Megaspìlus, Megathȳmus, Mycetóchares, Myrmìca, Nématus, Nemógnatha, Nómada, Opóstega, Oxȳptilus, Pachȳbrachys, Paleácrita, Pemphìgus, Pìeris, Ponèra, Sitotròga, Stenòma, Sȳstena, Tachȳporus, Tétracha, Trypóxylon, Typhlócyba, Ypsólophus.

The family termination -idæ, meaning like, is added to the root of the typical genus. The i is short, so the accent precedes this suffix: Carábidæ, *Cárabus*-like; Dytíscidæ, *Dytíscus*-like. When the root differs from the nominative the family name may become lengthened: Lepismátidæ, based on the genus *Lepísma;* Belostomátidæ, based on *Belóstoma;* Calamocerótidæ, based on *Calamócerus.* But Apiocéridæ, Leptocéridæ, Tetanocèridæ have had such long usage that to use Apiocerátidæ, etc., would appear pedantic. Genera like *Acrídium, Anthomȳia, Cecidomȳia* and *Stratiomȳia* form the family names Acridìidæ, Anthomyìidæ, Cecidomyìidæ and Stratiomyìidæ. To unite the ĭĭ would produce a long vowel, resulting in such words as Acridìdæ, Anthomyìdæ, Cecidomyìdæ, more awkward than the cumbersome longer form.

Finally, in determining the pronunciation, the most useful single rule, especially for those familiar with spoken Spanish, is to regard the accent as recessive, considering the penultimate vowel as short unless there is good reason for believing it long.

ON THE OCCURRENCE OF VESPA AUSTRIACA PANZER IN THE NORTHEASTERN UNITED STATES.

By J. Bequaert, American Museum of Natural History, N. Y.

There are many facts in the taxonomy and still more in the life-histories of the common American wasps (*Vespa*) which need a thorough revision. The following small contribution is made with the hope of interesting other entomologists in the subject. During the last summer, the writer made a point of capturing all the specimens of wasps he met with on his collecting trips, but the result as a whole was very poor, 1916 apparently not being a wasp-year. However, amongst the catch were found two females which he was unable to refer to any of the species previously

known from North America and it was found that they belonged to what is called in Europe *Vespa austriaca* Panzer.

The following description of the species is made on these two American specimens:

Vespa austriaca Panzer, Fauna Ins. German. LXIII, 1799, p. 2, Tab.

Synonyms: *Vespa borealis* Smith, The Zoologist, I, 1843, p. 170 ♀ (nec Kirby, 1873; nec Lewis, 1897).

Vespa arborea Smith, The Zoologist, VII, 1849, Appendix, p. LX.

Pseudovespa austriaca O. Schmiedeknecht, Entom. Nachr. VII, 1881, pp. 317 and 318.

♀. Head slightly broader than high. Clypeus comparatively high, scarcely one third broader than high, its anterior margin much projecting, distinctly emarginate, *the lateral angles of the emargination strongly produced,* almost dentate and slightly directed outwardly. Oculo-malar space very short, the eyes practically reaching the base of the mandibles. Mandibles relatively slender, when compared with other species. *Tarsi distinctly heavily built,* the joints are as broad as in other species but much shorter. *Horizontal face of first abdominal tergite* comparatively long and narrow, *about half as long as the second tergite.—Punctuation remote and fine on head and thorax;* especially on the clypeus there is, in this respect, a marked difference between this and related species. On the mandibles also the sculpture is very obsolete.—The whole body is covered with erected black hairs, which are very noticeable on the abdomen. *Upper side of all the tibiæ clothed with very long erect hairs,* more abundantly so on the hind legs.

