Recently through the kindness of the authorities of the Academy of natural sciences of Philadelphia I had the opportunity of studying the types of Ammophila contained in their collection. A synopsis of the species was arranged in tabular form with the intention of further work on the group. As this plan cannot now be carried out it seems advisable to publish the notes made while in Philadelphia for the assistance of any who wish to study this interesting genus. In the original table have been interpolated the additional North American species not contained at the Philadelphia academy, their places having been determined from the descriptions alone. Owing to the incomplete diagnoses of some authors a number of these species have been placed out of their natural order, and hence the table is in part more artificial than is to be desired; but in the main a natural relationship is expressed.

It is strange that the study of such large, common, and intelligent insects should have been so long neglected. Possibly this is due to the uncertainty in the determination of the species of the older authors and to the confusion existing between the homonymous but different species of Dahlbom and Lepeletier. But as in the northeastern part of the United States the species are not numerous the student of at least that section should experience but little trouble in naming his captures. For example, some two hundred specimens collected by myself in central and southern Texas, Illinois, and New England yield only three Psammophilas, nine Ammophilas and the one Coloptera, thirteen species, of which ten are found in the Northeastern States. In order of abundance of individuals these species are: proceras, nigricans, urnaria, violaceipennis, extremitata, inepta (Tex.), abbreviata, vulgaris, grossa (Tex.), luctuosa, gracilis, wrightii (Tex.), and an undescribed species from Illinois. It will be noticed that most of these are the species of the older authors. On account of the brevity of their descriptions the determination of these can best be accomplished by eliminating the other species found in the type locality. By this method, and as they seem to be the most abundant forms, the older species can be readily fixed. A careful redescription of them is desired from the next monographer.

A number of changes in nomenclature are instituted, whereby several well-known names are dropped as synonyms. The dubious violaceipennis is a common form of the United States, concerning whose identity it is indeed strange that a doubt should ever have existed. The Brazilian urnaria of Lepeletier is not the
same as Dahlbom's species; *procera* Lep. is not *procera* Dahlb., but is the other sex of his *intercepta* and both are synonyms of *nigricans* Dahlb.; *gracilis* Cam. is not *gracilis* Lep., while the Canadian form of same name seems to be a third species.

With such well-known and long established names as *cementaria*, *gryphus*, *procera*, *robusta*, *macra*, *anomala*, etc., untenable, the future student will hesitate before describing new species. However the Mexican and Central American species of Peter Cameron seem valid and in little danger of confluence. The stumbling block of the earlier describers has often been the association of the sexes, since a distinct dimorphism often prevails. Generally the males are more slender, more hirsute, and more brilliantly marked than the females, and in those species with the abdomen partially red the males frequently have the black encroaching dorsally as a median line. Their clasping sexual organs and the narrow and straight-sided face are distinctive of this sex.

Of the species of the United States some difficulty might be experienced in differentiating between certain forms. For this reason a few supplementary notes on the common species are added:—

*vulgaris* is a small species, about three fourths of an inch in length. The mesonotum of the female generally has a deep median furrow. The striae of the metanotum are close together, oblique and well-cut, and are generally connected by a median line.

*juncea* is founded on a slender male with very fine transverse metanotal striae. The central portion of the disc is sometimes confusedly punctate and slightly hairy. It is a larger form than *vulgaris*.

*strenua* is about one inch in length and has complete transverse striae on the metanotum not quite so well marked as in *vulgaris* but rougher than in *juncea*. The anterior striae tend to become oblique. The female has a short narrow impressed line on the mesonotum.

*urnaria*. The obsolete striate arrangement of the punctures near the tegulae is quite characteristic and fairly constant in this species. The rather coarse striae of the metanotum are more or less oblique and frequently become rugulose on the disc as in *juncea*.

*abbreviata* is quite distinct among the local species by the acuminate clypeus of the male, the short pale golden macule of the mesopleurae, and the black abdomen.

*nigricans* also has the abdomen mostly black but the pleurae are entirely black and the wings darkened.

*extremitata* is quite distinct by the yellowish wings. The thorax of the female is matte-black and the abdomen contains a brighter red than in the other common forms.
Proterea is the only local species with complete and coarse transverse striae on the notum. It is also the largest of our species, some specimens attaining nearly an inch and a half in length.

