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GRAPHIC PRESENTATIONS OF ENTOMOLOGICAL FACTS:

BY HARRY B. WEISS, NEW BRUNSWICK, N.J.

In reading over various entomological publications, one is impressed by the growing tendency of authors to present their facts where possible, in a graphic manner. In support of this statement, it is only necessary to recall in various publications, the many charts showing curves of insect activity of one sort or another. There are many entomological authors, however, who have not adopted this forward step and in support of this, one has only to remember the numerous tables of figures so often to be found.

Many readers, when they arrive at a page containing detailed information in the form of printed tables, experience a sinking sensation and unless they are especially interested in the insect or activity in question, they are inclined to pass hurriedly over this part and seek a summary if one is to be found. It is realized, of course, that many entomological facts cannot be treated graphically, but on the other hand, many can but are not and to those who are not in the habit of using illustrative charts wherever possible in their publications, this paper is intended as a slight suggestion along such lines.

Much time and money is expended in the collection of entomological data and unless this material is presented in a clear and interesting manner, the maximum amount of benefit will not be secured. Not only is time saved for the reader by graphic presentations, but the facts are put before him in such a manner that they appeal to him more strongly, he remembers them better and it is less possible for him to draw wrong conclusions when quantitative facts are placed before him in accurate proportions. Such presentations do not as a rule require as much space as printed words. They do require more work of the author, but if the data are worth

collecting at all, they are certainly worth presenting in a manner likely to convince the reader, thereby obtaining the desired results.

The scope of this paper is purely suggestive and the following figures are of the simplest. If one starts only to think of the best way to present his facts, various graphic methods will suggest themselves to him and by placing himself in the position of the readers he is trying to reach, he can decide upon the best method to use. Graphic methods are used by banking houses, corporations, railroad companies, statisticians, engineers and many others in business and professional occupations, and there

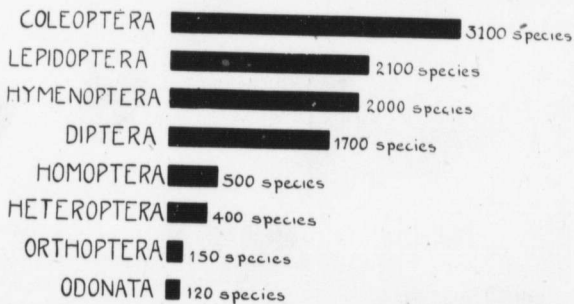
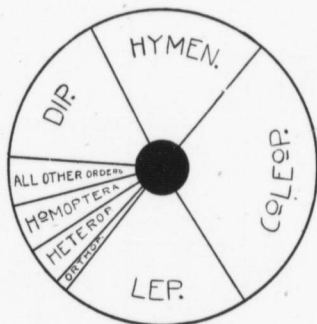


Fig. 29.—A comparison of New Jersey's Insect Orders.

is no reason why all entomologists should not use them wherever possible.

Figure 29 is a graphic comparison of the number of species of insects in some of the orders in New Jersey. Figure 30 is a similar comparison in which each order is represented by the sector of a circle. The bar method as shown in figure 29 is by far the most preferable. It is easier to read and the figures in round numbers at the right hand ends of the bars give the reader a chance to test the accuracy of the comparisons. All titles should be as full as possible and in large enough type to be easily read. Figure 30 is an example of the direct opposite of this. Many entomologists simply number their figures and have an explanation of the plate

at the end of their paper, and worse still is the practice of having the explanations scattered throughout the text. In many instances there is no real reason why the explanation and the figure



10630 SPECIES FOUND IN NEW JERSEY

Fig. 30.

should not appear on the same page. An author fails to realize that all readers do not share his burning interest in the question treated, and unless he can command their attention, sometimes in spite of themselves, he is likely to lose their interest.

Figure 31 is a bar method of comparing percentages. An illustration of this sort is easily read, and the reader can grasp readily the fact that 48 per cent. of the species of insects in New Jersey feed on vegetation and that 16 per cent. are predatory, and so on. The words "on vertebrates" should have been replaced by "injurious to vertebrates," as the former phrase is somewhat misleading. The shading of the large sections of the bar might also have been made more dense, to bring them out better. A chart of this kind is much more effective than a mere printed statement of the facts. Many readers do not grasp printed figures easily, and if you desire to reach this class you must visualize the facts for them.

Figure 32 needs practically no explanation. It is simply a graphic method of placing figures or amounts before a reader and

making them easy to compare. This chart would have been more effective and useful if the figures showing the actual amounts spent in the states had been placed at the ends of the bars, and if

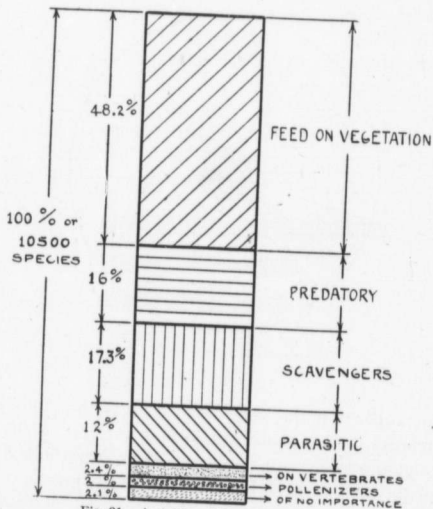


Fig. 31.—Activities of New Jersey Insects.

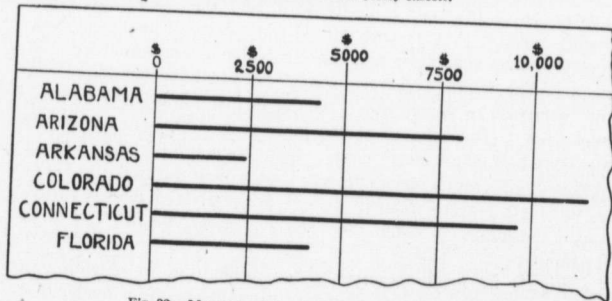


Fig. 32.—Money spent for entomological activities in 1912.

the figures in the horizontal scale were at the bottom. No importance should be attached to the amounts shown on this chart. They were taken from Prof. P. J. Parrott's paper in the Jour. Econ. Ent., Vol. 7, p. 57, simply for the purpose of illustration and should not be used without reference to Prof. Parrott's article.

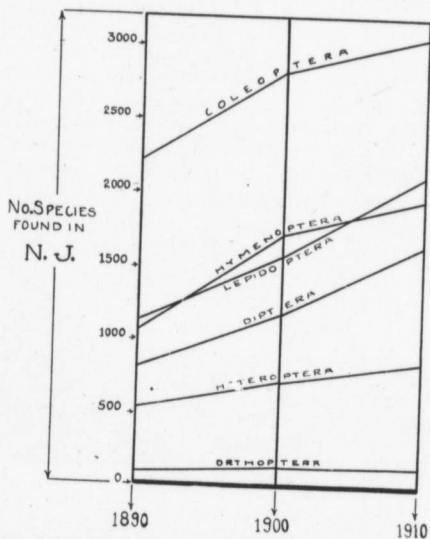
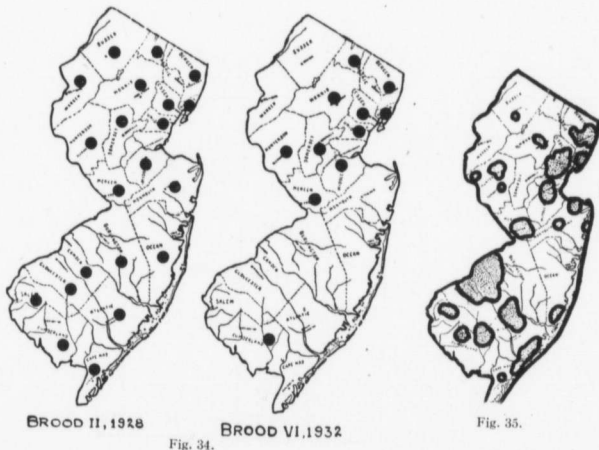


Fig. 33.—Additions to insects of New Jersey during 20 years (showing growth).

Figure 33 shows the growth, by means of comparative curves, in the knowledge of New Jersey's insects from 1890 to 1910 in ten year periods, this information having been obtained from Smith's *Insects of New Jersey*. The Coleoptera and Hymenoptera have run along somewhat parallel with respect to the number of additional species discovered during the twenty years from 1890 to 1910, and the largest part of this growth took place from 1890 to 1900. The Lepidoptera and Diptera show a steady upward trend, and the Heteroptera also, but at a slower rate. In charts

where the factor of time is considered, the earlier year should always appear at the left, and all vertical scales should read upward.

