





INDIGENOUS  
FOSSORIAL HYMENOPTERA.

*On the 1st of May will be published, uniform with the present Work,*

## THE BEES OF GREAT BRITAIN;

Containing the Description and Synonymy of all the Species hitherto discovered to be Natives of this Country, as far as the Metropolitan and Provincial Cabinets to which the Author can obtain access, will admit; with remarks on their Habits and Economy.

By W. E. SHUCKARD, M. E. S.

LIBRARIAN TO THE ROYAL SOCIETY.

†† The expenses of publication being very great, and the sale of works of this description limited, the Author will feel obliged by those Entomologists, who may wish to have the above, signifying their intention to him prior to the 15th of March, as the number printed will be influenced by the probability of the extent of the sale. Part I., containing the *ANDRENIDÆ*, will be first published.

ESSAY  
ON THE  
INDIGENOUS  
FOSSORIAL HYMENOPTERA;

COMPRISING  
A DESCRIPTION OF ALL THE  
BRITISH SPECIES OF BURROWING SAND WASPS  
CONTAINED IN THE  
METROPOLITAN COLLECTIONS;

WITH  
THEIR HABITS AS FAR AS THEY HAVE BEEN OBSERVED.

By W. E. SHUCKARD, M. E. S.  
LIBRARIAN TO THE ROYAL SOCIETY.

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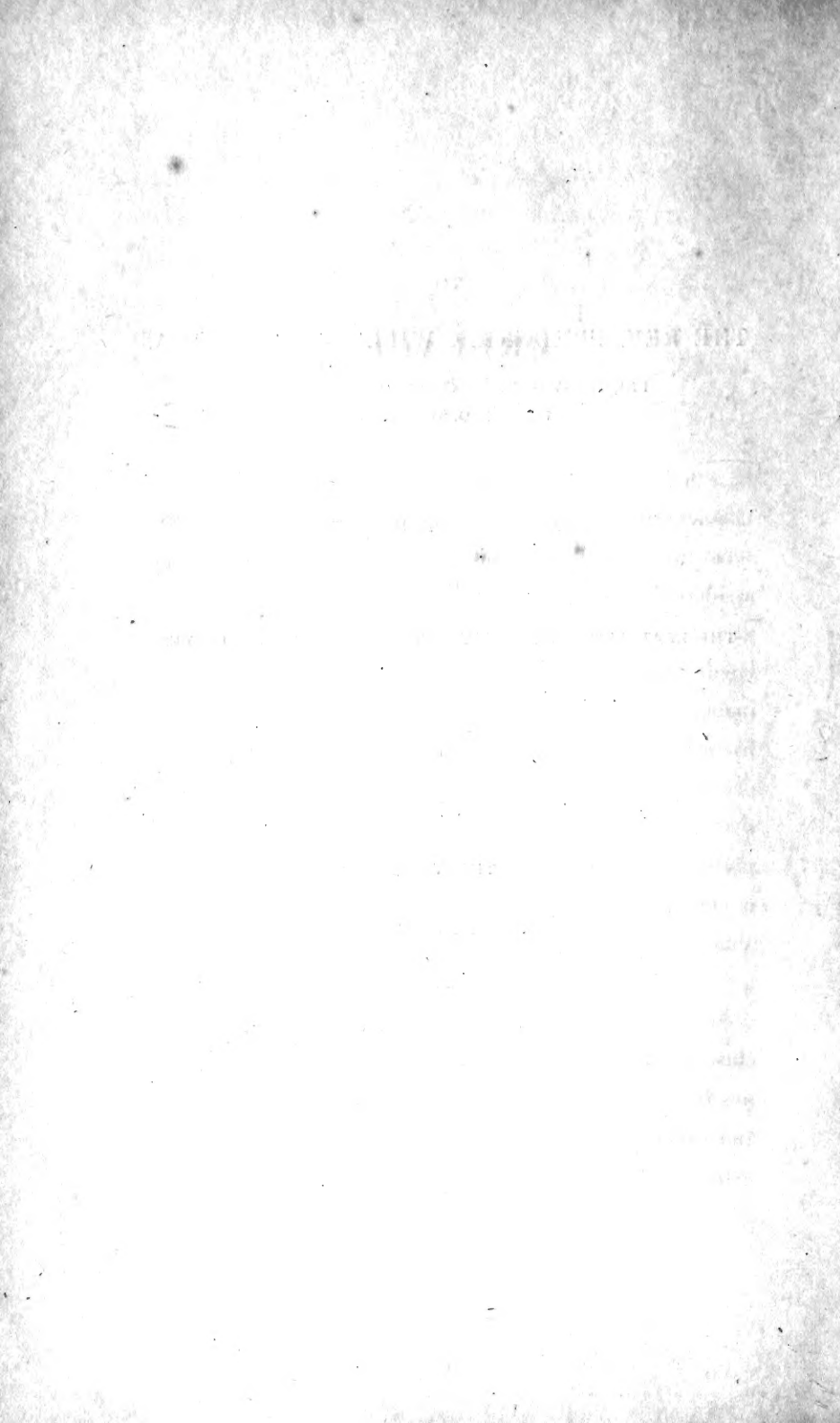


TO  
THE REV. FREDERICK WILLIAM HOPE, M. A.  
PRESIDENT OF THE ENTOMOLOGICAL SOCIETY,  
F. R. L. Z. G. SS. &c. &c. &c.  
AS  
A TRIBUTE OF RESPECT  
FOR  
THE ZEAL AND LIBERALITY WITH WHICH HE CULTIVATES,  
AND PROMOTES THE CULTIVATION,  
OF  
THE SCIENCE OF ENTOMOLOGY,  
THIS ESSAY  
IS DEDICATED  
BY  
THE AUTHOR.

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## PREFACE.



It is with diffidence that I present myself before the Entomological public; but having paid much attention for some time past to the aculeate Hymenoptera, and having assiduously collected our native species, a collection has grown upon my hands, and observations have accumulated upon their habits and distinctions, that I have been induced to yield, perhaps too easily, to the persuasions of friends to present British Entomologists with the fruits of my labour,—truly a labour of love,—with the hope that it may incline them to look about, and give some portion of their zeal to a tribe of insects which merit it certainly as much as many others that have hitherto almost exclusively absorbed their attention.

My own success within a limited district justifies the conclusion that our country is much richer in these insects than has been suspected. I feel convinced that when distant and different localities are well searched many decidedly new species will be discovered, as I have seldom examined

a Cabinet, with any pretension to possess this tribe, without finding something new. This is an additional inducement to collect, for the stimulus to exertion is increased by the prospect of making discoveries, thereby extending our knowledge of Nature and of her productions. Every species is an important link in the great chain, without which its consecution is necessarily broken. The futility of all theories of natural arrangement is therefore self-evident, until we shall possess an absolutely perfect knowledge of species; for even the most elaborate, and best conceived, may, by the introduction of a new creature, be totally subverted.

Another inducement to attend to these insects may be urged in the exceedingly interesting nature of their economy, and the peculiarities of their structure. Amongst them exclusively, at least with but one exception, we find social tribes governed by a peculiar polity, and they appear generally gifted with an instinct very superior to that of the adjacent groups: and with respect to their structure, as in the works of the Omniscient Artist, the means are always fitted to the end, it consequently follows, that where we find a complexity and peculiarity of habits and economy, we invariably discover the organs adapted.

This work, however, embraces only a portion of the tribe. I originally intended it to comprise solely the fossorial

Aculeates of Latreille, but possessing all but one of the yet discovered indigenous species of the family *Mutillidæ* of the *Heterogyna*, I have been induced to add their description; consequently, to complete the first half of the aculeate Hymenoptera, the *Formicidæ* and the *Vespidæ*,—the first and the last families,—are alone wanting. These I however purpose publishing, accompanied by an English description of the Bees of Great Britain, containing all the discoveries made since the Rev. Mr. Kirby published his admirable ‘*Monographia Apum Angliæ*,’ in 1804. This I hope to accomplish in the course of the spring, and which, in conjunction with the present work, will place in the hands of British Collectors a description of all the aculeate Hymenoptera yet discovered in these islands.

The present work, as the title indicates, contains a full description of all the species of the *Mutillidæ*, and of the fossorial Hymenoptera, known to be inhabitants of Britain, at least as far as they are contained in the Metropolitan Cabinets to which I could have access. To avoid the possibility of mistake, I have given very detailed descriptions, and I trust that I shall render some service to the science by having fully determined several previously very doubtful species. In the *generic* descriptions, I have omitted the cibarial organs, with the exception of the mandibles, and sometimes of the labrum,—other parts, but the wings chiefly, furnishing, for the fossorial tribe at least,

characters much less difficult to examine, and also less liable to vary specifically. The correctness of this mode of distribution is proved by the correspondence of their general habit and of their economy.