It is believed that the following table will give a truthful determination of the species of this group as they have been defined, and since the species need no longer be confused it is hoped that an interest in their study may be aroused. Especially to be desired is the observation of the habits of these intelligent wasps,—a pleasant research,—for the ammophiles are intellectually superior to the other fossorial Hymenoptera, as the entertaining records of Fabre, the Peckhams, Williston, and others have shown.

### Table of the North American Species.

<table>
<thead>
<tr>
<th>Description</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front wings with three submarginal cells, submedian cell but little shorter than the median</td>
<td>2.</td>
</tr>
<tr>
<td>Front wings with but two submarginal cells</td>
<td>3.</td>
</tr>
<tr>
<td>2. Petiole of abdomen consisting of the first abdominal segment only</td>
<td>(Psammophila) 4.</td>
</tr>
<tr>
<td>Petiole of abdomen consisting of the entire first segment and at least the basal portion of the second</td>
<td>(Ammophila) 18.</td>
</tr>
<tr>
<td>3. Second and third submarginals united. Black species with the base of the abdomen red</td>
<td>(anomalous species of Ammophila) 74.</td>
</tr>
<tr>
<td>Third submarginal cell wanting; submedian cell distinctly shorter than the median</td>
<td>(Coleoptera) 75.</td>
</tr>
<tr>
<td>4. Body wholly black, piceous-black, or blue-black</td>
<td>5.</td>
</tr>
<tr>
<td>Abdomen more or less ferruginous</td>
<td>7.</td>
</tr>
<tr>
<td>Metanotum shining, transversely striolate</td>
<td>6.</td>
</tr>
<tr>
<td>6. Slender; pubescence in part whitish; face silvery; abdomen more or less purplish</td>
<td>2. luctuosa Sm. ♀.</td>
</tr>
<tr>
<td>Robust; pubescence black; face broad, black pubescent; abdomen black</td>
<td>2. luctuosa Sm. ♀.</td>
</tr>
<tr>
<td>7. Pubescence of thorax wholly black</td>
<td>8.</td>
</tr>
<tr>
<td>Pubescence more or less brownish, gray, or white</td>
<td>13.</td>
</tr>
<tr>
<td>8. Abdomen except the petiole entirely ferruginous</td>
<td>9.</td>
</tr>
<tr>
<td>Abdomen proper in part black</td>
<td>11.</td>
</tr>
<tr>
<td>9. Clypeus broadly projecting in the middle, the projection sinuated</td>
<td>6. Jason Cam.</td>
</tr>
<tr>
<td>The margin of the clypeus pluridentate</td>
<td>10.</td>
</tr>
<tr>
<td>10. Wings with a yellow tinge; metanotum obliquely rugose</td>
<td>3. validus Cam.</td>
</tr>
<tr>
<td>Wings with a violaceous tinge; metanotum transversely striolatied</td>
<td>11. quadriquetata Cam.</td>
</tr>
<tr>
<td>11. Metathorax rugose; wings violaceous</td>
<td>8. sonorensis Cam.</td>
</tr>
<tr>
<td>Metathorax trans-striate; wings violaceous-black to subhyaline</td>
<td>12.</td>
</tr>
<tr>
<td>12. Petiole of abdomen short, not extending beyond the hind trochanters; large species</td>
<td>4. grossa Cress. ♀.</td>
</tr>
</tbody>
</table>
Petiole extending beyond the hind trochanters; smaller species variable in pubescence and wing-coloration. 1. violaceipennis Lep.

Third submarginal cell small, barrel-shaped; eyes strongly convergent below.

Third submarginal normal, i.e., broader below than above. 12. pacifica Mel. and Br.

Front and middle legs in part red. 9. morrisoni Cam.

Petiole of abdomen short, not extending beyond hind trochanters; stout species. 15.

Petiole much longer; smaller species. 16.

Base of abdomen entirely ferruginous. Only the sides of the first and second segments reddish. 17. montana Cam.

Legs densely pruinose. 7. alpestris Cam.

Legs sparsely pruinose. 1. violaceipennis Lep. 13.

Pro- or meso-notum transversely striate. 18. grossa Cress.

Disc of thorax punctured or smooth, never with complete transverse strigae. 19.

Thorax or legs in part red. Ground color of thorax and legs entirely black. 20.