Figures 34 and 35 show map representations, which are common and convenient ways of charting certain kinds of information. Figure 34 illustrates the distribution by counties of two broods of



the Periodical Cicada in New Jersey. Distribution information should always be placed before a reader in a graphic way, as only in such a way can he grasp and visualize the material as a whole. Where necessary, the detailed printed information can accompany the chart, but it should never be used alone if one expects to convince the reader. Figure 35 shows the distribution of the nursery stock which entered New Jersey from other states during the fall of 1916. In order to bring the localities out more clearly, the dotted areas have been surrounded by heavy black lines. Both figures 34 and 35 are incomplete as to titles, which have been omitted purposely to show the ineffectiveness of such a procedure.

A good thing to remember in making graphic presentations and one which is often disregarded by entomologists, especially in their efforts to show the differences in yields between sprayed and unsprayed fruit trees by means of comparative drawings, is to have the presentation read from one dimension only and not to use areas and volumes which are so easily interpreted wrongly when quantities are represented. Inasmuch as many entomologists are familiar with curve plotting, no mention need be made of this method here, except to advocate its greater use. As stated before, this brief paper is merely suggestive, as are also the illustrations, which are not to be taken as examples, inasmuch as they are far from perfect. For a complete treatise on this subject, one is referred to "Graphic Methods for Presenting Facts" by Willard C. Brinton, published by the Engineering Magazine Company (New York City), a copy of which will be exceedingly useful to the entomologist who desires to present his material where possible in a convincing manner.

SOME PYRALID NOTES.

BY WM. BARNES, S. B., M. D. & J. MCDUNNOUGH, PH.D., DECATUR, ILL.

In a recent number of the *Insecutor* (Vol. V, pp. 69 *et seq.*) Dr. Dyar has given some valuable critical notes on the Pyraustids and other Pyralids as listed in our Check List; one of our purposes in publishing this list was to elicit just such new records from our North American fauna as Dr. Dyar gives; without published records species indigenous to the territory embraced in our list may long remain unlisted, known only to a few individual curators or workers, and we trust that others who have further new records may be prevailed upon to follow Dr. Dyar's example.

We are also pleased to adopt Dr. Dyar's references of several of our apparently new species to older names given to West Indian or Central and S. American material; based as they are on a study of the large collections from this territory in the National Museum they may be presumed to be correct; we had already expressed the hope (*Contr. II, (6) p. 223*) that workers more favourably situated than ourselves would endeavour to align our names with those from more southerly points, and Dr. Dyar's efforts in thus

straightening out the synonymy are, therefore, to be commended; such work is instructive, not destructive.

With a few of Dr. Dyar's references we cannot wholly agree and offer the following notes in this connection.

Genus *Egesta* Rag.

Dr. Dyar has apparently not referred to Ragonot's original separation of the genus *Egesta* from *Homophysa* Led. (*Glaphyria*, Hbn.) which was made in his "Classification des Pyralites p. 24" and seemingly overlooked by Hampson in his later Classification. Ragonot separates the species *renalis* (the spelling later corrected to *reniculalis*, l. c., p. 213) and *eripalis* from the other species of his *Homophysinae* on the strength of veins 10 and 11 being *separate* and not *stalked*; this character is entirely disregarded by Dr. Dyar who bases his separation of the genera *Egesta* and *Glaphyria* solely on the length of the maxillary palpi. *Smyphysa* Hamp. (type *sulphuralis* Cram.) calls for the same venation as does *Egesta*, and for this reason was listed by us as a synonym; this may be incorrect and will need verification by a study of the type species from Brasil. In any case the genus *Egesta* must be used for our North American species, and in order to avoid any further confusion regarding its status we would specify the type as *reniculalis* Zell.; further subdivision of the two genera may be necessary when the length of the maxillary palpi of the various species is taken into consideration, but according to the primary division on the strength of veins 10 and 11 being stalked or separate we believe our arrangement will hold. The North American species of the genera *Glaphyria*, *Egesta* and *Lipocosma* (as listed by us) form a group which must probably sooner or later be separated from the *Pyraustinae* entirely; careful study will doubtless bring further structural details to light and lead to a more satisfactory grouping of the species, but until this can be done and done thoroughly we prefer to adhere to the general grouping as indicated.

Sameodes adipaloides G. & R.

Dr. Dyar believes that this name should be given varietal rank and would apparently apply it, as has generally been done, to a smaller, suffused form found in the Northern Atlantic States.

The only type of the species which we have been able to find is in the American Museum Collection, a ♂ from Pennsylvania, and this type unfortunately does not bear out the above conception but, although in poor condition, is clearly a straight synonym of *lealis* Wlk. The original description of *adipaloides*, especially the statement that the ground colour is a "rather bright clear yellow" would seem to show that the author's conception of the species is correctly illustrated by this type; on the other hand the figure given of a ♀ specimen (Tr. Am. Ent. Soc. I, Pl. II, fig. 19) rather points (except in ground colour) in the other direction, but as this figure is not a photograph certain inaccuracies may possibly be laid to the door of the artist. Whether, therefore, the identification of *adipaloides* should be based on the existing type, which would appear authentic, or on the figure is a delicate point for specialists to wrangle over; if the view supported in our list be correct then a varietal name may be necessary for the *adipaloides* of various authors, but we prefer to leave the matter to Dr. Dyar's judgment rather than propose a new name with the prospect of being accused later of rushing into print and overburdening the synonymy.

***Diasemia (Metasia) elegantalis* Warr.**

Dr. McDunnough when last at the British Museum, carefully examined Warren's type and compared it with specimens he had brought with him; we have a note stating that the British Museum series was mixed, and that Warren's type was in poor condition but was evidently the same species as that described later by Fernald as *argalis*; this is also borne out by Warren's description which states that the reniform is large and filled with lilac-gray; the type localities for both species are California and we have not seen the species from any locality outside of this State. The other species considered by Dr. Dyar to be *elegantalis*, following an erroneous determination of Prof. Fernald's, occurs in Arizona and is apparently nameless. We venture to describe it as follows:

***Diasemia disputalis*, sp. nov.**

Very similar to *elegantalis* Warr. but the ground colour of

primaries paler, the orbicular and reniform filled with rather shiny whitish and the latter smaller and much more constricted centrally, being almost divided into two equal triangular spots; beyond the t. p. line is a faint silvery band in costal portion of wing and a broader bluish patch between the bend and inner margin; the fringes are smoky in basal half, whitish outwardly. The secondaries are paler than in *elegantalis* with only faint, smoky suffusion outwardly and an obsolescent postmedian line. Expanse 20 mm.

Habitat.—Palmerlee, Ariz.; Tuscon, Ariz. Three ♂'s, 3 ♀'s. Types, Coll. Barnes.

***Pyrausta orphisalis* Wlk.**

Our note regarding the type says that it is close to *generosa* G. & R., so that it may very well equal *ochosalis* Dyar as suggested by Dr. Dyar; in our list we kept the name separate for want of further verification, believing that a name wrongly sunk in the synonymy is more likely to be overlooked than a synonym wrongly standing as a species.

***Cornifrons pulveralis*, Warr.**

Our note, after studying the type of this species and that of *simalis* Grt. side by side, says that the former is more even gray on primaries, with a less oblique t. a. line and with the secondaries paler; we are not at all sure that Dr. Dyar is correct in regarding the two as simply forms of one species; his action without further evidence than a study of Warren's description might at least be characterized as premature.

***Macrotheca interalbicalis* Rag.**

Our identification of this species as figured by us in Contr. I, No. 5, Pl. III, fig. 9 has been confirmed by a comparison of specimens with Ragonot's type in Paris; it would seem, therefore, that *vulnifica* Dyar (1917, Ins. Menst. V, 83) will fall as a synonym. Ragonot's figures of both this species and *baccalis* are distinctly poor; it is very probable that *vicarilis* Dyar will become a synonym of this latter species; the reference is, however, not absolutely certain but should be kept in mind.

A NEW GENUS AND SPECIES OF COCCIDÆ.
(HEMIP.; HOMOP.).

BY G. F. FERRIS, STANFORD UNIVERSITY, CALIFORNIA.

Stomacoccus, new genus.

Coccidæ, referable to the tribe *Xylococcini* of the subfamily *Margarodina*, characterized, as are the other members of the subfamily, by the presence of legs in the first larval stage, the loss of these appendages in succeeding larval stages of the female, at least, and their reappearance in the adult female. Differing from any of the other members of the subfamily by the presence of mouth-parts in the adult female. Intermediate larval stages without an anal tube.

Type of the genus, *Stomacoccus platani*, n. sp.