To make the book as complete as possible, for I consider every book should be as complete as is possible in itself, I have worked out the synonymy as fully as the materials in my possession would admit: in doing this, I have had occasion frequently to correct the inaccuracies and oversights of my predecessors; but I wish it to be fully understood, that this has been done solely for the sake of the science, and that it was never prompted by illiberal captiousness. My views of synonymy may possibly differ from that of the majority; for I cannot consider a mere citation as a synonym, having frequently detected, when a description was given, that the insect of the author referred to differed from that of the author writing. How is it therefore possible to ascertain the correctness of a reference, when nothing but the latter is given? I have, however, sometimes diverged from the strictness of this rule, when I had no doubt, arising from the collateral evidence of the invariable correctness of the author. The specific *character* I have moulded to my own occasions, it being necessarily variable according to the views pursued, and the specific *descriptions* have always been made from an autoptical examination of native spe-

cimens; but sometimes, when no British specimen of one sex was known, I have inserted the best foreign description in inverted commas, that it may be recognised when found.

I have only further to remark, that as a portion of this book, viz. as far as sheet H inclusive, to page 112, was printed as long back as August, 1835, and the six following pages were then in type, to which no alteration was made upon resuming the work within these two months, all subsequent discoveries, and remarks, upon the insects previously described, are, unavoidably, thrown into an appendix at the end.

In the use of terms, I have almost exclusively restricted myself to those employed by Messrs. Kirby and Spence, unless obliged by paramount considerations to deviate from them; and it is necessary to observe, that all the insects were examined under a lens of a moderately high power, which, as sculpture very generally constitutes the specific distinction, will be found essential to the removal of all doubt as to their identity and determination.

In the drawings of the wings I have endeavoured to give the relative proportions as accurately as possible; but should I have failed therein it is not of much moment, as the course of all the nervures is correctly indicated, and thus a com-

parison of the entire system of the neuration facilitated, which will be found sometimes necessary to detect their differences when resembling. The generic descriptions will, however, at once correct any inadvertent error that may be made, by displaying the combination of characters which corroborate the differences traced in those organs, and which I have selected by preference as their most simple expression.

To add to the convenience of Entomologists, I have given, at the end, two copies of the nomenclature of the genera and species, printed upon hard paper; the one for the purpose of labelling their collections, and the other as an index to their possessions: and I hope I have added to its utility by introducing the sexual signs, for no species can be considered complete with but one sex only.

In conclusion I beg to return my sincere thanks to my numerous Entomological friends, for it is impossible to enumerate them here, both for the facilities they have afforded me in describing the rarities of their respective Collections, and the liberality with which they have contributed to my own; and to my friend Mr. Frederick Smith I am indebted for engraving my plates.



## CONSPICUUS OF THE GENERA.

One submarginal cell	{ confluent with the 2d discoidal ..... { not confluent .....	{ marginal cell slightly appendiculated ..... { .. .. . acuminate and joining the costal nerve at its extremity .....	.....19. OXYHELIUS .....21. CRABRO. .....20. TRYPOXYLON.	
Two submarginal cells	{ one recurrent nerve ..... { two recurrent nerves .....	{ 1st submarginal receiving both recurrent nerves ..... { 1st and 2d submarginal cells receiving each a recurrent nerve ..... { 2d submarginal receiving both recurrent nerves .....	{ anastomosing with the first transverso-cubital ..... { joining the cubital about the middle of the 1st submarginal cell ..... { marginal cell largely appendiculated ..... { second submarginal cell petiolated ..... { apex of the marginal cell parallel with that of 2d submarginal ..... { 2d submarginal not petiolated ..... { apex of the marginal cell extending considerably beyond the 2d submarginal ..... { 3d submarginal quadrate ..... { .. .. . transverse ..... { .. .. . a truncated triangle .....	.....23. CELLA. .....22. STIGMA. .....27. CEMONUS. .....16. DISEIUS. .....15. MISOPHUS. .....4. TIPHA. .....26. PEMPHEBUS. .....25. XYLOCUS. .....24. DIODONTUS. .....8. APORUS.
Three submarginal cells	{ the 1st and 2d, receiving each a recurrent nerve ..... { the 2d receiving both recurrent nerves ..... { .. .. . not petiolated ..... { the 3d and 3d receiving each a recurrent nerve .....	{ .. .. . and petiolated ..... { marginal cell appendiculated ..... { .. .. . not petiolated ..... { marginal cell not appendiculated ..... { 2d submarginal petiolated ..... { 2d submarginal not petiolated ..... { .. .. . nearly linear .....	{ the second petiolated ..... { .. .. . not petiolated, and the 3d apical ..... { 3d submarginal of the usual form ..... { 3d submarginal lunulate ..... { .. .. . not so long as the dorsolum ..... { 3d submarginal petiolated ..... { 3d submarginal not petiolated, but ..... { smaller than the second ..... { of the size of the 2d ..... { larger than the 2d ..... { 3d submarginal having a short pseudo-nerve from the middle of its terminal transverse one ..... { .. .. . either triangular or subquadrate and without the pseudo-nerve ..... { elongate triangle ..... { acuminate at its extremity and joining the margin of the wing ..... { obtuse at its extremity .....	.....29. ALYSON. .....3. METHOCUS. .....18. XANSON. .....17. ASTATA. .....13. IARRA. .....14. TACHITES. .....10. MISCUS. .....9. AMMOPHILA. .....31. ARPACTUS. .....33. MIMESA. .....34. CERCEBIS. .....1. METILLA. .....6. POMPIIUS. .....32. PSEN. .....35. PHILANTHUS. .....11. SPHAEX.
Four submarginal cells	{ the 1st and 3d, receiving each a recurrent nerve ..... { the 2d receiving both recurrent nerves ..... { the 2d and 3d receiving each a recurrent nerve ..... { .. .. . a pseudo-nerve originating from the centre of the 1st transverso-cubital and returning backwards ..... { .. .. . no pseudo-nerve .....	{ .. .. . the second submarginal triangular ..... { .. .. . quadrangular .....	{ .. .. . nearly square ..... { .. .. . oblong .....	.....28. MELLINUS. .....30. GORYTTUS. .....12. DOLICHURUS. .....2. MYRMOSA. .....5. SAYGA. .....7. CEROPALES.

One submarginal cell .....	} confluent with the 2d discoidal..... } not confluent .....	19. OXYBELUS.
		21. CRABRO.
		20. TRYPOXYLON.
		23. CELIA.
		22. STIGMUS.
		27. CEMONUS.
Two submarginal cells .....	} one recurrent nervure .....	16. DINETUS.
		15. MISCOPHUS.
	} two recurrent nervures .	4. TIPHIA.
		26. PEMPHREDON.
	} 1st submarginal r } 1st and 2d subm } cells receiving e } recurrent nervure } 2d submarginal r	25. XYLÆCUS.
		24. DIODONTUS.
		8. APORUS.
		29. ALYSON.
		3. METHOCA.
		18. NYSSON.
		17. ASTATA.
		13. LARRA.
		14. TACHYTES.
		10. MISCUS.
		9. AMMOPHILA.
		31. ARPACTUS.
		33. MIMESA.
		34. CER CERIS.
		1. MUTILLA.
		6. POMPIIUS.
		32. PSEN.
		35. PHILANTHUS.
		11. SPHEX.
		28. MELLINUS.
		30. GORYTES.
		12. DOLICHURUS.
		2. MYRMOSA.
		5. SAPYGA.
		7. CEROPALES.
Three submarginal cells .....	} the 1st and 2d, receiving each a recurrent n } and petiolated ..	
		the 2d receiving both recurrent nervures ....
	} not petiolated ..	
		the 2d and 3d receiving each a recurrent nervure
	} 2d submarginal r } 2d submarginal } petiolated .....	
Four submarginal cells .....	} the 1st and 3d, receiving each a recurrent n } the 2d receiving both recurrent nervures ..	
		the 2d and 3d receiving a pseudo-nervure
	} each a recurrent nervure	
		no pseudo-nervure

# INTRODUCTION.

## § 1.

A LIST of the most useful books upon this tribe, or to which any reference is made in the following pages; a few words upon the history of these insects since the period at which Mr. Kirby published his “*Monographia Apum Angliæ* ;” an account of their external structure; and a few observations of a more general nature, will not perhaps be thought superfluous here.