Coloration.—Black with many pale lemon-yellow markings: a broad lozenge on the front between the antennæ, the under half of the sinus of the eyes, a large spot in the upper half and a much smaller one near the under end of the temples (behind the eyes), nearly the whole of the mandibles, *the clypeus except for its margins and 3 small black spots placed in a triangle on the center.* In one specimen, the underside of the antennal scape bears a short and narrow yellow stripe; in the other, the scape is entirely black.—On the thorax, the lateral hind-margins of the pronotum are broadly yellow, as are also two widely separated spots on the scutellum and a smaller one on the upper half of the mesopleuræ beneath the insertion of the wings. Tegulæ, yellow and brownish.—On the legs, the apices of the femora, the tibiæ, with exception of a black stripe on the under side, and the tarsi are yellow, this color, however, turning in certain parts brownish.—First abdominal tergite with a broad apical yellow margin, in front of which are situated, on the transition between the horizontal and vertical portion, two transverse, entirely free, yellow spots. The remaining segments are, for the largest part, yellow; there is a basal black band which is angularly produced in the center, and on each side of this angle a transverse black spot; on the second tergite

the basal black band is much broader and its angular projection extends backwards as to be connected with the lateral spots. Sixth tergite yellow with a broad brown apex and a median longitudinal black band. Sternites two and three with a terminal black fascia which is much broadened on the sides and encloses there a transverse black spot; the fourth and fifth tergites show also an indication of a similar pattern. The coloration of the abdomen is not mixed with brownish, except on the ventral face, where there is a slight brownish tinge on the boundaries between the black and yellow markings.

Length: total, 16 mm.; from front of head to posterior margin of second segment, 12 mm.

2 ♀ from Fort Lee, N. J., July 16, 1916.—Professor J. S. Hine has shown me a third ♀ specimen which was caught by him the same day on Staten Island, N. Y., on flowers of sumach (*Rhus typhina* L.)

Except for the difference in the color of the antennal scape noted above, these three specimens agree in every respect. I was also able to compare them with a *Vespa austriaca* ♀ from Switzerland, for which I am indebted to the generosity of the well-known French hymenopterologist, Mr. J. de Gaulle. In sculpture, structure and pubescence I can discover no difference between the European and the American specimens. The coloration also is very similar in the European ♀: the black spots on the clypeus are very small, the underside of the antennal scape has a broader yellow stripe, the postscutellum bears two minute lateral yellow spots and the ventral face of the abdomen is richer yellow. However, coloration is a very secondary matter in the wasps, and it is well known that English specimens of *V. austriaca* are paler in color than those of Continental Europe.

Vespa austriaca Panzer is not closely related to any other American species, its nearest relative being the European *Vespa rufa* L. Of the latter species I have never seen a North American specimen in any of the collections I was able to look over. R. du Buysson (1905), however, describes of this species a var. *intermedia* from Hudson Bay, and a var. *americana* from Quebec. I am inclined to believe that these American specimens belong to *Vespa consobrina* Sauss., which, although very different in coloration, is very probably the American race or subspecies of *Vespa rufa* L.

Vespa austriaca comes in the group of species with short oculo-

malar spaces, where the eyes reach very nearly to the base of the mandibles. This group includes, in North America: *V. carolina* L., *V. sulphurea* L., *V. vidua* Sauss., *V. consobrina* Sauss., *V. occidentalis* Cress., *V. pennsylvanica* Sauss.* and also the common yellow-jacket, *Vespa communis* Sauss.† All these, however, differ from *V. austriaca* inter alia by the absence of long hairs on the upper side of the tibiæ‡ and very often also by the shape of the clypeus, which in most of the species has broadly rounded lateral angles.

V. austriaca Pz. is a very scarce wasp in Europe. It was recorded from Switzerland, the Vosges, Southern Germany, Western Austria, near St. Petersburg, Southern Sweden, the Pyrenees, Upper Italy, and the British Islands, and shows a marked preference for mountainous regions where it goes as high as 1,800 meters. J. Pérez records a ♂ from Shang Hai.