Stomacoccus platani, n. sp.

Adult female 1.6 mm. long (on slide), of elongate form, with nearly parallel sides. In life of a deep yellow colour, without waxy secretion except for the fluffy ovisac in which the eggs are placed. *Antennæ* set close to the extreme anterior margin of the body with their bases nearly or quite touching, seven-segmented, the first segment large and stout, the second segment short and broad, the remaining segments becoming successively narrower and longer than the second with the seventh nearly as long as the first. *Legs* well developed, the anterior pair somewhat stouter than the others. Tarsal claw with at least six knobbed hairs arising near its base. *Body* apparently with no dorsal setæ, but with a pair of slender setæ at the base of each coxa and a median pair of such setæ on each ventral segment of the abdomen. *Pores* of wax-glands relatively few, concentrated toward the posterior end of the body, simple, surrounded by a chitinous ring. *Anal* opening on the dorsum of the last abdominal segment, very small, surrounded by a simple, chitinous ring. Eight pairs of spiracles present, two on the thorax and one on each of the first six abdominal segments.

Larva at first with legs and antennæ, the latter five-segmented, then losing these appendages and assuming a regularly oval form having much the appearance of some insect's egg. In life, of a

deep yellow or light brown colour, entirely devoid of secretion except for a few dorsal waxy filaments. Length of fully grown larva .5 mm. (on slide). Segmentation indistinct. Anal opening on dorsum at a slight distance from the posterior margin of the body, simple as in adult, without an anal tube. Tracheal system as in adult.

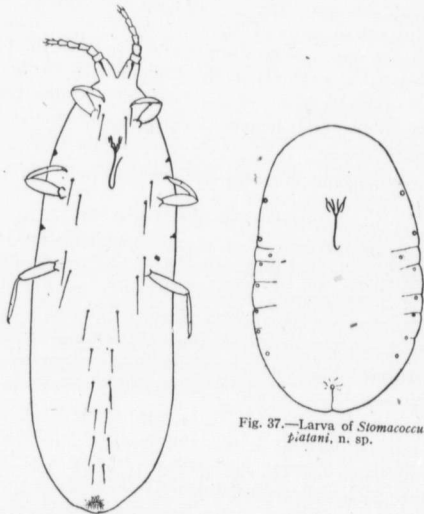


Fig. 36.—Adult female of *Stomacoccus platani*, n. sp.

Fig. 37.—Larva of *Stomacoccus platani*, n. sp.

Adult male apterous, entirely devoid of waxy secretion, of a deep yellow colour. Antennæ 10-segmented. Eyes simple.

Male pupa enclosed within a loose sac.

Male prepupa with mouth-parts, legs and antennæ, the latter very short and stout, apparently eight-segmented. General form much like that of adult female. The earlier larval stages of the male have not been recognized and it is not known if there is an encysted stage, such as recorded by Hubbard and Pergande for the male larva of *Xylococcus betulae* Hub. and Perg.

Types.—Holotype, an adult female, allotype and paratypes of adults and larvæ in the collection of the Department of Entomology of Stanford University. Paratypes in the collections of Mr. H. S. Smith and Mr. E. O. Essig. Type locality, Stevens Creek, Santa Clara County, Calif.

Host and distribution.—On leaves, branches and trunk of *Platanus racemosa* (sycamore), Pasadena, Calif., and Stevens Creek, Santa Clara Co., Calif.

This is the only species of *Margarodina* as yet recorded in which the mouthparts are retained in the adult female, a fact that seems amply to justify the naming of a new genus. The adult female appears, aside from the possession of mouth-parts, to approach most closely the genus *Steingelia* Nasonow, a genus

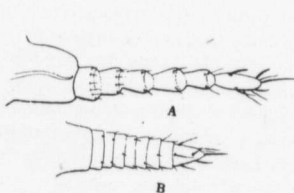


Fig. 38.—A.—Antenna of adult female of *Stomacoccus platani*, n. sp. —B—

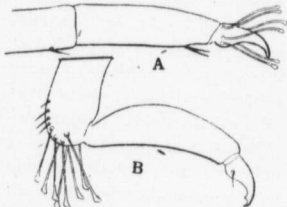


Fig. 39.—A.—Tarsus and portion of tibia of adult female of *Stomacoccus platani*, n. sp. —B.—Tarsus and part of tibia of adult female of *Kuwania quercus* (Kuw.).

of two species, one of which, *S. gorodetskia* Nass., occurs in Russia (host not recorded) and the other *S. brittanica* (Green) on birch in England. The latter species was referred by its author to the genus *Kuwania* Ckll., but it is obviously not very closely related to the type species, *K. quercus* (Kuw.) as cotype specimens of the latter before me show, the most significant differences being in the structure of the legs. Whether it is a synonym of *S. gorodetskia* Nass., as suggested by Sasser in his Catalogue of Recently Described Coccidæ for 1915, can hardly be determined without knowledge of the larval forms which is lacking in the case of both these species.

Credit for the discovery of the species here described is due Dr. A. G. Smith, of Pasadena, who forwarded specimens to Mr.

H. S. Smith, of the State Commission of Horticulture of California. These specimens were forwarded to Mr. E. O. Essig and received from him by the author. Upon its appearing that the species was new Mr. Essig and Mr. H. S. Smith resigned their rights to it, and Mr. Smith procured an additional supply of material. To these gentlemen are due the fullest thanks for their kindness. A search by the author then revealed the species in the vicinity of Stanford University, a region that still continues to yield new forms and records in spite of years of assiduous collecting on the part of numerous workers.

The life history has been followed for but a short time, but this is sufficient to indicate its general course. The insect occurs either on the bark or on the leaves, probably passing the winter on the former and then going out to the leaves. The presence of adult males and females, mingled with all the immature stages, on leaves scarcely a month old indicates that the life cycle is quite short. The immature stages are attached solely by the beak and are entirely exposed either upon the under side of the leaves or upon the bark. The adult females seek the protection of bark scales when present but may form their ovisacs in the open, sometimes remaining even partially within the exuvium of the preceding stage although they are quite active. The males are very active and have been observed apparently attempting to copulate with females that were still in the appendageless state.

SOME SENSORY STRUCTURES IN THE APHIDIDÆ.

BY A. C. BAKER, WASHINGTON, D. C.

During the writer's studies on aphids he has had occasion to notice certain sensory structures on the wings and legs of these insects. These structures vary in the different groups, and since scarcely any references to them appear in the literature of the family the writer here records some of his observations. The pores on the legs are recorded in technical descriptions of species of Chermes, but those present on the legs of insects in other genera and on the wings appear not to be referred to in descriptions. Vickery* has mentioned the presence of pores on the legs. No experiments

*Rept. of State Ent. of Minn., 1907-08, p. 178.

have been conducted by the writer to indicate the nature of these organs, but they appear in structure quite similar to the sensoria of the antenna in the genus *Aphis*. They are small circular or oval structures composed of an outer rim and a middle pore-like centre. Each organ is often surrounded by an irregular or oval area which is differentiated from the surrounding chitin. The organs occur near the base of the wings on the thickened origin of the subcosta and radius, scattered along the area between these veins and on the trochanters and bases of the femora. None seems to be present on other portions of the legs. The species examined are arranged under their respective genera.

Genus *Lachnus*.

Besides the presence of many small pores near the base of the femur in species of this genus, larger ones, more or less tuberculate are sometimes also present in *ponderosa* Wms. (fig. 39) and *L.* sp. (fig. 40). *Curvipes* Patch (fig. 41) does not seem to possess any of these large pores. Another species (fig. 32) shows a broken group. Members of this genus also possess usually a group of small pores near the base of the hind wing as in *curvipes* (fig. 42) and *ponderosa* (fig. 43).

Genus *Essigella*.

Essigella californicus Essig. does not possess the group of small pores present in species of *Lachnus* examined, but the femora are provided with only two moderate sized ones near the base (fig. 44).

Genus *Symydobius*

S. oblongus Heyden seems to have none of these organs upon the wings. There are three or four however upon the femur, and about the same number upon the trochanter (fig. 20).

Genus *Myzocallis*

Members of this genus as well as other members of the tribe, have as a rule only a few pores situated at the base of the femur, for example, *M. alnifolia* Fitch (fig. 47) and *M. bella* Walsh (fig. 48). They have no definite group on the wings but sometimes a few scattered pores on the subcosta.

Genus *Drepanaphis*.

D. acerifolii Thos. possesses a few small pores upon the subcosta. On the femur there are usually two large pores which are

very distinct (fig. 31). They are more prominent upon forms taken in the summer than in the spring forms.

Genus *Pterocomma*.