## § 2.

- CA. LINNÆUS.—*Fauna Suecica*. Edit. altera. *Stockholm*æ. 1761. 8vo.  
—————*Systema Naturæ*. Edit. 12a. *Holmiæ*. 1766—1768.  
Tom. 3. 8vo.
- CAROLI DE VILLERS.—*Caroli Linnæi Entomologia, fauna suevicæ descriptionibus aucta, &c.* *Lugduni*. 1789. 4 Tom. 8vo.
- CH. DE GEER.—*Memoires pour servir à l’Histoire des Insectes*. 7 Vols. 4to. *Stockholm*. 1752—1778.
- A. J. RETZIUS.—*Car. de Geer Genera et Species Insectorum, extraxit digessit, &c.* *Lipsiæ*. 1783. 8vo.
- J. C. FABRICIUS.—*Systema Entomologiæ*. *Flensburgi et Lipsiæ*. 1775. 8vo.  
—————*Species Insectorum*. *Hamburgi et Kilonii*. 1781. Tom. 2. 8vo.  
—————*Mantissa Insectorum, &c.* *Hafniæ*. 1787. Tom. 2. 8vo.  
—————*Entomologia Systematica emendata et aucta*. *Hafniæ*. 1792—1794. 4 Tom. 8vo. Et *Supplementum*. 1798. 8vo.  
—————*Systema Piezatorum*. *Brunsvigæ*. 1804. 8vo.
- P. ROSSII.—*Mantissa Insectorum*. Tom. 2. 4to. *Pisis*. 1792—1794.
- FR. KLUG.—*Monographia Siricum Germaniæ atque generum illis adnumeratorum*. *Berolini*. 1803. 4to. Cum tab. color.

- C. ILLIGER.—Petri Rossii Fauna Etrusca, iterum edita et annotationibus perpetuis aucta. Tom. secundus. Helmstadii. 1807. 8vo.
- J. L. CHRIST.—Naturgeschichte, Klassifikation, &c. der Bienen, Wespen und Ameisengeschlecht. Frankfurt am Main. 1791. 4to.
- W. KIRBY.—Monographia Apum Angliæ. (Vol. 1. Introductory Remarks.) Ipswich. 2 Vols. 8vo. 1802.
- Transactions of the Linnean Society. Vol. 4. London. 1798. (Ammophila, a new genus of insects.)
- L. JURINE.—Nouvelle Methode de Classer les Hyménoptères. Tom. 1. Geneve. 1807. 4to.
- P. A. LATREILLE.—Histoire Naturelle des Crustacés et des Insectes. Tom. 13. 1805. 8vo.
- Genera Crustaceorum et Insectorum. Tom. 4. 8vo. Parisiis et Argentorati. 1809.
- Nouveau Dictionnaire d'Histoire Naturelle. 2d Edit. 36 Tom. 8vo. Paris. 1816—1819.
- MAX. SPINOLA.—Insectorum Liguriæ species novæ aut rariores, &c. Tom. 2. 4to. Genuæ. 1806—1808.
- OLIVIER.—LATREILLE et LEPELLETIER DE ST. FARGEAU.—Encyclopedie Methodique, partie de l'Histoire Naturelle; Entomologie. Tom. 4—10. 1789—1825. 4to.
- J. C. D. SCHREBER.—Der Naturforscher. St. xx. 8vo.
- G. W. F. PANZER.—Faunæ Insectorum Germaniæ initia. Nurnberg. Fascicul. 110. 1795—1805. 12o.
- Kritische Revision der Insekten-faune Deutschlands. 2e band. Nurnberg. 1806.
- FRANC. DE P. SCHRANK.—Fauna Boica. Tom. 3. 8vo. 1798—1803. Nurnberg, Ingolstadt, Landshut.
- C. A. WALCKENAER.—Memoires pour servir à l'Histoire Naturelle des Abeilles Solitaires qui composent le genre Halicte. 1 Tom. 8vo. Fig. Paris. 1817.
- P. L. VANDER LINDEN.—Observations sur les Hyménoptères d'Europe de la Famille des Fouisseurs. 4to. Bruxelles. 1829.
- J. CURTIS.—British Entomology, or Illustrations and Descriptions of the Genera of Insects found in Great Britain, with figures from nature of the most rare and beautiful species. 11 Vols. 8vo. London. 1824—1835.
- LE PELLETIER DE ST. FARGEAU.—Annales de la Société Entomologique de France. Tom. 1. Prem. Trim. sur le genre Goryte, et Tom. 3. 4 Trim. Monographie du genre Crabro. 1834.
- NEES AB. ESENBECK.—Hymenopterorum Ichneumonibus affinium Monographiæ. Volumen Secundum. Stuttgart et Tubing. 1834.

## § 3.

For the determination of genera, Jurine's work will be found the most useful of all the preceding books, that is to say, as far as it refers to the Fossorial Aculeates. He merits great praise for the application of a system—the utility of which had not been fully recognised by its discoverer either Harris or Frisch—to a tribe of insects which still remained, notwithstanding the labours of Fabricius, Latreille and Oliver, in detail a confused mass very difficult to ascertain with perfect accuracy or satisfaction. The characters derived from the organs of the mouth, made use of by the former writer, are, perhaps, as good and as perfectly distinct as any that could be adopted, were they not in the majority of cases too recondite for easy investigation, exclusive of the excessive labour of inspecting them fully. But we shall even then find the number of their parts frequently the same, differing only in form, and that so slightly that recourse must still be had to external characters to substantiate and confirm them. But when characters are pointed out to us in a group of insects already combined by one still more important, which are so simple, that the first glimpse will inform us, even when we have not the clue of habit\* to guide us, whether an insect be of the same or of a different genus with those with which it is compared, should we not be grateful to the individual who discovered or applied it; and this is due to Jurine. He saw in the neuration of the superior wings of the majority of the Hymenoptera differences, which he found would separate them generically from the circumstance of its assembling together such which perfectly agreed in all

\* This word, in the singular, I always apply to the general appearance, the *facies* of the insect.

other respects. He limited his use of the nervures to those placed beyond the stigma, (pl. 1, fig. 1, s.) and which are dotted in the second figure of the first plate and the spaces or cells formed by them, marked 5, 6, 7, 8 and 9, in the first figure of the same plate.\* The names which he applied to the genera thus distinguished have not been allowed always to stand, owing to the too rigid application of the law of priority, which retained the names of Fabricius and Latreille, &c. to the conglomerate genera they had formed, when their types were subsequently discovered to be identical with any of the insects contained in the genera constructed by him. But this he can well afford, for his fame is permanent. No subsequent discovery has as yet invalidated his system when rigidly applied, although sometimes in exotic genera it derives perspicuity from other external characters, viz. from general habit, the form of the eyes, &c. &c. Latreille's merits have been considerably obscured by the publication of the preceding work, which lent its lustre to all his subsequent performances. St. Fargeau's generic descriptions in the work above mentioned merit great praise, and the introductory remarks of Mr. Kirby will be found exceedingly instructive. For the description of species we must cite Vander Linden. He first has drawn the attention of Entomologists to the value of sculpture as a specific distinction in this tribe, and by means of which the confusion that has hitherto prevailed as to the specific identity or differences of these creatures promises to be removed. Colour has hitherto been resorted to as the best specific character, but it is of so variable a nature in the majority, that I have not found it safe to depend upon: I

\* See below for the detailed nomenclature of the nerves and cells of the wing, which I have extracted from my paper to be published in a forthcoming number of the Entomological Transactions.

have extended Vander Linden's application of sculpture to all the species, and I find it the safest guide to their true determination. The custom has been hitherto to describe the varieties of colour as alphabetical varieties of the species—this plan is extensively adopted by St. Fargeau—but I find it produce less confusion, when very variable, to indicate its latitude in a parenthesis than particularly to describe every distinction, for in those species liable to vary we shall seldom find two that perfectly agree, it consequently tends to engender doubt in the minds of those who have not seen multitudes of individuals as to their specific identity. This plan I have adopted throughout the following work, unless the variations were very marked and very constant, and consequently probably the effect of locality or other influences. After the above named writers, we may instance Christ, Spinola, Rossi and Illiger, as perhaps the most satisfactory describers of species. None could surpass Linné and Fabricius, were they not so brief, which, although sufficing for the paucity of their materials, makes the majority of their species doubtful now that collections have so much accumulated. Olivier is also admirable in detecting the errors of his predecessors, and his laborious works must ever remain monuments to his memory, perseverance, and assiduity. All the authors named above will be found more or less useful; it would be as idle to repeat the list as it would be invidious to give further preference.