Head red; metanotum transversely striate. 28. ferruginosa Cress.

Head black; metanotal striae becoming rugose laterally. 30. collaris Cress.

Abdomen wholly black above. 21.

Abdomen in part red above. 22.

Scutellum with strong longitudinal carinae. 43. ceres Cam.

Scutellum with longitudinal grooves or simply punctate. 23.

Pleurae with golden to silvery spots; abdomen almost wholly black; clypeus of male acuminate. 24.

Pleurae with elongate silvery markings; third ventral in part red; clypeus of male not produced. 25.

Tip of metapleurae with a marking of silvery pubescence. 13. abbreviata Fabr.

Tip of metathorax not marked with glistening pubescence. 42. aureonotata Cam.

Face with silvery pile and pubescence; metathorax transversely striate. 17. gracilis Lep.

Face more or less silvery but with black pubescence also; metanotum with oblique striae at least in part. 26.

Prothorax shorter, sculpture of thorax coarser and insect more pubescent. 23. barbata Sm.

Prothorax longer and comparatively stout; sculpture of thorax less coarse. 16. procura Dahlb.

Black pilose species; upper part of metathorax velvet black, and arcuateely strigose; wings fulvous. 31. extremitata Cress. 9.

Not such species; pile in part lighter. 28.

Metapleurae rugosely punctate. 29.

Metapleurae strigose. 33.

Clypeus coarsely punctured; mesothorax punctured at middle but becoming strigose at the sides; disc of metanotum obliquely striated. 27. conditor Sm.

Species not conforming with all these characters. 30.

Face with whitish pubescence; abdomen largely red. 31.
Face with black pubescence
Legs completely black
Legs densely pruinose
Prothorax transversely striate
Prothorax smooth
Abdomen almost wholly red
Petiole and apical part of abdomen black
Legs at least in large part red
Ground color of legs wholly black or piceous
Head and clypeus black; metanotum at least centrally with transverse striae
Metanotum sharply, densely, and obliquely striated; face and clypeus silvery
Sides of thorax with markings of silvery pubescence; central part of metanotum pubescent
Pleurae and metanotum not pubescent, pleurae with three large silvery pruinose spots
First joint of petiole black, i.e., with more black than second joint
First joint of petiole with more red than second joint; species of 16–25 mm.
Pleurae with dense matted pubescence; species of 35 to 40 mm.
Pleurae with sparser more erect hairs; species under 30 mm.
Base of femora black; thorax not densely pubescent above
Four anterior legs red; thorax densely pubescent above
Wings yellowish or fulvous
Wings dark-violaceous to subhyaline
Head and thorax matte-black, sparsely black pilose
Head and thorax bluish, densely fusco-pilose
Mesopleurae with spots or oblique stripings of silvery golden color
Pleurae uniform in color, not with pubescent markings
Thoracic notum with appressed sericeous pubescence and erect hairs
Thorax devoid of dense appressed pubescence but often with sparse to dense hairs and sometimes more or less pruinose
Central space of metathorax closely pubescent
Metathorax not pubescent centrally
Abdomen largely red, the segments with a black dorsal spot
Abdomen nearly or wholly black
The dilated part of the second segment except its hind margin red
Abdomen completely blue-black; third submarginal narrow; the sericeous pubescence confined to the front part of the thorax
Metapleurae coarsely striated; hind coxae covered with silvery pubescence
Metapleurae finely rugulose; hind coxae silvery above only
Central part of metathoracic disc rugulose, scutellum with longitudinal striae
Central part but little roughened, generally more or less striated
Small species clothed with silvery cinereous pubescence; metanotum with well-marked oblique striae generally connected by a median line
Species of other character, the metanotum only rarely with a median line ... 50.
50. Face covered with golden pubescence; abdomen largely reddish; clypeus not produced ... 51.
Pubescence of face of other color, if golden the abdomen is black and the clypeus of the male is produced ... 52.
51. Punctures of thorax fine and sparse; scutellum strongly furrowed

Punctures of thorax close; scutellum rugose ... 53. dejecta Cam.
52. Head and thorax with sparse black but no silvery pubescence ... 53.
Pubescence of head (inclusive of face) and thorax in part silvery, gray, or fuscous ... 55.
53. Mesonotum strigose or very thickly punctate towards the sides. Eastern species.