All the species of this genus show the same character of these organs. There is a large group of very small pores close to the base of the femur. *Populifoliae* Fitch (fig. 33) and *smithiae* Mon. (fig. 34) show very compact groups. *Salicis* L. (fig. 35) shows numerous pores upon the trochanter and a group of nine or ten near the base of the fore wing (fig. 36). *Bicolor* Oest., (fig. 37) has a similar group upon the femur.

Genus *Trichosiphum*.

One species of this group has been examined and it possesses one large pore near the base of the femur (fig. 46).

Genus *Aphis*.

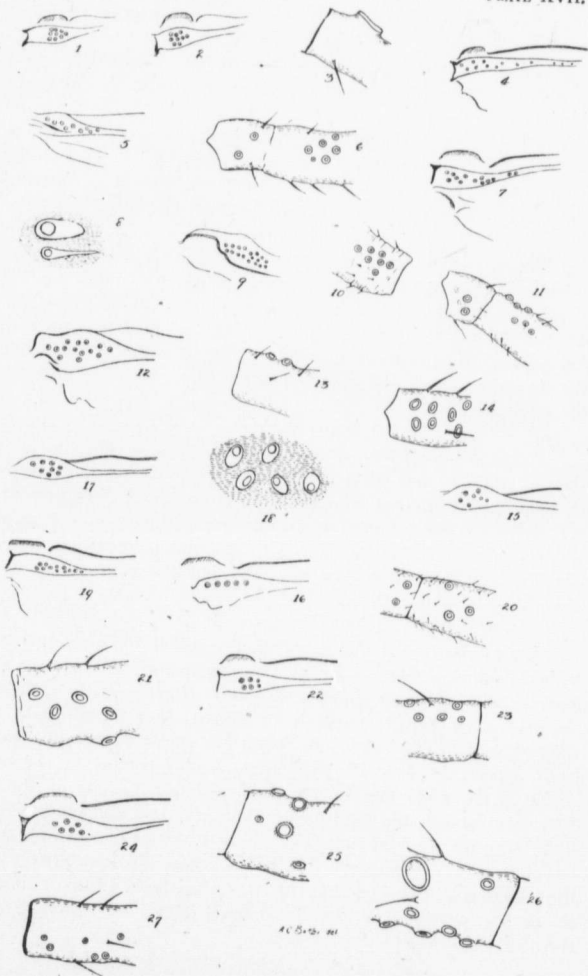
There is considerable variation met with in this genus. Most species have two or three of these organs at the base of the femur. *A. coreopsidis* Thos. (fig. 21) has a group of four or five at the base of the femur. *A. gossypii* Glover (fig. 32) is quite similar as is also *A. viburnicola* Gill (fig. 45). *A. madiradicis* Forbes shows a group near the base of the fore wing (fig. 22) and a group of four or five at the base of the femur. *A. middletoni* Thos., shows a group near the base of the fore wing (fig. 24), and about five near the base of the femur (fig. 25). It will be remembered that these last two species are subterranean. *A. maidis* Fitch, shows one of the deepest pores seen on any species (fig. 26). This huge pore is, however, not present on every specimen. The same thing is sometimes met with in species of *Lachnus*.

Genus *Myzus*.

Myzus cerasi Fab. shows one or two pores at the base of the femur, and *M. plantaginis* Fab., has a group of about four near the base of the hind wing (fig. 28).

Genus *Macrosiphum*.

M. circumflexum Buckton, possesses a scattered group of about six small pores on the femur (fig. 27). None is found upon the wings, or if so a few small ones along the subcosta. *M. ambrosiae* Thos., has one pore at the base of femur and a few minute ones along the subcosta of the wing.



SENSORY STRUCTURES IN APHIDS (p. 378).

Genus *Toxoptera*.

T. graminum Rond. possesses three or four large pores at the base of the femur quite similar to those met with in the genus *Aphis*.

Genus *Rhopalosiphum*.

R. rhois Mon. possesses about six pores at the base of the femur but these are considerably scattered (fig. 29). Another species examined possesses four near the base (fig. 30).

Genus *Anoecia*.

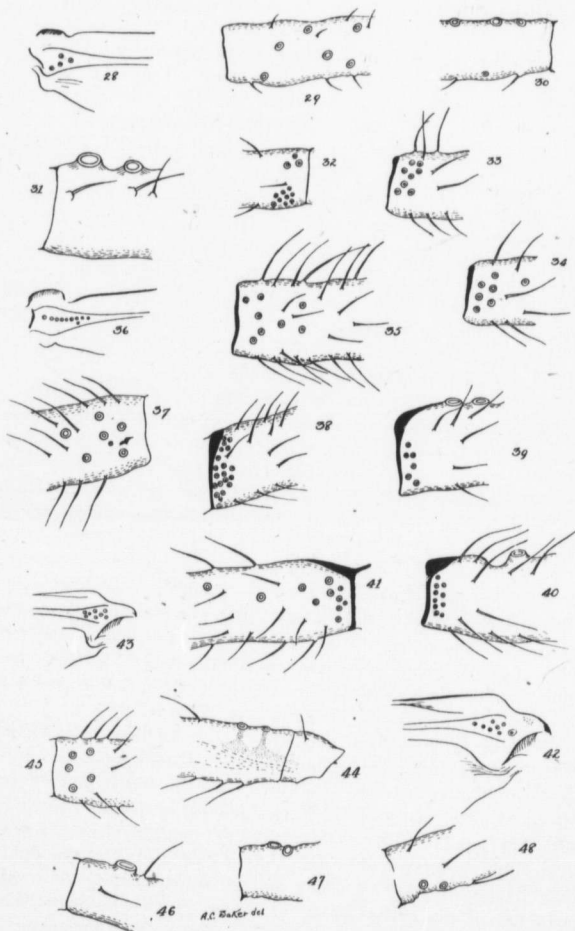
Two species of this genus *querci* Fitch., and *corni* Fab. were examined. Fall migrants were used in both cases. Both showed about the same group of six to ten near the base of the fore wing, but the organs of the femur are different. *Querci* Fitch shows a row of four or five extending about one-quarter of the way along the segment, whereas *corni* gave a group of six or seven near the base (Fig. 14).

Genus *Eriosoma*.

E. americanum Riley shows a group of three to nine pores at the base of the fore wing (Fig. 17). These are surrounded by irregularly shaped areas (Fig. 18). There are about three present, usually at the base of the femur and usually three at the base of the hind wing. *E. pyricola* B. & D., has a group somewhat larger near the base of the fore wing (Fig. 19), and some four or five also along the subcosta.

Genus *Prociphilus*.

Several species of this genus were studied and they proved to be all quite similar as far as these organs are concerned. *P. bumulae* Sch., possesses a group of about 18 pores at the base of the hind wing (Fig. 9) and a few scattered along the subcosta of the fore wing. The base of the femur has another group of about eight pores (Fig. 10). *P. pyri* Fitch is very similar to *bumulae* as far as the wings are concerned, there being a group of about 15 at the base of the hind wing. The group on the femur is a little more scattered in *pyri* (Fig. 11) and several are seen on the trochanter. *P. imbricator* Fitch has a group of about fifteen at the base of the hind wing (Fig. 12), and a scattered group of about six on the proximal end of the femur. There are also two or three near the base of the fore wing.



SENSORY STRUCTURES IN APHIDS (p. 378).

Genus *Thecabius*.

Thecabius affinis shows a large group arranged in more or less of a row near the base of the fore wing. Two or three only are present near the base of the femur (Fig. 13).

Genus *Pemphigus*.

Several species of this genus were studied and they all showed a considerable number of pores. *P. populicaulis* Fitch has a series of nine or ten at the base of the hind wing (Fig. 5), and about three on the fore wing. The base of the femur in this species is armed with a group of five or six and two or three are present on the trochanter (Fig. 6). Another species of this genus taken in Colorado shows a similar group, but about a dozen are present on the fore wing (Fig. 7). These are surrounded by oval or elongate transparent areas (Fig. 8). The individuals of this second species were taken underground.

Genus *Colopha*.

C. ulmicola Fitch possesses a group of five or six in an even row near the base of the fore wing (Fig. 16).

Genus *Hormaphis*.

H. hamamelidis Fitch, possesses a series of about a dozen small pores. Scattered near the base of the wing none was observed on the legs.

Genus *Phylloxera*.

Two species of this genus were examined, *caryæcaulis* Fitch and *castaneæ* Hald. Both showed the same character of the grouping of the pores. These occurred near the base of the fore wing in a rather compact group, *caryæcaulis* (Fig. 1) and *castaneæ* (Fig. 2). The legs seem to show no small pores, but some specimens of *castaneæ* possess one large pore (Fig. 3).