It would not be in place, nor can I be expected to enter into an elaborate history of this tribe in a book devoted merely to the description of British genera and species. Without an extensive reference to foreign forms, it would be absurd to attempt it, and as the majority of British Entomologists are barely interested in them, and as it would besides occupy much space, I reserve my notes upon the

subject, as well as my own particular views, for another opportunity. A very few words will give a broad outline of the chief improvements that have been made, which is all that can be required here.

It is to Latreille that we owe the division of these insects into families, which collocate into distinct groups such genera as possess characters in common. It was in his "Precis" that he first sketched this distribution which he has successively remodified in every subsequent work. It is that which he published in his "Familles Naturelles du Regne Animal, 1825," that I follow in the following pages, adapting it to the limits of our genera; but although I do so, it is merely temporary, until I can complete my researches upon the subject, and not because I fully agree in his arrangement. I have adopted the names applied by Dr. Leach to those families, on account of the uniformity of their termination. The comparison of the works of Latreille consequently will show his progression to the present comparatively natural arrangement of them: beyond which he has done nothing to advance this tribe since his establishment of a few genera in his earlier books. The description of species has begun to receive some attention, and I hope that the solid characters laid down by Jurine for the determination of genera, and by Vander Linden for species, will continue to receive the attention pre-eminently due to them. The Comte le Pelletier de St. Fargeau has recently described and subdivided the extensive genus *Crabro*; but the majority of the genera he has separated from it are removed upon much too trivial characters, for there is scarcely a genus which would not equally admit of being broken up in the same spirit of super refinement, and which would tend to generate as much confusion and perplexity as the establishment of genera upon



firm and general principles is intended to remove. I question therefore whether his generic names can be treated otherwise than as synonymes of the genus he has divided. The same observations will also apply to what he has done in the genus *Gorytes*; but the value of his specific descriptions is not at all affected by it. He is the first who has commenced seriously to monograph the materials before him which have been accumulating since Fabricius wrote, since when but little attention has been paid to specific description, unless the insect presented characters which rendered the construction of a new genus imperative. But I must be always understood as implying the exception of Vander Linden, and it must be kept in mind that I speak only of the aculeate Hymenoptera. I could dilate much upon this subject, but as it would lead me wide into the field of exotic Entomology, for the reasons named above, I will here terminate my remarks. I regret that I shall have occasion to differ frequently in opinion from the Comte de St. Fargeau, but when I do so, it is from the strictest conviction of his being in error, and with no other view than to prevent its diffusion; and I therefore trust it will not be misconstrued into any want of due respect for so veteran and able an Entomologist.

#### § 4.

The following generalization of the external structure of these insects I have inserted for the purpose of enabling me to make such remarks as have occurred to me in their investigation, which could not have been well introduced elsewhere, and which I hope will not be entirely without their use.

The HEAD is generally transverse, sometimes wider than

the thorax (*Ammophila*, *Cerceris*), occasionally subglobose, (*Methoca*, *Tiphia*), or large and subquadrate (*Crabro*, *Pemphredon*, &c.), rarely triangular (*Crabro vexillatus*, male), and as rarely armed with a spine beneath the cheek (*Crabro subpunctatus*, &c.), or with an acute one in the middle of the face between the base of the antennæ (*Xylæcus corniculus*); sometimes a longitudinal (*Cerceris*) or triedral (*Psen atratus*) carina in the same situation; or a tubercle to which the antennæ are laterally attached (*Dolichurus*). The EYES are generally oval, sometimes subglobose, frequently prominent, very rarely contiguous (*Astata*, male), the canthus occasionally entering deeply, giving them a kidney shape (*Sapyga*, *Trypoxylon*). The STEMMATA are placed upon the vertex generally in a triangle, which is sometimes very open, forming only a slight curve;\* the posterior pair are nearly confluent or obsolete in *Larra* and *Tachytes*, and they are deficient in the female *Mutilla*. The ANTENNÆ invariably consist of thirteen joints in the male, and twelve in the female.† The bulbous or radicle has been, by mistake,

\* This is one of those anomalies of structure for which, unless it be to constitute a specific distinction, to which it admirably subserves, I cannot account; it is most remarkable in the black species of the genus *Crabro*.

† St. Fargeau, at p. 693 of the Third Volume of the *Annales de la Société Entomologique de France*, doubts this as being general in the aculeate Hymenoptera, and instances *Ceramius* (which I suppose he intends for *Celonites*) and *Masaris*, as having fewer, but all the three genera have decidedly those numbers, which I know positively from ocular demonstration. Mr. Hope's rich cabinet possesses a specimen of the rare genus *Masaris*, which I have had the opportunity of inspecting, and in my own collection I possess the others. I should not here have made this reference to foreign insects, had not St. Fargeau cited them to support his opinion that some male *Crabros* have but twelve, which I can assure him, if he will use a lens of a high power, he will find to be a mistake. I was in doubt myself, until I inspected them in a flexible state, or in recent insects, the two first joints of the clavolet being very closely connected

occasionally counted as one, but as it forms a component part of the scape, and does not articulate with it, it must be necessarily included with it as one. They vary in length in the sexes; they are generally filiform and slightly curved, sometimes much so (*Mutilla*, female, *Tiphia*, female, some of the *Pompili*, females, and *Arpactus*), rarely porrect (*As-tata*, male), and as rarely capitate (*Sapyga prisma*, male), often subclavate (*Sapyga*, *Nysson*, *Mimesa*, *Trypoxylon clavicerum*, *Cerceris*, *Philanthus*), distinctly geniculated in *Mutilla*, *Crabro*, *Pemphredon*, &c.; the joints vary in shape, generally cylindrical, sometimes subarcuate (*Methoca*, male), in the males of some species of *Nysson* the apical joint, and in some *Crabros* the basal joints of the clavolet are emarginate, in some males of the latter also the entire clavolet is occasionally fringed with curled hairs, sometimes merely at its base, and in the latter case it is generally compressed (*C. cribrarius*, *patellatus*). They are usually inserted in the middle of the face, frequently very near the clypeus, sometimes upon a slight protuberance, often approximate but occasionally distant. Their uses have been so often sought, and so vainly hypothesis\* has been heaped upon hypothesis, that my own conjectures it is fruitless to state. They have been considered as organs

together. Some further observations of mine upon this subject will be found below, in the descriptions of those male *Crabros* which have the basal joints of the clavolet emarginate.

\* Mr. Newman's ingenious hypothesis of their fuller development at the expense of the eyes in insects that fly by night, and the great development of the eyes and decrease of the antennæ in those which fly in a bright light, is happily conceived and illustrated in the instance of the *Melolonthidæ*, *Syrphus* and *Libellula*, but it is not supported by our insects, which are invariably lovers of the brightest sunshine, so much so, that if but a transitory cloud flit before the sun, they as suddenly disappear; but still, except in one insect, the male of *As-tata*, they do not entirely contradict his theory, from the position of their eyes being lateral.

of smell, touch and hearing. It is evident they play a most important part in the intercourse of the sexes, for we invariably find them most strongly developed in the male. Observation teaches us that among the ants they communicate *intelligence*;—experiments confirm their service as organs of touch and hearing:—what a complex sense this combination produces!—but I fear their true function will be for ever concealed from us, for it is doubtlessly one to which it is proved by the organ that we do not possess any analogue. Their importance in the economy, particularly of the Hymenoptera, is distinctly proved by the complex apparatus provided for keeping them clean, and placed in the anterior leg, of which I shall speak in detail below. The FACE is generally flat, sometimes slightly convex (the *Mutillidæ*, *Sapyga*), or sulcated (*Crabro*). The CLYPEUS, although never articulated, is sometimes distinctly separated by suture, but very generally by a mere impression, which also is frequently obsolete. It undergoes a great variety of form, but is most generally transverse; frequently emarginate in front, the apices of which are sometimes produced into tubercles (*Oxybelus*, *Diodontus*, some *Cerceris*,) in the latter it is laterally lobate, and has very frequently a longitudinal carina in the centre, which in *Oxybelus* is produced in an aquiline form. In the majority of males, and in the female *Crabros*, it, as well as the face, is covered with a dense silvery or golden pubescence.

