curvicauda borealis*. Outline of ovipositor. Aweme,  
Manitoba. *Type*. (Greatly enlarged.)
- “ 28.—*Scudderia mexicana*. Outline of ovipositor. Huachuca Moun-  
tains, Arizona. (Greatly enlarged.)
- “ 29.—*Scudderia septentrionalis*. Outline of ovipositor. No locality.  
(Greatly enlarged.)

## Plate XI

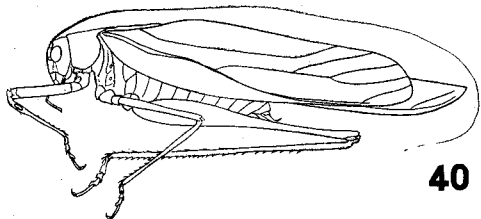
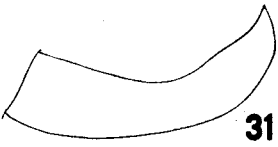
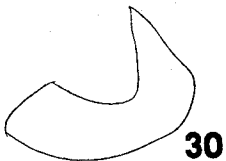
- FIG. 30.—*Scudderia pistillata*. Outline of male cercus. Pequaming,  
Michigan. (Greatly enlarged.)
- “ 31.—*Scudderia septentrionalis*. Outline of male cercus. West Point,  
Nebraska. (Greatly enlarged.)
- “ 32.—*Amblycorypha oblongifolia*. Lateral outline of pronotum, teg-  
men and exposed wing. Male. Chestnut Hill, Pennsylvania.  
( $\times 2$ )
- “ 33.—*Amblycorypha floridana floridana*. Lateral outline of pronotum,  
tegmen and exposed wing. Male. Homestead, Florida.  
( $\times 2$ )
- “ 34.—*Amblycorypha floridana carinata*. Lateral outline of pronotum,  
tegmen and exposed wing. Male. *Type*. Stafford's Forge,  
New Jersey. ( $\times 2$ )

- Fig. 35.—*Amblycorypha huasteca*. Lateral outline of pronotum, tegmen and exposed wing. Male. Flatonia, Texas. ( $\times 2$ )
- “ 36.—*Amblycorypha uhleri*. Lateral outline of pronotum, tegmen and exposed wing. Webster, Texas. ( $\times 3$ )
- “ 37.—*Amblycorypha rotundifolia rotundifolia*. Lateral outline of pronotum, tegmen and exposed wing. Male. Parkdale, New Jersey. ( $\times 3$ )
- “ 38.—*Amblycorypha rotundifolia parvipennis*. Lateral outline of pronotum and tegmen. Male. Dallas, Texas. ( $\times 3$ )
- “ 39.—*Amblycorypha rotundifolia iselyi*. Lateral outline of pronotum and tegmen. Male. Paratype. Wichita, Kansas. ( $\times 3$ )
- “ 40.—*Amblycorypha insolita*. Lateral outline of type. Quitman Mountains, Texas. ( $\times 2$ )

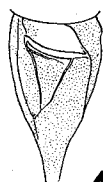
## Plate XII

- Fig. 41.—*Amblycorypha oblongifolia*. Stridulating field of male. Chestnut Hill, Pennsylvania. ( $\times 4$ )
- “ 42.—*Amblycorypha floridana floridana*. Stridulating field of male. Homestead, Florida. ( $\times 4$ )
- “ 43.—*Amblycorypha huasteca*. Stridulating field of male. Flatonia, Texas. ( $\times 4$ )
- “ 44.—*Amblycorypha insolita*. Stridulating field of male. Type. Quitman Mountains, Texas. ( $\times 4$ )
- “ 45.—*Amblycorypha uhleri*. Stridulating field of male. Webster, Texas. ( $\times 4$ )
- “ 46.—*Amblycorypha rotundifolia rotundifolia*. Stridulating field of male. Parkdale, New Jersey. ( $\times 4$ )
- “ 47.—*Amblycorypha rotundifolia parvipennis*. Stridulating field of male. Dallas, Texas. ( $\times 4$ )
- “ 48.—*Amblycorypha rotundifolia iselyi*. Stridulating field of male. Paratype. Wichita, Kansas. ( $\times 4$ )
- “ 49.—*Amblycorypha oblongifolia*. Outline of ovipositor. Cornwells, Pennsylvania. ( $\times 4$ )
- “ 50.—*Amblycorypha floridana floridana*. Outline of ovipositor. Type. Miami, Florida. ( $\times 4$ )
- “ 51.—*Amblycorypha floridana carinata*. Outline of ovipositor. Paratype. Stafford's Forge, New Jersey. ( $\times 4$ )
- “ 52.—*Amblycorypha huasteca*. Outline of ovipositor. Flatonia, Texas. ( $\times 4$ )
- “ 53.—*Amblycorypha uhleri*. Outline of ovipositor. Rosenberg, Texas. ( $\times 4$ )
- “ 54.—*Amblycorypha insolita*. Outline of ovipositor. Southern Arizona. ( $\times 4$ )

- FIG. 55.—*Amblycorypha rotundifolia rotundifolia*. Outline of ovipositor.  
Lyme, Connecticut. (× 4)
- “ 56.—*Amblycorypha rotundifolia parvipennis*. Outline of ovipositor.  
Lavaca County, Texas. (× 4)
- “ 57.—*Amblycorypha rotundifolia iselyi*. Outline of ovipositor. Ames,  
Iowa. (× 4)







41



42



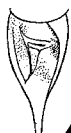
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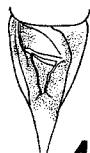
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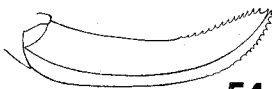
51



52



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57