It will be seen from the foregoing tabulation that species living underground and those inhabiting galls possess upon their wings more of these structures than the free-living solitary forms. In fact many of the latter have none upon the wings at all. This applies also to those present upon the legs. Species living underground possess them, as a rule, in more abundance than their near relatives which are not subterranean. This will be noted in the genus *Aphis*. In some genera, however, such as the genus *Lachnus*, the aerial forms have these structures in quite large numbers on the legs.

NEW COLEOPTERA. VII.

BY H. C. FALL, PASADENA, CAL.

In view of the possible appearance in the not distant future of a synopsis of the North American species of *Conotrachelus*, it is thought best to present at this time descriptions of two new species, which have been drawn up for some time. With these are submitted descriptions of what appear, with present light, to be five new species of *Ceutorhynchus*. It is rather remarkable that four of the five were taken at the same place—Aweme, Manitoba—and all in the same month, by Mr. Norman Criddle, who has sent them to me for determination. Types of all the above are in my collection.

CONOTRACHELUS SCH.

***Conotrachelus biscaynensis*, n. sp.**

Form approaching that of *anaglypticus*, but with the prothorax somewhat wider and the elytra a little less robust. Colour piceous, the beak and tibiae dark rufous; vestiture consisting of rather narrow to linear appressed scales, mostly brownish fulvous in colour and irregularly dispersed, with a few, usually broader, creamy white scales aggregated in very small spots, mostly along the elytral costae. Head coarsely punctate, with a small, inconspicuous frontal fovea; beak about two-fifths the length of the body, polished and very sparsely, finely punctate apically, lightly sulcate at sides posteriorly; antennae inserted at apical third. Prothorax a little wider than long, sides parallel and straight in about basal half, thence a little oblique nearly to the apical constriction; surface coarsely, densely cribrate punctate, median line imperfectly and incompletely carinate. Elytra one-half wider at base than the thorax, sides feebly sinuate for a short distance at base, becoming widest at about basal third, thence arcuately narrowing to apex; striae punctures rather coarse, intervals 3, 5, 7, 9 acutely carinate throughout. Mesosternum not protuberant; metasternum grossly punctate; first ventral similarly, coarsely but still more sparsely so, following segments broadly smooth and polished at middle, punctate only at sides, last segment unmodified. Femora obscurely annulate and unidentate.

Length 4.1 mm.; width 2.2 mm.

November, 1917

Biscayne, Florida, May 14. (Hubbard and Schwarz). A single specimen, probably a female, is before me. By LeConte's table it would fall near *germinatus*, but it does not at all resemble the latter. In general aspect it is very similar to *floridanus*, but is less elongate and with very differently punctured ventral segments.

***Conotrachelus obesus*, n. sp.**

Form of *anaglypticus* but with a relatively wider thorax; piceous, vestiture not well preserved, consisting, so far as visible, of very small, short, appressed dirty white scales or squamiform hairs on the elytra, and short squamiform setae within the coarse punctures of the prothorax. Head densely punctate, more coarsely so in front at the base of the beak, the latter stout, not longer than the prothorax, carinate and sulcate as in *anaglypticus*. Prothorax slightly broader than long, sides parallel and nearly straight in basal two-thirds, surface very coarsely, densely cribrate punctate, median line not carinate, but with a short, narrow, smooth line behind the middle, and two short, parallel raised lines or crests in front. Elytra five-eighths wider than the prothorax, three-tenths longer than wide, with striae of coarse punctures; intervals 3, 5, 7, 9 acutely carinate, the carinae of the third and fifth abruptly interrupted before the middle, but not at all so posteriorly. Mesosternum moderately coarsely punctate, protuberant in front. Ventral segments opaque, rather coarsely but not very densely punctate. Legs stout, annulate; femora with a stout, triangular tooth and a small denticle.

Length 5 mm.; width 2.8 mm.

Georgia.—A single example of unknown sex. It is impossible to say from the type whether the elytra when in perfect condition, are as completely clothed as in *anaglypticus*, but it seems probable that this is the case, as the two species are closely allied in most respects. The present species is larger than *anaglypticus*, which differs notably by its non-interrupted elytral costa.

CEUTORHYNCHUS GERM.

***Ceutorhynchus echinatus*, n. sp.**

Moderately broadly oval, convex, piceous, sides of elytra gradually brunnescent, legs dull rufous, elytra conspicuously

tuberculate and hispid. Antennæ brownish piceous, scape and basal joint of funicle pale, base of club also paler and subglabrous; funicle 6-jointed, second joint a little shorter than the first, fully twice as long as wide; third joint three-fourths as long as the second; fourth, fifth and sixth subequal, each a little shorter than the third and slightly longer than wide; club as long as the preceding four joints, ovate-pointed. Head coarsely, densely cribrate punctate, a short occipital carina; beak rather stout, as long as the prothorax, striate basally and densely, coarsely punctate and hispid throughout; antennæ inserted slightly beyond the middle. Prothorax about one-fifth wider than long, sides parallel in basal third, broadly constricted in front, apex a little more than one-half as wide as base, apical margin scarcely sinuate at middle, median sulcus narrow, moderately deep posteriorly, evanescent in front, lateral tubercles small but acute, vestiture of intermingled fine white and blackish setæ, the former less erect, the latter bristling but more or less recurved, and with small patches of elongate, appressed white scales at the hind angles at base of median sulcus. Elytra about as wide as long, sides feebly rounded and subparallel basally; striæ moderate, intervals each with a single series of strongly elevated, shining tubercles, which are acute when viewed laterally, but with transversely arcuate outline when viewed from behind, each bearing at its summit a long, blackish, erect but recurved seta. The surface is also clothed sparsely throughout with shorter, more inclined white hairs; a short linear patch of white scales at the base of the suture. Body beneath coarsely, densely punctured, the sternal side pieces albo-squamose, the ventral segments with intermixed, whitish scales and erect, dark hairs, the former predominating at the sides. Legs moderate, the femora armed with a very small acute tooth; unguis teeth approximate, and very nearly as long as the claws.

Length 2.5 mm.; width 1.5 mm.

Aweme, Manitoba, Sept. 25, on *Heuchera hispida* (Criddle). The type is a male, having all the tibiae strongly unguiculate, and the last ventral with a rather shallow median fovea, with its lateral margins somewhat elevated posteriorly.

This remarkable little species does not in all respects look like a *Ceutorhynchus*, but I am unable to refer it elsewhere. It may be placed near *sulcipennis* and *decipiens* for the present.

Ceutorhynchus invisus, n. sp.

Oval, convex, black, thinly clothed above with appressed, hair-like scales, grayish to pale brownish in colour, rather inconspicuously condensed in a narrow, basal, sutural spot, and at the base of the pronotal sulcus, and arranged on the elytral interspaces in two or three somewhat irregular series; the scales of the elytral striae are just visibly coarser and more uniformly whitish. Antennae entirely piceous, funicle 7-jointed, funicular joints gradually shorter, the second scarcely twice as long as wide, inserted at the middle of the beak (σ^7). Beak very little longer than the prothorax, striate and punctate basally, more sparsely punctured and shining apically. Prothorax one-fifth wider than long, moderately narrowed and constricted anteriorly, front margin entire, median line sulcate, lateral tubercles small, obtuse, surface shining and densely, coarsely punctate. Elytra across the humeri four-ninths wider than the prothorax, scarcely one-fourth longer than wide, gradually narrowed from the humeri, intervals rugose, nearly flat, twice as wide as the striae, declivity with some acute granules. Body beneath more closely clothed with broader grayish white scales. Legs moderate, femora toothed, claws with an acute basal tooth rather approximate to its fellow.

Length 2.35 mm.; width 1.4 mm.

Aweme, Manitoba, Sept. 23. (Criddle).

The type is a male, having the last ventral distinctly foveate, the sides of the fovea not elevated, the four posterior tibiae distinctly unguiculate.

Using Dietz' table of groups, one is uncertain whether to refer this species to the *subpubescens* or *sulcipennis* group, since the vestiture is neither dense, nor very sparse. Blatchley and Leng unite these two groups in their own Group "A," and by their table the present species would seem to fall between *marginatus* and *sulcipennis*, differing from the former by its smaller size and shorter basal tooth of claws, and from the latter, among other characters, by the less deeply sulcate elytra with much less rugose intervals.

Ceutorhynchus omissus, n. sp.