I have now arrived at the true oral organs, the investigation whereof Fabricius considered as essentially necessary to the determination of genera, in which he has been much too servilely followed by several eminent men. In the Fossorial group of the aculeate Hymenoptera, experience and Jurine have proved that their examination is of minor importance. I have consequently made no constant use of them in my

generic descriptions, wherein I have only noticed the labrum and mandibles, which sometimes yield a subsidiary character, as in *Diodontus*, *Tachytes*, &c.; but even these might be dispensed with, for the alary system strictly applied will be found to bring together insects of the same habit and economy, or when there is a discrepancy of habit it may be sometimes useful to make it subgeneric. The advantages derivable from the use of external characters are too apparent to require further justification, and the investigation of the cibarial apparatus is of consequence only to the comparative anatomist, to display the gradual divarication of form from an original type; but they will still doubtlessly be deemed of importance to all who wish to make difficult and obscure what nature has rendered so simple and clear. It is very evident that generic subdivisions are extremely artificial, for the leaps nature is thereby caused to make, and the great difference in the value of genera, prove what extensive discoveries we have yet before us, and which, I conceive, when made, and all the created species fully ascertained, that the true system will be found to be neither circular, square, nor oval, neither dichotomous, quinary, nor septenary, but a uniform meshwork of organisation, spread like a net over the universe. But what gaps remain to be filled! We are truly as yet scarcely upon the threshold of the great temple and consequently still remote from the adytum where the veiled statue reposes. We have not yet learnt our alphabet, for species are the letters whereby the book of nature is to be read.

But to prove that I have not neglected what has been unduly considered of so much importance I will insert a few generalities upon the oral organs. They consist of the labrum, mandibles, maxillæ and its palpi, the tongue, and the labium with its appendages. The LABRUM is always

present, although in a state of repose frequently concealed beneath the clypeus; it is very various in form, in *Oxybelus* it is lunulate; in *Pompilus* transverse, rounded in front and slightly emarginate; in *Ceropales* triangular; in *Philanthus* it is laterally reflexed, sinuate anteriorly, with a lobate appendage beneath; in *Cerceris* and *Diodontus* distinctly emarginate; in *Mellinus* transversely quadrate; and in *Pemphredon lugubris* bilobate. In the majority it is anteriorly fringed with long hair, and the general rule is, that when concealed beneath the clypeus it is membranaceous, and only when fully exposed is it horny. The structure of the mandibles will frequently determine their use, as in *Sapyga*, *Pemphredon*, &c. where they are very broad, and armed with several teeth. We thus see their adaptation to the specific purpose of forming their cylindrical cells in wood. Their analogous conformation in the wood-boring bees (*Megachile*, *Saropoda*, &c.) corroborates this conclusion; but still this is not uniformly the case, for in several of the *Crabronidæ*, which are distinctly wood burrowers, the mandibles are merely bidentate at their apex. May not this disparity arise from the different nature of the wood they are instinctively led to form their nests in? for I have always found that the insects with this shaped mandible make their cells in sub-putrescent and soft woods, chiefly decaying willows; but the object of nature in giving to some of the true Fossores such immense arcuate mandibles as we perceive in *Ammophila*, *Sphex*, &c. is less obvious. The only apparent use to which I have observed them applied, is, in the female, to assist her in conveying her prey, and in the male, to seize the female. I have never observed any of the tribe feed with them; in fact their only sustenance, and that taken but rarely, appears to consist of the nectar of flowers. In the instance of *Mutilla* there is a great sexual

disparity in the form of the mandibles, for in the male they are particularly strong, and approach much to those of the genus *Pemphredon*; in the genus *Diodontus* also there is a sexual difference. The processes or teeth are generally apical, yet we sometimes observe them basal internally, as in some *Crabros* and in *Tachytes*; and in the latter genus and *Larra*, &c. there is an external process towards the base. The form which most generally obtains is bidentate, with the exterior tooth the longest; but in some, as in the *Crabros*, it is the shortest; in some however it is unidentate and acuminate at its apex. When closed they are frequently forcipate; they then pass over the labrum, and thus inclose the whole internal cibarial apparatus. The interior PALPI are always four jointed and the exterior six, they vary much in their form both in the genera and species. The TONGUE, which I consider to be that portion of the cibarial apparatus, which is thrust forward to lap the nectar of flowers, or as it is more apparent in the bees, the hairy tube through which they suck it, is in this tribe very variously formed—sometimes indeed it is so short as to be scarcely evident; in *Tiphia*, it is very short and rounded, it is very generally bifid or emarginate with the lateral edges reflected; in *Ammophila*, it is elongate, still bifid, and in closing reflected backwards, which induced Mr. Kirby to consider that this genus ought to come near the bees. This circumstance strongly exhibits a prominent defect of the cibarial system, as it would bring together insects of so great a disparity of habit and economy. In *Crabro*, it is truncated anteriorly and laterally produced, and to this form *Oxybelus* closely approaches. In *Pompilus*, it is trilobate, the lateral lobes having each, near their base, a pilose spot. In *Philanthus*, it is deeply emarginate, and the sides are produced into pilose angles.

The VALVULÆ are variously shaped, generally coriaceous; they form a sheath, or case for the tongue in repose, and it is to them that the exterior palpi are attached, the interior being affixed to the apex of the tube of the tongue (*mentum*, M'Leay).

The comparative investigation of the structure of the THORAX throughout the order of the Hymenoptera, is a subject that well merits strict attention, and which, in its connection with their organs of locomotion, would be rich in its results towards advancing a philosophical knowledge of the order, and more fully determining their natural arrangement.\* Much doubt and confusion still exists upon the subject although we possess two or three essays, which, as far as they go, are admirable in execution. This work being restricted to a small tribe only of the order, it would not be in place, nor is it my intention, to enter into it here: I shall satisfy myself, and I hope my readers, with a few generalities, going only into those parts which are at all dwelt upon in the following pages. I shall consider the organs of locomotion after the general view of the thorax, which, although not the most correct mode of proceeding, is the most convenient to my purpose.

The thorax is generally ovate, seldom cylindrical (*Sapyga*),

\* It is a subject that would require the accompaniment of a series of plates. Mr. Newman will doubtlessly enter into it, but as his treatise is general I fear he will not be able to give it all the space it requires, for the admirers of the other orders have equal claims upon him. Its progressive development should be faithfully recorded, unbiassed by any theory, and nothing should be seen but what absolutely exists. In reference to it the following works will be found useful:—

Burmeister's Manual of Entomology—(a tabular view of the terms used by the several writers at p. 90.)—and the writers to whom he refers.

Jurine, L., Observations sur les Ailes des Hyménoptères. Transactions of the Academy of Turin. Vol. 24. 4to. 1820.



rarely longer than the abdomen (male *Astata*). The COLLAR\* in the first families, is laterally prolonged as far as the origin of the wings, embracing the mesothorax in a semi-circle, it is rarely truncated anteriorly (*Mutilla*, *Sapyga*), and occasionally prolonged into a kind of neck (*Ammophila*, *Miscus*). In the last families it is very narrow and transverse. The clavícula of M'Leay and Chabrier appears to me to be distinct from the TUBERCLE of Kirby. In the thorax of the two insects, which the former author has figured to elucidate his and Audouin's theory, the tubercle is almost obsolete, as is the case in the *Vespadæ* generally, and in all which have the collar extending laterally to the origin of the wings. Its situation also varies with the form of the collar, it is most remote from the wings and most developed in such as have the collar narrow and transverse, and its colour sometimes affords a subsidiary specific character. I consider that it forms a cover or case for the anterior spiracle, the aperture to which varies in the several genera and is always indicated by the cilia or short stiff hairs with which one of its margins is fringed. It is always smooth and shining, frequently coloured, and is, I think, the *corps calleux* of St. Fargeau; it is always attached by one side to the sutural separation from the collar, I suspect it has some slight degree of motion and that it articulates with it. The TEGULÆ also afford frequently a subsidiary specific character, but their colour, as well as that of the tubercles, is not constant; they are very large in the male of *Mutilla*, moderately so in *Tiphia*, and very small in *Pompilus*. But the METATHORAX will be found a more important portion of this division of the body in this tribe,

\* I always use this term with Mr. Kirby, it is synonymous with Burmeister's *pronotum* and well explains the part in this order, the terms of other writers are too circumlocutory.

from its frequently furnishing in its sculpture undeviating specific characters in several genera, wherein colour either affords none or very unsatisfactory ones. I understand it similar to Kirby and Spence, to comprise the whole of the thorax beyond the post dorsolum. It is frequently separated into two divisions, the anterior portion forming a semicircular, triangular or subcordate plate with an elevated margin. It is generally obtuse at its extremity, but occasionally truncated, and then sometimes armed on each side with a spine (*Nysson*, *Alyson*). In *Oxybelus* it has a central curved mucro in its centre at its origin, with a lanceolate process on each side, and it is occasionally pubescent. The MESOSTERNUM has in some species a spine on each side posteriorly, and this not sexual but common to both; the uses of these tubercles and spines is exceedingly difficult to imagine, no satisfactory explanation of them has ever suggested itself to me. Of the organs of locomotion the WINGS must decidedly rank foremost in these insects. I have already shown above their importance in the generic division of this tribe, but it is only a portion of them which has hitherto been thus applied, viz. those nervures marked in dots in the second figure of the first plate of this book, which will be found quite sufficient for all the purposes of British Entomology. In a paper of mine recently read at the Entomological Society, I have examined the distribution of the nervures upon the superior wing and the rules which seem to regulate it. In the nomenclature I adhere to that of my predecessors, unless at all at variance with the course nature seems to have pursued in their structure, which I follow as closely as the clue admits. I refer, consequently, to that paper for the detail of my investigation, and shall retain here merely the names of the parts, to illustrate which, I have added a coloured figure, which shows

the extent and direction of the nervures to which the references are made.