The life-history and even the identity of this wasp was long a puzzle; early writers thought it to be only a color-variation of *Vespa rufa* L. Giraud (1862) was the first to point out the structural differences between the two forms, and since that time *V. austriaca* has generally been accepted as distinct. Curiously enough, R. du Buysson, in his recent Monograph of the genus *Vespa* (1905), returns to the older opinion and gives *austriaca* merely as a variety of *rufa,* although he indicates the characteristics of both forms.

Owing to some very remarkable biological facts, the question of the relationship of *V. austriaca* to *V. rufa* (or to other species of wasps) goes far beyond the usual interest of discussions as to species and varieties. Though both ♂ and ♀ of *V. austriaca* are

* I came recently to the conclusion that *Vespa occidentalis* Cresson and *V. pennsylvanica* Sauss. are two very distinct species. R. du Buysson (1905) brings them together as synonyms.

† This species is commonly identified as *V. vulgaris* L. or *V. germanica* F. in American collections. I have seen no American specimens which correspond exactly to these European species. Moreover, *V. communis* Sauss. is apparently the American race or sub-species of *V. vulgaris* L. In a similar manner, *V. pennsylvanica* Sauss. (but not *V. occidentalis* Cresson) may be a subspecies of *V. germanica* F.

‡ These long hairs on the tibiæ exist in all the American species with long oculo-malar spaces, such as *V. maculata* L., *V. diabolica* Sauss., etc.

well known to European entomologists, workers referable to it with certainty have never been found. So the suspicion arose that this species has no workers, but breeds as an inquiline in the nest of some other species. This suggestion, first made by Morawitz (1864), was strongly supported by Schmiedeknecht (1881) and Holmgren (1883). But it was not until 1898 that direct observations, made by Robson, supported the belief of inquiline relationship between *V. austriaca* and *V. rufa.* However, by far the most important paper on the subject was published in 1903 by G. H. Carpenter and D. R. Pack-Beresford. These authors not only made a complete comparative study of the two forms, but they attempted also to become more closely acquainted with the exact nature of the relations existing between them.

In résumé, three different opinions may be held as regards the relation existing between *V. austriaca* and *V. rufa.*

1. The older opinion, recently renewed by R. du Buysson, sees in *V. austriaca* merely a color-variation of *V. rufa.* The ♀ and ♂ *austriaca* have then in the economy of the nest the same standing as the ordinary *rufa* ♀ and ♂. This can hardly be accepted any longer, as there are many structural characters separating both forms and, furthermore, this does not explain why no workers presenting the structural peculiarities of *austriaca* are found.

2. The inquiline theory as presented by Schmiedeknecht, Robson and J. Pérez (1910) : according to this, *V. austriaca* is a distinct species, whose ♀ and ♂ play in the *V. rufa* nest the same rôle as the *Psithyrus* ♀ and ♂ in the *Bombus* nests. The ♀ of *austriaca* invades the nest of a *V. rufa,* lays its eggs in the cells and the hatching larvæ are fed by the *rufa* workers.

3. The opinion of G. H. Carpenter and D. R. Pack-Beresford is in some respects intermediate between the two preceding theories. They believe that *V. austriaca* and *V. rufa* must have diverged from a common stock in comparatively recent times. They add further: "The observations that we have been able to make on the nest containing both forms strongly incline us to the view that, although their differences are apparently 'specific,' there is a direct genetic relationship between them and that they may be regarded as races of one and the same species. . . . We conclude,

therefore, *that the old austriaca queen was the foundress of the nest, and that both the rufa and austriaca form are her offspring.* . . . As regards the precise relationship between *V. austriaca* and *V. rufa* we believe that the former represents the ancestral stock of the latter, because *V. rufa* shows distinctly more tendency to vary, while the rarity and discontinuous distribution of *V. austriaca* suggest that it is the older form. . . . Moreover, as all the workers of these wasps are clearly referable to *V. rufa,* it seems that *V. austriaca* points us back to a time in the history of the race before the worker had become differentiated from the queen." The authors believe that, if their view be established, the development of *rufa* offspring from *austriaca* parents would be a very striking instance of "discontinuous variation," as the structural differences between the two wasps are quite sufficient to warrant "specific" distinction in the ordinary sense of the term.