Oval, black, opaque, clothed not densely above with short,

whitish, piliform scales, which become broader and more numerous in the median thoracic sulcus and along the base of the thorax, also obscurely so at the base of the elytral suture. Antennae piceous, second funicular joint elongate, the third about two-thirds as long as the second. Beak slender, arcuate, serially punctate at sides basally, finely punctulate and shining above and apically, the punctures showing a tendency to unite longitudinally. Antennae (♀) inserted slightly behind the middle. Head closely punctate. Thorax moderately transverse, gradually narrowed from the base, broadly constricted apically, anterior margin feebly subsinuate at middle, punctuation dense, moderately coarse, median line distinctly impressed, lateral tubercles small. Elytra about one-fourth longer than wide, widest across the humeri, gradually narrowed posteriorly, rather finely striate, intervals twice as wide as the striae, rugose, each with a double line of appressed piliform scales; declivity with some acute granules. Body beneath closely, coarsely punctate, each puncture bearing a more or less elongate white scale; last ventral with a rather shallow, median fovea. Legs rather slender, femora unarmed, last tarsal joint projecting a distance subequal in length to the lobes of the preceding joint, claws with an acute basal tooth subapproximate to its fellow.

Length 2.4 mm.; width 1.3 mm.

Aweme, Manitoba, Sept. 23, (Criddle).

This species belongs to the *convexicollis* group, and may precede *mutabilis*, from which and *ovalis* it differs in its narrow, piliform vestiture.

***Ceutorhynchus moznettei*, n. sp.**

Oblong oval, moderately convex, piceous, vestiture above consisting of small, not densely placed, brownish piliform appressed scales, with broader white scales condensed in a baso-sutural spot, and in the pronotal sulcus; a few similar scales along the basal margin of the elytra, about the elytral apex and scattered singly very remotely over the elytral disk; body beneath rather densely grayish squamose. Antennae piceous, inserted just perceptibly beyond the middle of the beak; funicle 7-jointed, second joint slender, but little shorter than the first, fully three times as long

as wide, and subequal to the next two. Head densely punctate, front concave, vertex finely carinate. Beak moderate, striate and punctate as usual. Prothorax moderately transverse, sides arcuately subparallel basally, surface densely punctate, median channel distinct, deeper behind, lateral tubercles obtuse. Elytra distinctly longer than wide, broadly arcuately narrowed posteriorly; striae fine; intervals broad, flat, each with three or four more or less irregular series of small, hair-like scales. Legs moderate, thighs unarmed, feebly annulate with whitish scales. Claws with a rather small but acute basal tooth.

Length 2.9 mm.; width 1.75 mm.

Corvallis, Oregon, (Moznette).

The type is a male, having the last ventral distinctly foveate, and the middle and hind femora unguiculate.

This species must be placed near *mutabilis* Dietz. The latter is a smaller species, with coarser, less appressed vestiture, the broader scales of the upper surface much more numerous.

Scutellorhynchus convexipennis, n. sp.

Oval, black, moderately shining, thinly clothed above with short, white appressed hairs which are somewhat coarser on the elytra, where they are disposed in nearly single series on the intervals, as well as in the striae. Antennae entirely piceous, funicle 7-jointed, first and second joints subequal in length, following joints gradually shorter. Beak rather slender, evenly arcuate, shining, sparsely punctate and lightly striate at sides basally; more sparsely, finely and irregularly punctate above and apically; antennae inserted at about the middle (♀?). Head densely, evenly punctate. Prothorax coarsely, densely punctate, the punctures round and nearly in mutual contact; base much wider than the apex, sides parallel in nearly basal half, broadly constricted apically, anterior margin not emarginate, lateral tubercles small, acute. Elytra sub-oval, strongly convex, two-sevenths wider than the prothorax and a little more than one-fourth longer than wide, widest at basal fourth; striae moderate, intervals a little wider than the striae, only slightly convex, surface feebly rugose, some small, acute granules on the declivity. Body beneath coarsely, closely punctate, each puncture bearing a white scale, the scales a little

broader and more approximate on the sternal side pieces. Legs rather slender, femora not toothed, terminal joint of tarsi projecting a distance rather less than the length of the lobes of the preceding joint; claws simple.

Length 1.8 mm.; width .9 mm.

Awenic, Manitoba, Sept. 8, (Criddle).

A small species belonging to the *squamulatus* group of Dietz, in which it may best follow *persimilis*, though not agreeing closely with any species of the group. The small size and lack of true scales on the upper surface distinguishes it from all but *albopilosulus*, which differs in its erect, coarser vestiture among other characters.

LECTOTYPES OF THE SPECIES OF HYMENOPTERA
(EXCEPT APOIDEA) DESCRIBED BY ABBÉ
PROVANCHER.

BY A. B. GAHAN AND S. A. ROHWER, BUREAU OF ENTOMOLOGY,
WASHINGTON, D.C.

(Continued from page 336.)

Coccophagus brunneus. Type.—Yellow label 1384. 2nd Coll. Pub. Mus., Quebec. Badly glued.

Coccophagus compressicornis. Type.—Harrington Coll.

Coccophagus pallipes. Type.—Yellow label 1389; blue 783(s). 2nd Coll. Pub. Mus., Quebec. Head gone.

Coleocentrus mellipes. Type.—Not located.

Coleocentrus quebecensis. Type.—Not in Pub. Mus., Quebec., unless under *C. pettiti* Cress.

Coleocentrus rufus. Type.—Female, yellow label 456. 1st Coll. Pub. Mus., Quebec.

Copelus paradoxus.—See *Helorus*.

Copidosoma pallipes. Type.—Harrington Coll.

Crabro aciculatus. Type.—Female, yellow label 813. 2nd Coll. Pub. Mus., Quebec. Male, allotype, without label.

Crabro niger. Type.—Female, blue-green label 852(s), yellow label 1660. 2nd Coll. Pub. Mus., Quebec.

Crabro 4-maculatus.—See *C. 4-punctatus*. Type the same specimen.

- Crabro 4-punctatus.** Type.—Female, yellow label 807. 2nd Coll. Pub. Mus., Quebec. See *C. 4-maculata*. See Fauna p. 654 and table 653, both names used.
- Cratospila aciculata.** Type.—No specimen. Pin with name label. 2nd Coll. Pub. Mus., Quebec. Probably returned to collector.
- Cratospila brevicauda.** Type.—Female, yellow label 1273. 2nd Coll. Pub. Mus., Quebec. Lacks apex of left flagellum.
- Cratospila caudata.** Type.—Female, yellow label 606. 2nd Coll. Pub. Mus., Quebec. Lacks flagella.
- Cremastus fusiformis.** Type.—Female, yellow label 306. 2nd Coll. Pub. Mus., Quebec. Antennæ broken at apex.
- Cremastus longicaudus.** Type.—Female, yellow label 1050. 2nd Coll. Pub. Mus., Quebec.
- Cremastus mellipes.** Type.—Female, yellow label 363. 1st Coll. Pub. Mus., Quebec. Antennæ broken near middle; fore wings gone; badly pinned. Female. 2nd Coll. antennæ broken.
- Cremastus rectus.** Type.—Yellow label 361. 1st Coll. Pub. Mus., Quebec. Left antenna at scape, left hind leg at coxa and abdomen gone.
- Cremastus royi.** Type.—Female, yellow label 674. 2nd Coll. Pub. Mus., Quebec.
- Cryptus affabilis.** Type.—Female, yellow label 258. 2nd Coll. Pub. Mus., Quebec.
- Cryptus albonotatus.** Type.—Not located.
- Cryptus amblytelarius.** Type.—Female, yellow label 1204. 2nd Coll. Pub. Mus., Quebec.
- Cryptus annulatus.** Type.—Female, yellow label 291. 1st Coll. Pub. Mus., Quebec. Lacks right fore wing.
- Cryptus apicatus.** Type.—Female, yellow label 246. 2nd Coll. Pub. Mus., Quebec. Lacks right antenna.
- Cryptus belangeri.** Type.—Not in Pub. Mus., Quebec, unless under name *C. nuncius* Say. One specimen.
- Cryptus brevicornis.** Nat. Can., Vol. 7, p. 176.—See *Phygadeuon impressus*.
- Cryptus brevicornis.** Of index p. 432. Type.—Female, old rose label 79; yellow label 1202. 2nd Coll. Pub. Mus., Quebec.