The contour of the wing is formed by—*a.* the *costal nervure*, which forms the *anterior margin*; *b.* the *apical margin*, which has no nervure accompanying it; and *c.* the *posterior margin*, which also is without a nervure—it is along this margin that the little hooklets are placed which connect the superior and inferior wings together in flight. The nervures found upon the superficies of the wing are the following: *d.* the *post costal nervure*; *e.* the *externo-medial nervure*; *f.* the *anal nervure*; *g.* the *transverso-medial nervure*; *h.* the *radial nervure*; *i.* the *cubital nervure*; *k.* the *discoidal nervure*; *l.* the *sub-discoidal nervure*; *m.* the *transverso-cubital nervures*—these vary in number in the genera, from one to three being found; *n.* the *recurrent nervures*—these also vary in number, there being either one or two, in all the British genera there is one; *s.* the *stigma*, which appears to be a dilatation of the cubital nervure. The spaces indicated by numbers show the CELLS or areæ found upon the surface of the wing: 1. the *costal cell*; 2. the *externo-medial cell*; 3. the *interno-medial cell*; 4. the *anal cell*; 5. the *radial or marginal cell*—when this is crossed by a nervure there are either two marginal cells, or the one is appendiculated, according to the situation of the nervure dividing it, whether it be placed towards its centre or its apex; 6—9. the *cubital, or sub-marginal cells*—these vary from one to four according to the number of the transverso-cubital nervures which cross the space enclosed between the radial and cubital nervures: when the latter does not reach the apical margin, the boundary cell is called incomplete; and if either of the transverso-cubital nervures furcate after quitting the radial, the cell enclosed by the fork is called petiolated, as in *Miscophus*, *Nysson*, *Cerceris*, *Alyson*, and

the cubital cells are named in the order of their appearance, counting from the stigma; 10. 11. 12. are the *discoïdal cells*; 13 and 14. the *apical cells*, which are frequently confluent together as well as with the third discoïdal.

The conspectus at the end of this introduction gives a tabular view of the neuration of the wings; but I may be allowed to remark here upon the singularity of one genus only (*Cemonus*\*) receiving both the recurrent nervures in the first sub-marginal cell, and that but two insects (*Stigmus* and *Celio*) have but one recurrent nervure. Only those just mentioned and those which have but one sub-marginal cell, viz. *Oxybelus*, *Crabro*, and *Trypoxylon*, receive the recurrent nervure in the first sub-marginal cell. Three sub-marginal cells seem to be the most prevalent number. I am acquainted with but one sexual disparity in the nervures of the wings, which is the open marginal cell in the females of *Tiphia*, it being closed in the males. The size of the wing is not always in direct connection with the power of flight, but all these insects are rapid fliers, and most active during the greatest heat of the day. In one genus (*Pompilus*) however the wings do not seem always used for flight, for it

\* I know only in this instance, in *Mellinus* and in the exotic genus *Lorrhæum*, Leach (type, *Chlorion compressum*, Fab.), that where more than one sub-marginal cell is present, the second does not receive a recurrent nervure. In *Lorrhæum* and *Mellinus* it is the more remarkable, as it neglects the second to be received by the third; but the former insect is extraordinary in other respects,—it is the only fossorial insect whose tarsi have foot cushions, and the two projecting spines at the apex of its metathorax are singular appendages. The foot cushions would indicate a more fully developed power of walking against gravity, and, consequently, refer to some extraordinary peculiarity in its economy. The approximate group, the *Vespadæ*, have it also. Is it like them social in its habits? I apply Leach's MS. name to this genus instead of Jurine's *Ampulex*; for, notwithstanding what the latter says, there is a great difference in the neuration of the wings if his figure and the *C. compressum* be closely compared together. British Entomologists must pardon me this exotic morsel.

seldom quits the ground, rapidly skipping along, which makes it difficult to capture. The inferior wings are generally narrower than the superior, but in the male *Astata boops* they are wider. The flight of this insect also is singular. It rapidly makes a wide gyration in the air, and returns to settle upon the same clod it started from, and this it will repeat a dozen times in the course of five minutes. It is rarely that these insects, which are so powerfully armed, and so very bold, simulate death, upon the approach of danger, by closing up their legs and wings and falling down; this is however the case frequently in the genus *Nysson*. The LEGS are very variously formed; they are generally of a moderate length, but in some they are very short in proportion to the body, as in *Tiphia*, *Philanthus*, *Cerceris*, *Crabro*, and very robust in the latter. In others (the *Pompilidæ* and *Sphecidæ*), they are very long and adapted for running; in *Ceropales*, in particular, they are disproportionately so. Their tibiæ are sometimes armed with spines, and their anterior tarsi with cilia on the exterior, and upon this structure, or the absence of it, St. Fargeau proposed a theory for the distribution of these insects into parasites or non-parasites, but which I have shown elsewhere in detail,\* that howsoever ingenious it may appear, it is nevertheless not correct. In the paper referred to, I suggested that it might distribute them into those which nidificate in wood or sand, which St. Fargeau seems to have adopted, for in a monograph of the genus *Crabro*,† he says, “ *La présence ou l’absence de cils aux tarsi antérieures (ce qui indique que ces insectes travaillent dans la terre ou dans le bois),*” and has consequently dropped his

\* See Entomological Transactions, my paper upon the Aculeate Hymenoptera, vol. i. pt. 1, p. 52.

† Annales de la Société Entomologique de France, tom. iii. p. 692.

original hypothesis ; but neither will his new view bear this general application, as I have indicated in the paper referred to, and which further experience has confirmed. We often detect a sexual difference in the form of the tibiæ, or the tarsi, but which is confined chiefly to the anterior pair, and to the genus *Crabro*. A dilatation in the form of a convexo-concave scale of either the anterior tibiæ or tarsi is found in several males of that genus, and in others we perceive a peculiarity in the structure of the intermediate tibiæ and the first joint of their tarsi. The apex of the tibiæ is always armed with a pair of moveable spines, called *calcaria*, except the anterior pair, which have but one. One is sometimes pectinated, as in *Ammophila*. Mr. Kirby has supposed them to be for the purpose of assisting the insect in burrowing, but I consider them as designed to support the leg, and to prevent its slipping, as they always stand off at an angle with the tibiæ, and they are moveable, that they may be adapted to the position of the limb. Those of the anterior pair are singularly formed, having a curved incision fringed with short hair in the interior, which is made to close over a corresponding incision, also fringed, at the base of the first joint of the tarsi, and they thus together form a circular aperture, through which the insect passes its antennæ when it wishes to clean them, as it were combing them ; or may not the friction be subservient to their receiving atmospheric impressions ? for I have observed them thus occupied when there was not the least appearance of soil upon the antennæ, and after long confinement in a box.