Mesonotum simply punctate. Mexican species ... 54.
54. Ground color black over all ... 40. iridipennis Cam.
55. Scutellum sparsely punctate ... 56.
Scutellum deep channelled longitudinally ... 59.
56. Silvery mark of mesopleurae elongate; base of abdomen red ... 57.
Pleural spots short; abdomen nearly black; third submarginal cell narrow; clypeus of male produced ... 58.
57. Dorsal furrow of mesonotum deep ... 35. strenua Cress.
Dorsal furrow of mesonotum indistinct ... 52. montezuma Cam.
58. Metapleurae finely rugulose; third antennal joint nearly twice the length of the second ... 13. abbreviata Fabr.

Metapleurae coarsely striated; third antennal joint one fourth longer than the fourth ... 37. miliaris Cam.
59. Thorax nearly impunctate, but covered with dense silvery pubescence; slender species ... 36. juncea Cress.
Thorax strongly punctured, its pubescence with long darker hairs intermixed. Mexican species ... 60.
60. Third submarginal cell twice as wide at the bottom as at the top ... 55. azteca Cam.
Third submarginal only one fourth longer at the bottom than at the top — gracilis Cam.
61. Wings blackish; thorax black-sericeous; pubescence dense ?, or sparser ?

Wings sub- or fusco-hyaline ... 62.
62. Abdomen without red markings ... 63.
Abdomen in part red ... 65.
63. Blue-black species; pleurae more or less shining; face with sparse silvery pubescence ... 64.
Black species; pleurae opaque ... 41. centralis Cam.
64. Pubescence sparse; hind tibiae with fulvous hairs ... 38. gaumeri Cam.
Pubescence dense, fuscous; legs with almost no hairs ... 39. micans Cam.
65. Thorax opaque matte velvet-black on the sides; species of the United States ... 66.
Pleurae not matte-black ... 67.
66. A spot of golden pubescence above the base of the middle and hind coxae ... 31. extremitata Cress.
No such spots present ... 31. extremitata var. pictipennis Walsh.
67. Pro- and meso-thorax silvery pruinose. Cuba. ... 62. guerinii D. T.
The following list includes the species of this group which have been described as from North America. The species are given in chronological order and show no phyletic sequence.

Psammophila Dahlbom.

   


7. jason Cam., ibid., p. 20. \( \varphi \). Guatemala.

8. alpestris Cam., ibid., p. 21. \( \varphi \). Panama.

9. sonorensis Cam., ibid., p. 21. \( \varphi \). Mex.

10. mormoni Cam., ibid., p. 21. \( \varphi \). Mex.

11. piceiventris Cam., ibid., p. 22. \( \varphi \). Guatemala.

Ammophila Kirby.

   procera Lep., ibid., p. 376. ♀. (1845).
18. arvensis Lep., ibid., p. 384. Δ ♀. Amer. bor.
27. conditor Smith, ibid., p. 223. Fla.
29. prininos Cress., ibid., p. 455. Col.
34. mediata Cress., ibid., p. 459. Δ ♀. Col.
36. juncea Cress., ibid., p. 460. Δ. Col.
38. guumeri Cam., ibid., p. 4. Δ. Guat., Mex.
39. micans Cam., ibid., p. 5. ♀. Guat.
40. iridipennis Cam., ibid., p. 5. Δ ♀. Guat.
41. centralis Cam., ibid., p. 6. Δ. Guat.
42. aureonotata Cam., ibid., p. 7. Δ ♀. Mex.
43. ceres Cam., ibid., p. 8. Δ. Guat.
44. zanthoptera Cam., ibid., p. 8. ♀. Guat.
45. championi Cam., ibid., p. 9. ♀. Guat.
THE NORTH AMERICAN ANTS OF THE GENUS STENAMMA SENSU STRICTO.¹

BY WILLIAM MORTON WHEELER, AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, N. Y.

There is a good deal of confusion in regard to the two described North American species of *Stenamma sensu stricto*, owing to imperfect knowledge of the sexual forms of one of the species. *Stenamma nearcticum* was described by Mayr from two male and two female specimens taken towards the end of October in California. To the same species he referred two workers, one from New Hamp-

¹ Contributions from the Zoological Laboratory of the University of Texas. No. 51.