- Cryptus canadensis.** Type.—Male, yellow label 248. 2nd Coll. Pub. Mus., Quebec. Lacks left antenna.
- Cryptus certus.** Type.—Not in Pub. Mus., Quebec, unless under name *C. fungor* Nort. Two damaged specimens.
- Cryptus cinctus.** Type.—Male, yellow label 292. 1st Coll. Pub. Mus., Quebec. Lacks apex of right antenna.
- Cryptus circumcinctus.** Type.—Male, yellow label 516. 2nd Coll. Pub. Mus., Quebec. Lacks antennæ.
- Cryptus collaris.** Type.—Male, blue label 121, yellow label 1206. 2nd Coll. Pub. Mus., Quebec.
- Cryptus dubius.** Type.—Not in Pub. Mus., Quebec. Probably returned to collector. (Geddes).
- Cryptus eburneifrons.** Type.—Male, yellow label 517. 2nd Coll. Pub. Mus., Quebec. Lacks most of antennæ.
- Cryptus elongatus.** Type.—Male, yellow label 670. 2nd Coll. Pub. Mus., Quebec. Lacks apices of antennæ and hind legs.
- Cryptus erythropygus.** Type.—Not in Pub. Mus., Quebec. Probably in Harrington Coll.
- Cryptus exilis.** Type.—Male, yellow label 283. 1st Coll. Pub. Mus., Quebec.
- Cryptus flavipectus.** Type.—Not in Pub. Mus., Quebec, unless under *Ichneumon scitulus* Cress.
- Cryptus fletcheri.** Type.—Female, white label 115; also "*Cryptus* ♀ *fletcheri* Prov. Type.—Victoria, V. I." in hand other than Provancher's. 2nd Coll. Pub. Mus., Quebec.
- Cryptus gracilis.** Type.—Not in Pub. Mus., Quebec. Probably in Harrington Coll.
- Cryptus ignotus.** Type.—Male, Harrington Coll. Pink label "P 423." Part of left antenna gone.
- Cryptus imitator.** Type.—Female, yellow label 296. 1st Coll. Pub. Mus., Quebec.
- Cryptus incognitus.** Type.—Blue label 39; yellow label 1205. 2nd Coll. Pub. Mus., Quebec. Lacks left flagellum.
- Cryptus insignis.** Type.—Not in Pub. Mus., Quebec, unless under *Phygadeuon blakei* Cress.
- Cryptus latus.** Type.—Not in Pub. Mus., Quebec, unless under *Phygadeuon occidentalis*.

Cryptus linearis. Type.—Male, old rose label 49. Yellow label 1207. 2nd Coll. Pub. Mus., Quebec. Part of antennæ gone.

Cryptus longicaudus. Type.—Female, Harrington Coll. Pink label "P. 375."

Cryptus mellicoxus. Type.—Male, yellow label 1209. 2nd Coll. Pub. Mus., Quebec. Apices of antennæ gone; abdomen glued on number label.

Cryptus mellipes. Type.—Female, Harrington Coll. Pink label "P. 392." Abdomen wanting, wings except left hind wanting.

Cryptus montivagus. Type.—Female, yellow label 251. 2nd Coll. Pub. Mus., Quebec. Lacks most of flagella.

Cryptus mundus. Type.—Male, yellow label 245. 2nd Coll. Pub. Mus., Quebec. Lacks part of antennæ and right hind leg.

Cryptus nigricornis. Type.—Male, yellow label 294. 1st Coll. Pub. Mus., Quebec. Lacks left antenna beyond 4th joint.

Cryptus nigricoxus. Type.—Male, yellow label 1553. 2nd Coll. Pub. Mus., Quebec.

Cryptus notatus. Type.—Male, yellow label 254. 2nd Coll. Pub. Mus., Quebec.

Cryptus occidentalis.—See *Phygadeuon occidentalis*.

Cryptus ornatus. Type.—Not in Pub. Mus., Quebec.

Cryptus osculatus. Type.—Male, yellow label 281. 1st Coll. Pub. Mus., Quebec. Lacks right flagellum.

Cryptus pentagonalis. Type.—Harrington Coll. Male, pink label 425. Female, pink label 431.

Cryptus perditus. Type.—Male, Harrington Coll. Pink label "P. 442." Lacks antennæ and right fore wing; other wing folded and hard to see.

Cryptus pubescens. Type.—Male, Harrington Coll. Pink label "P. 424."

Cryptus quebecensis. Type.—Not in Coll. unless under name *Ichneumon velox* Cress. Two females. 1st Coll. fair.

Cryptus rectus. Type.—Male, yellow label 1208. 2nd Coll. Pub. Mus., Quebec. Lacks left flagellum.

- Cryptus ruficornis.** Type.—Male, yellow label 519. 2nd Coll. Pub. Mus., Quebec. Some verdigris.
- Cryptus rufoannulatus.** Type.—Female, yellow label 286. 1st Coll. Pub. Mus., Quebec.
- Cryptus rufus.** Type.—Male, yellow label 259. 2nd Coll. Pub. Mus., Quebec. Lacks right flagellum.
- Cryptus scutellatus.** Type.—Male, yellow label 282. 1st Coll. Pub. Mus., Quebec. Lacks apices of antennae some tarsi, and abdomen has been glued on.
- Cryptus segregatus.** Type.—Male, Harrington Coll. Pink label "P. 422."
- Cryptus sericeifrons.** Type.—Female, yellow label 515. 2nd Coll. Pub. Mus., Quebec. Most of flagellum gone. No male in Coll.
- Cryptus signatus.**—See *Phygadeuon signatus*.
- Cryptus sordidus.** Type.—Female, Harrington Coll. Pink label "P. 373." Abdomen off but glued on card.
- Cryptus soriculatus.** Type.—Male, yellow label 697. 2nd Coll. Pub. Mus., Quebec. Lacks right antenna.
- Cryptus spissicornis.** (Addit. 1886, p. 68, not suppl. p. 361). Type.—Not in Pub. Mus., Quebec, unless under *Cryptus crassicornis* of which there is one specimen agreeing with description of *spissicornis*.
- Cryptus spissicornis.** (1888, suppl. p. 361 not Addit., 1886, p. 68). Type.—Female, yellow label 1582. 2nd Coll. Pub. Mus., Quebec.
- Cryptus 3-annulatus.** Type.—Not in Pub. Mus., Quebec. Probably in Harrington Coll.
- Cryptus varius.** Type.—Not in Pub. Mus., Quebec, unless under name *Cryptus atricollaris* Walsh.
- Cteniscus apicatus.** Type.—Male, yellow label 341. 2nd Coll. Pub. Mus., Quebec. Lacks antennae.
- Cteniscus concolor.** Type.—Female, yellow label 321. 2nd Coll. Pub. Mus., Quebec. Under name *Mesoleptus concolor* Cress. Lacks most of antennae.
- Cteniscus crassipes.** Type.—Not in Pub. Mus., Quebec. Probably returned to collector.

Cteniscus rufus. Type.—Public Mus., Quebec. Data from pin not obtained.

Ctenopelma sanguinea. Type.—Pub. Mus., Quebec. Data from pin not obtained.

Cylloceria lemoinei. Type.—Male, yellow label 470. 2nd Coll. Pub. Mus., Quebec. Lacks apices of antennæ.

Cyrtocentrus quebecensis. Type.—Female, yellow label 693. 2nd Coll. Pub. Mus., Quebec. Antennæ wanting beyond third joint.

Dacnusa crassitela. Type.—Female, yellow label 1299. 2nd Coll. Pub. Mus., Quebec. Antennæ broken, right at scape, left at seventh joint.

Dacnusa spatulata. Type.—Female, yellow label 1305, blue label 669. 2nd Coll. Pub. Mus., Quebec. Antennæ broken at tips.

Decatoma basilaris. Type.—Not in Pub. Mus., Quebec, unless under *Isosoma hordei*.

Diastrophus piceus. Type.—White label 3(s); yellow label 1325. 2nd Coll. Pub. Mus., Quebec.

Diastrophus 5-costatus. Type.—Not located.

Dimicrostrophis nigricornis. Type.—Mica point, blue label 759(s); yellow label 1664. 2nd Coll. Pub. Mus., Quebec.

Dineura americana. Type.—Yellow label 639. 2nd Coll. Pub. Mus., Quebec. Lacks left flagellum.

Dinocamptus linearis. Type.—Yellow label 1275. 2nd Coll. Pub. Mus., Quebec. Thorax broken by pin and abdomen crushed out of shape at apex. Sex of type uncertain but believed to be female.

Dinotus acutus. Type.—Yellow label 1385. 2nd Coll. Pub. Mus., Quebec. Badly glued; another specimen in better condition.

Dolichoderus borealis. Type.—Yellow label 1603. 2nd Coll. Pub. Mus., Quebec.

Doryctes atripes. Type.—Female, yellow label 1262. 2nd Coll. Pub. Mus., Quebec.