The ABDOMEN is composed of seven joints in the male, and six in the female :\* it is either sessile, subsessile, or

\* The female of *Crabro vexillatus*, according to Vander Linden, forms an exception, but I agree with St. Fargeau that Vander Linden has here made a mistake, and considered as the female of that species the male of another.

petiolated, the petiole being an elongation of the first segment, very rarely a distinct articulation (*Ammophila vulgaris* and *Miscus*), frequently apparently distinct, but not so (*Psen*, *Mimesa*, *Ammophila*, *Stigmus*, *Pemphredon* and *Cemonus*). It is generally longer than the thorax, rarely of the same length (female *Methoca*, *Crabro brevis*), and only in the instance of the male *Astata boops* shorter; it is generally elongate, ovate, and acuminate, at its apex, but in male insects frequently obtuse or truncated; it is rarely linear (male, *Methoca*), or clavate (*Ammophila* and *Miscus*), sometimes ovato-conic (*Nysson*, *Gorytes*, *Oxybelus*), and occasionally sub-clavate in *Trypoxylon*, and in some species of *Crabro*, in the latter genus frequently subcuneiform, but rarely triangular (*Astata*). The segments are subcoarctate in *Oxybelus* and *Dolichurus*, and fully so in *Cerceris*. The second ventral segment is produced anteriorly in *Nysson*, more slightly so in some species of *Gorytes*; the terminal ventral segments are emarginate in the males of some species of *Pompilus*, and the hypopygium in the male *Methoca* and in *Tiphia* is prolonged into a compressed upcurved spine; the last segment is truncated in the males of *Nysson*, *Tachytes*, and *Larra*, with two small processes at its lateral extremities, and in *Ceropales* an ovipositor is exerted. This last is the only instance of an ovipositor being exerted in an aculeate Hymenoptera.

#### § 5.

My observations here upon the economy and habits of these insects will be very brief, as it would be merely an unnecessary repetition, for under each species will be found all that has as yet been observed; I may refer to my paper on the subject in the Entomological Transactions\*

\* Vol. i. part 1, p. 52.

for a more extensive generalization. The question of parasites, to which I have referred above in my notice of the legs of these insects, is one deserving attention, and I would therefore suggest to collectors the propriety of recording every fact which opportunity may throw in the way of their observation. With respect to the apparent anomaly of parasites being of the same order, or perhaps of the same genus, it may be remarked that these are not internal parasites, and that perhaps a greater resemblance was necessary between the individuals than in the case of internal parasites, which I believe are destroyers of eggs and larvæ exclusively, or at least they are deposited within the insect in those stages of its existence, and consequently when in an indefensive state. But here, where the food only, which is stored up as provision for the young, is the object of attack, and the maternal solicitude of the parent insect for the nurture of her offspring is rendered fruitless by the presence of an interpolater secretly deposited, it required all the sagacity of the insect introducing her intrusive progeny to evade the instinctive apprehension of the laborious mother, and nature has furnished additional means to foil the latter in the parasite's resemblance to herself. This appears plausible, but it is not yet substantiated, nor is it general; for we frequently observe a vast discrepancy between the two, although of the same order, for instance, between *Odynerus* and its parasite *Chrysis*, and between *Osmia* and its supposed parasite *Sapyga punctata*. Several Diptera are also found parasitic upon this tribe. The non-parasites among them provide their young with insects of several orders, and with Arachnides, but it is the Diptera chiefly upon which they prey, and I know but one instance in which a Coleopterous insect is subject to their attack, viz. *Cerceris arenaria* upon a *Strophosomus*.



It is seldom the case that one character, as we find it here, can be so extensively applied, and with so much precision as to determine and separate all the genera of a definite group; it consequently makes the varying number of species congregated under each the more conspicuous, and we naturally ask, why are there so many of this peculiar structure here, or so few, or only one there? what object had nature in view? The fertility of some species also is remarkable, as compared with others. These are questions which constantly recur, but when will they be answered? The variations of individuals can be more plausibly accounted for, but why is it more frequent in some species than in others? But so many questions can be asked in Natural History, and so few as yet satisfactorily answered, that I can only repeat what I have before urged, that, if every special fact be recorded when observed, time will do the rest, for nature is communicative at intervals only, and she must consequently be assiduously watched.

#### § 6.

I have enlarged above more than was perhaps desirable upon the differences of form in these insects, but some excuse may be found, possibly, in my wish to show that even in this small group there is much dissimilitude affording material for profound speculation and research, and that, consequently, whatever fragment we may pick up of the great book of nature, it becomes in the right minded, when diligently perused, the source and spring-head of a current of new thoughts, which, in their progressive development, deeply imbue us with the conviction that all is GOOD, nothing has been created in vain; and that whatsoever of evil apparently exists, is to be found solely in our own moral turpitude

and the perversion of our faculties, and not in the vast scheme of nature, wherein, were it not for the imperfection of our powers and the contractedness of our ideas, we should see nothing but what the Greeks so elegantly expressed in the personification of their Graces, the mutual embrace of the Charities—Truth, Beauty, and Goodness—thus symbolising the magnificent harmony of universal nature. In comparison with the feelings thus engendered, and the sublime devotion to which they form the broad and rational basis, how insignificant is the taunt of the worldling, who gibes us with wasting our time in what he calls such frivolous pursuits!

Much still remains “debatable land,” but the collision of opinions generally tends to elicit the truth; yet it should be conducted in an amicable spirit—for should objects which display the immense variety of creation in the diversity of their structure, and its beautiful adaptation to their economy and habits, and which therefore raise us to the admiration of the skill displayed in their formation, and which ought to elevate us to the adoration of the Great Being, who, in the plenitude of His benevolence, has created such myriads of animal forms that the blessing of life may be as infinite as it is varied, be allowed to nurture the malevolent passions of the mind by fanning and adding fuel to their latent flame? No! Let us, if we cannot check such feelings, not disturb nature with them, but turn back from her fields into the dust and turmoil of the highways of life, where amidst its turbulence and bustle the love of contest may be indulged with impunity, without frightening the tranquil investigator of the wonders of creation from the objects of his admiration, by showing him that his course of study is but the Broadway that leads to the arena, the gladiatorial combats of which, he, to his utter disgust, must necessarily witness.

The surest test of a true love of nature is decidedly the superinduction of suavity of manners, benevolence of mind, and amiability of temper, without which we are but the pseudo-priests of its fane and our worship is but lip-worship, an ulterior object being the aim. There are numerous instances upon record of men retiring from the world with embittered feelings and excoriated hearts, loathing its deceit and treachery, and who, like the poor wounded deer, have left the herd and passed into the glade and have there found sanatives in the study of nature which have restored their minds to health and enjoyment; for the true votary is wholly absorbed by its magnificence,—its order and harmony pass by inculcation into his soul and tranquillize its agitation, giving it a foretaste of its future state, one main occupation whereof, according to the opinion of sound and learned divines, will consist in the contemplation of the works of the Creator.

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## DIVISION II.\*

### HYMENOPTERA ACULEATA. Lat.

Antennæ with thirteen joints in the males and twelve in the females. Wings always having nervures and presenting the various kinds of ordinary cells. Abdomen always petiolated and consisting of seven segments in the males and six in the females, and containing in the latter a sharp sting concealed within the anus. Their larvæ are apodes, and are supplied by their parent with provisions for the time they remain in that state, or are else fed daily by neuters, (females whose ovaries are abortive,) or by the females; in the two latter cases they are united in societies. Some are parasitic.

#### TRIBE I.

### HETEROGYNA. Lat.

These Hymenoptera are generally burrowers or live upon the ground, sometimes assembled in societies, which are temporary in these latitudes. The antennæ are geniculated.

\* The Hymenoptera are separated into two divisions. The first containing the Terebrantia, and the second the Aculeata; the latter are subdivided into four tribes, viz. 1. the Heterogyna; 2. the Fossores; 3. the Diploptera; and 4. the Mellifera. It is only of the second family of the first tribe of the Aculeata and the whole second tribe that the following pages treat.

The females of those which are solitary, and the neuters of the social ones, are apterous and very frequently without stemmata.

FAMILY I.

FORMICIDÆ. Leach.

Live in societies consisting of three kinds of individuals, the males and females of which have wings, which the latter lose after impregnation.\*

FAMILY II.

MUTILLIDÆ. Leach.

Are solitary and each species consists of but two individuals. The females are apterous and generally differ in colour from the winged individuals or males. Their antennæ are filiform or setaceous. The legs of the females are robust, their tibiæ spinose and tarsi ciliated; and the males have generally one or more spines or obtuse teeth at the anus.

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(a) *Thorax of the females continuous or almost cubital.*

GENUS I. MUTILLA. Lin.