Unfortunately the facts on which Carpenter and Pack-Beresford base their theory are very feeble, and they can just as well be explained by the ordinary inquiline theory.

I have given at length the opinions held by different writers, because I believe that the discovery of *V. austriaca* in North America may, perhaps, furnish some evidence to support one or another of the preceding theories. In fact the sudden appearance of this species in the New World is in itself well worthy of study. It is not likely that this wasp has been overlooked so many years in this country, for several of the larger collections which I have examined do not contain a single specimen of it. It is therefore most probably a recent immigrant from Europe. However, the capture of 3 ♀♀, in very fresh condition, in two different localities, makes it improbable that these specimens were imported as adult insects or even in the pupal stage. I am rather inclined to believe that the species is already in some way connected with one of the American wasps. No supposition as to the nature of these relations can be made at present. As seen above, direct observation showed in Europe that *V. austriaca* is associated with *V. rufa,* but the latter insect has never been found in the Eastern United States.

BIBLIOGRAPHY.

R. du Buysson. Monographie des Guêpes ou *Vespa. Ann. Soc. entom. France,* LXXII, 1903, pp. 260–288.—Ibid., LXXIII, (1904), 1905, pp. 485–556 and 565–634.

G. H. Carpenter and D. R. Pack-Beresford. The relationship of *Vespa austriaca* to *Vespa rufa. Entom. Mo. Magaz.* (2), XIV, 1903, pp. 230–242, Pl. IV.

J. Giraud. Hyménoptères recueillis aux environs de Suse, en Piémont, étc. *Verh. k. k. zool. bot. Ges. Wien,* XIII, 1863, pp. 11–46.

E. Holmgren. Entomol, Tidskr. II, 1883, pp. 60 and 115.

F. Morawitz. Ueber *Vespa austriaca* Panz. und drei neue Bienen. *Bull. Soc. Impér. Nat. Moscou,* XXXVII, 1864, pp. 439–449.

J. Pérez. Notes sur les Vespides. *Actes Soc. Linn. Bordeaux,* LXIV, 1910, pp. 1–20.

J. E. Robson. *Vespa austriaca,* a Cuckoo-Wasp. *Science Gossip* (N. S.), V, 1898, pp. 69–73.

E. Saunders. On the relationship of aculeate inquilines and their hosts. *Entom. Mo. Magaz.* (2), XIV, 1903, pp. 272–274.

O. Schmiedeknecht. Ueber einige deutsche *Vespa-Arten. Entom. Nachricht.,* VII, 1881, pp. 313–318.

D. Sharp. *Vespa rufa* + *austriaca. Entom. Mo. Magaz.* (2), XIV, 1903, pp. 297–299.

TWO NEW SPECIES OF CEBRIO (COL.).

BY CHARLES SCHAEFFER, Brooklyn, N. Y.

Cebrio antennatus new species.—Castaneous, head black or piceous, antennæ, legs and underside paler. Head moderately densely punctate; labrum emarginate; mandibles as in *bicolor;* last two joints of maxillary palpi nearly equal in length; antennæ rather strongly serrate, reaching to about basal fourth of elytra, third joint about half as long as fourth, last joint elongate and feebly constricted. Prothorax transverse, sides almost straight, rather feebly converging towards apex, hind angles feebly divergent, surface moderately coarsely, not densely punctate. Elytral striæ rather feebly impressed; intervals nearly flat and moderately densely punctate. Prosternal process nearly as wide between the coxæ as in *bicolor.* Abdomen finely, not closely punctate; last ventral more densely punctate than the other segments, apex entire and broadly rounded. Length 17 mm.

Arkansas (coll. Dietz).

This species is closely allied to *C. bicolor* from which it differs in having longer antennæ, entire last ventral segment, which is