- Doryctes bæticatus.** Type.—Yellow label 557. 2nd Coll. Pub. Mus., Quebec. Abdomen wanting.
- Doryctes cingulatus.** Type.—Female, yellow label 556. 2nd Coll. Pub. Mus., Quebec. Lacks flagella.
- Doryctes fartus.** Type.—Female, yellow label 558. 2nd Coll. Pub. Mus., Quebec.
- Doryctes macilentus.** Type.—Female, yellow label 559. 2nd Coll. Pub. Mus., Quebec. No male in collection.
- Doryctes pallipes.** Type.—Female, yellow label 1569. 2nd Coll. Pub. Mus., Quebec.
- Echthrus canadensis.** Type.—Female, yellow label 468. 2nd Coll. Pub. Mus., Quebec. Some verdigris.
- Echthrus luctuosus.** Female, yellow label 521. 1st Coll. Pub. Mus., Quebec. Lacks apex of left antenna and abdomen.
- Echthrus nigricornis.** Type.—Male, yellow label 421. 2nd Coll. Pub. Mus., Quebec. Fair.
- Echthrus pediculatus.** Type.—Female, yellow label 937. 2nd Coll. Pub. Mus., Quebec.
- Echthrus provancheri.** Type.—Female, yellow label 1143; printed name label. 2nd Coll. Pub. Mus., Quebec. Considered as Brodie's species. The description was first published by Provancher and there is no indication that it was quoted from Brodie. Provancher indicates that it is his description so the species should, unfortunately, be accredited to Provancher.
- Echthrus rubripes.** Type.—Female, yellow label 1064. 2nd Coll. Pub. Mus., Quebec. Left wings gone.
- Eclytus pleuralis.** Type.—Female, yellow label 410. 1st Coll. Pub. Mus., Quebec.
- Eclytus robustus.** Type.—Female, yellow label 996. 2nd Coll. Pub. Mus., Quebec. Abdomen and part of antennæ gone.
- Elis dives.** Type.—Female, Cat. No. 1971, U. S. Nat. Mus.
- Elis 4-cinctus.** Type.—Male, Cat. No. 1972, U. S. Nat. Mus.
- Emphytus hullensis.** Type.—Harrington Coll.
- Emphytus nigristigma.** Type.—Yellow label 1543; name label "*Nematus nigristigma*." 2nd Coll. Pub. Mus., Quebec. Provancher's catalogue proves this.

Emphytus pallipes. Type.—Female, yellow label 35. 1st Coll. Pub. Mus., Quebec. Specimen without label, paratype.

Ephedrus completus. Type.—See introduction (Aphidiinae).

Ephedrus incompletus. Type.—See introduction (Aphidiinae).

Ephialtes variatipes. Type.—Harrington Coll. teste Davis. Not in Pub. Mus., Quebec.

Epirhyssa clavata. Type.—Female, yellow label 1260. 2nd Coll. Pub. Mus., Quebec. Lacks abdomen and apices of antenna.

Epirhyssa crevieri. Type.—Male, yellow label 388. 2nd Coll. Pub. Mus., Quebec.

Epyris formicoides. Type.—White label "Hull 25-8-84 Rus"; blue label 312; yellow label 1028. 2nd Coll. Pub. Mus., Quebec.

Epyris prolongatus. Type.—Yellow label 744(s). 2nd Coll. Pub. Mus., Quebec. Abdomen gone.

Eriocampa marginata.—See Selandria.

Eriocampa superba. Type.—Female, yellow label 1544. 2nd Coll. Pub. Mus., Quebec.

Erronemus bedardi. Type.—Female, yellow label 658. 2nd Coll. Pub. Mus., Quebec.

Erronemus marginatus. Type.—Female, yellow label 989. 2nd Coll. Pub. Mus., Quebec.

Erronemus tristis. Type.—Female, blue label 594. 2nd Coll. Pub. Mus., Quebec. Left antenna gone.

Eubadizon basilare. Type.—Not located.

Eubadizon californicus. Type.—Female, yellow label 1489. 2nd Coll. Pub. Mus., Quebec. Antennae broken beyond middle, head broken off and mounted on tag.

Eubadizon gracilis. Type.—Female, yellow label 603. 2nd Coll. Pub. Mus., Quebec. One antenna and left hind tarsi broken.

Eucerceris insignis. Type.—Male, white label 77(s); yellow label 1626. 2nd Coll. Pub. Mus., Quebec.

Eucharis gibbosa. Type.—Yellow label 623. 2nd Coll. Pub. Mus., Quebec. Head gone.

Eucoila minor. Type.—Not located.

Eulophus ramosus. Type.—Yellow label 924. 2nd Coll. Pub. Mus., Quebec. Fair.

Eulophus tricladius. Type.—Harrington Coll. Paratype, yellow label 1374; blue label 754. 2nd Coll. Pub. Mus., Quebec. Fair.

Eumenes cinctus. Type.—Female, round disk, yellow label 1643. 2nd Coll. Pub. Mus., Quebec. Poor condition, dirty, etc.

Eumenes crucifera. Type.—Female Cat. No. 1978, U. S. Nat. Mus.

Eumenes flavopictus. Type.—Female, round disk, yellow label 1644. 2nd Coll. Pub. Mus., Quebec.

Eumenes impunctus. Type.—Female, round disk, yellow label 1642. 2nd Coll. Pub. Mus., Quebec.

Euphorus cephalicus. Type.—Male, yellow label 1118. 2nd Coll. Pub. Mus., Quebec. One antenna gone, other showing 8 joints. Poorly tag-mounted.

Euphorus punctatus. Type.—Male, yellow label 991. 2nd Coll. Pub. Mus., Quebec. Badly pinned; head missing.

Euplectrus lucens. Type.—Yellow label 1369. 2nd Coll. Pub. Mus., Quebec. Fair.

Euplectrus mellipes. Type.—Female, Harrington Coll. Antennæ broken, one complete to fourth funicle joint. Paratype.—Yellow label 1363. 2nd Coll. Pub. Mus., Quebec. Two specimens, both badly glued.

Euplectrus viridæneus. Type.—Yellow label 1382; blue 771(s). 2nd Coll. Pub. Mus., Quebec. Fair.

Eurytoma conica. Type.—Harrington Coll.

Eurytoma nigricoxa. Type.—Harrington Coll.

Eustalocerus fasciatus. Type.—Female, blue label 701(s), yellow label 1281. 2nd Coll. Pub. Mus., Quebec. Lacks flagella.

Eustalocerus longicornis. Type.—Female, yellow label 1280. 2nd Coll. Pub. Mus., Quebec. Antennæ and hind tarsi, broken.

Eustalocerus petiolatus. Type.—Female, yellow label 1083. 2nd Coll. Pub. Mus., Quebec. Left antenna, median and posterior legs on left, missing.

- Eustalocerus tauricornis.** Type.—Female, yellow label 566. 2nd Coll. Pub. Mus., Quebec. One antenna gone.
- Euura nigra.** Type.—Yellow label 1538. 2nd Coll. Pub. Mus., Quebec. Another specimen with small, white label "161."
- Euxorides vancouverensis.** Type.—Female, yellow label 1556. 2nd Coll. Pub. Mus., Quebec. Lacks flagellum.
- Exenterus canadensis.** Type.—Not located. Allotype.—Female, yellow label 953. 2nd Coll. Pub. Mus., Quebec.
- Exenterus hullensis.** Type.—Male, Harrington Coll. Pink label "P. 581." Allotype.—Female, blue label 468, yellow label 1238. 2nd Coll. Pub. Mus., Quebec.
- Exetastes albitarsis.** Type.—Female, yellow label 376. 1st Coll. Pub. Mus., Quebec.
- Exetastes brevipennis.** Type.—Not in Pub. Mus., Quebec, unless under *Mesostenus promptus* Cress.
- Exetastes clavatus.** Type.—Not located.
- Exetastes matricus.** Type.—Female, yellow label 531. 2nd Coll. Pub. Mus., Quebec. Right antenna at scape, left before the middle, anterior and median legs on right at coxæ gone.
- Exetastes rufofemoratus.** Type.—Female, yellow label 310. 2nd Coll. Pub. Mus., Quebec.
- Exetastes rufus.**—See *Ceratosoma*.
- Exochilum nigrum.** Type.—Female, yellow label 279. 2nd Coll. Pub. Mus., Quebec. Left antenna gone, right broken at apex, hind tarsi broken at third joint.
- Exochus rufomaculatus.** Type.—Female, blue label 562. 2nd Coll. Pub. Mus., Quebec.
- Exolytus politus.** Type.—Female, yellow label 365. 1st Coll. Pub. Mus., Quebec.
- Exyston marginatum.** Type.—Not in Pub. Mus., Quebec. Probably returned to collector.
- Exyston variatus.** Type.—Male, yellow label 324. 2nd Coll. Pub. Mus., Quebec.