HEAD suborbiculate in the ♀, transverse and compressed in the ♂; eyes very small and round in the ♀, slightly emarginate in the ♂, which has the three stemmata placed in a triangle upon the vertex, but wanting in the ♀; the antennæ subfiliform, decreasing gradually towards their apex, which is acuminate, inserted in a cavity on each side of the base of the clypeus, which is convex and emarginate in front; the mandibles arcuate, unidentate, and acuminate in the ♀, and tridentate in the ♂, being

\* I have considered this brief definition sufficient, as this family is not treated of here.

much dilated at their apex and narrowed at the base. The THORAX longitudinal, nearly cubital in the ♀, and truncated at both extremities;—in the ♂ the *collar* embraces the *dorsolum* and extends laterally to the origin of the wings, the *tegulae* very large, the scutellum semicircular; in the ♀ an impression separates the collar from the mesothorax, which it embraces laterally; the superior wings of the ♂ with a *nearly semicircular marginal cell and three submarginal cells, subequal, the second and third receiving each in their centre a recurrent nervure, the second being almost obsolete and the third transverso-cubital, having a pseudo-nervure springing from its centre extending half way to the apex of the wing*; the legs moderately long in the ♂, somewhat robust and spinose in the ♀. The ABDOMEN ovate, the first segment subpyriform, the second subcampanulate, and the apical segments much curved in the ♂.

Type, M. Europæa.

††† This genus was first established by Linné; its etymology is uncertain, but it is conjectured to be derived from its supposed want of wings. Linné placed the male in the genus *Apis*.

SP. 1. EUROPEA. Lin.

*nigra, thorace rufo, abdomine fasciis tribus albis posteriore interrupta* ♀.

*chalybea, thorace rufo, abdomine fasciis tribus albis subinterrupta* ♂.

length 5—8 lines.

Lin. S. N. 2. 966. 4; F. Suec. 1727; Rossi, 2. No. 939; Panz. 76. 20;

Donov. 6. 77. pl. 212; Fab. Entom. Sys. 2. 363, 9; Piez. 430; Oliv.

Ency. Méth. 8. 57. 15; Latr. Actes de la Société de l'Hist. Nat. de

Paris, p. 8; Hist. 13. 263; Nouv. Dict. 22. 98; Cuv. Règne

Animal, 5. 315; Dumeril, Dict. des Sciences Naturelles, 33. 459.

*Apis Aptera*. Uddm. Diss. 98. f. 17; Harris, Ex. 166. pl. 50. f. 18.

— *simile*. Harris, Ex. pl. 50. f. 19. ♀.

Head black, coarsely punctured and pubescent; the apex of the mandibles rufescent.

Thorax red, deeply punctured, subpubescent, the whole disk shining; the legs black, very hirsute and spinose.

Abdomen black, very hirsute, somewhat shining, a broad band of griseous depressed hair upon the margin of the first, second, and third segments, in the two latter widely interrupted ♀.

The ♂ differs in having the head chalybeous, the collar and sides of the mesothorax black, as also the sides and truncation of the metathorax; the dorsolum, scutellum and a transverse lunate spot at the base of the metathorax red; the tegulæ piceous; the wings deeply fuscous. The abdomen chalybeous, with the white bands on the second and third segments merely subinterrupted or only slightly interrupted. In most Cabinets.

††† Abundant in some places; the male is generally taken settling on flowers; the female stings very severely: she has been described to me as making a harsh stridulous noise when impaled alive. My friend Mr. Pickering dug a female out of the ground, during the last winter, at Coombe Wood, and mixed in the sand he had removed he found the wings of flies; it is therefore not improbable that the larva is fed upon Diptera.

SP. 2. CALVA. Vill.

*nigra, vertice thoraceque rufis, abdominis margine cinereo* ♀.

*hirta, nigra, abdominis segmentis margine ciliatis* ♂.

length ♂ 3 lines.

Villers, 3. 343. No. 9. Tab. 8. f. 34; Fab. Ent. Syst. Suppl. 282; Piez.

438; Latreille, Actes de la S. Hist. N. de Paris, p. 10. No. 8; Hist.

13. 265; Oliv. Ency. Méth. 8. 64. 56. ♀.

♂ *M. nigrita*. Panz. 80. 22; Oliv. Ency. Méth. 8. 65. 59.

“ Head black, pilose, with the vertex and occiput fulvous;  
 “ antennæ dark, fulvous; beneath each there is an elevated line,  
 “ which terminates at the internal angles, near their insertion,  
 “ with a pointed tubercle. Mandibles fulvous, their apex black.



“Thorax fulvous, punctured with a few black hairs; legs blackish.

“Abdomen black, the base of the first segment fulvous, and provided on each side with a fulvous tooth pointed obliquely downwards, the margins of the remaining segments slightly ciliated with white hairs ♀.”

The ♂ has the head black, deeply punctured, hirsute, mandibles red in the centre, with their base and apex piceous. Thorax black, punctured, shining, covered with a dense griseous pubescence; the metathorax rugose, with a smooth space at its base of the form of an isosceles triangle, with the sides a little rounded, and inclosed by an elevated ridge; tegulæ piceous, wings fuscous, and their nervures rufo-piceous.

Abdomen with scattered punctures, and shining, covered with long griseous hair, having a band on the margins of the second and third segments formed by a short grey pubescence.

♂ in the Cab. of Brit. Mus.

††† The female was in the cabinet of Mr. Stephens, but by some accident he has exchanged it away. I have given a description of it, which, as it is not made from the insect itself, but compiled from the works of Olivier and Latreille, I have inserted in inverted commas, to indicate that it is not made by myself from a British specimen. It is upon the authority of Latreille that I have placed them together, although the male differs so widely from the female. It is doubtlessly correct, for both are found in great numbers upon the same spots in France, where no other species occur, and, as above shown, both have been found in England.

SP. 3. EPHIPIUM. F.

*nigra, antennis, thorace, pedibusque rufis, abdomine puncto fasciisque duabus approximatis albis ♀.*

*nigra, thoracis dorso rufo ♂.*

♀ length 2—3½ lines. ♂ 3½ lines.

♂ Fab. Ent. Syst. 2. 370. 18 ; Piez. 434 ; Oliv. Ency. Méth. 8. 63. 45 ;  
and ♀ Curtis, B. Ent. 2. Pl. 77.

*Mut. sellata.* Panz. 46. 19.

♀ *Mut. rufipes.* Fab. Ent. Syst. 2. 372. 26 ; Piez. 439 ; Oliv. Ency.  
Méth. 8. 66. 68 ; Lat. Hist. 13. 264 ; Nouv. Dict. d' Hist. Nat. 22. 98.

Head black, coarsely punctured ; antennæ red, with their three or four apical joints piceous ; mandibles red, their apex piceous.

Thorax hirsute, coarsely punctured, red ; legs red, very hairy.

Abdomen black, punctured, hirsute ; a white patch of grey hair on the centre towards the base of the second segment, and a fascia composed of the same pubescence on its margin, and on the third, occupying nearly the whole of the latter, the last segment piceous ; the general pubescence griseous ♀.

The ♂ differs in having the antennæ black. The thorax black, with the collar, dorsolum, and scutellum red ; the wings darkly clouded, their margin having a still darker border, extending inwardly as far as the apex of the marginal and sub-marginal cells ; the nervures piceous ; the legs black, hirsute, with the apex of the tarsi piceous. The abdomen with a white band at the base of the third segment, and a transverse line on the sides of the fourth and fifth, all formed of a silvery grey.

♀ In my own and other Cabinets. ♂ In those of Mr. Curtis, Rev. G. T. Rudd, Mr. Walker, and my own.

††† The ♂ was taken in the year 1822 by Mr. Curtis, at Shooter's Hill, in Kent, and the ♀ at Black Gang Chine, in the Isle of Wight, where also Mr. Walker has captured it ; and the Rev. G. T. Rudd found it at the same place last year, in June, in some numbers ; he took also three males, and it is to his liberality that I am indebted for my specimen. He saw several others, and remarked that towards the heat of the day they ascend higher up the cliff, and are consequently accessible only early in the morning.

(b) *Thorax of the ♀ divided by sutures.*

## GENUS II. MYRMOSA. Lat.

HEAD subglobose; *stemmata* in a triangle on the vertex; *eyes* small, round, and lateral; *antennæ* subfiliform, inserted in the ♀ at each side of the base of the clypeus and approximate, in the ♂ they are wider apart; the *clypeus* triangular and longitudinally carinated in the ♀, in the ♂ transverse and plane; *mandibles* unidentate and acuminate in the ♀, large and tridentate in the ♂. The THORAX longitudinally quadrangular, the angles in front rounded; the *collar* subquadrate, and the *metathorax* truncated ♀; in the ♂ the THORAX ovate; *collar* transverse, and curving towards the base of the wings posteriorly, but not reaching them; the *metathorax* descending on an inclined plane, and having on each side two short teeth; the *superior wings with one marginal and four submarginal cells*—the second submarginal triangular, receiving the first recurrent nervure near its centre—the third quadrate, receiving the second recurrent nervure at about one-third of its length—the fourth extending to the apex of the wing; the *legs* moderately long, and spinose. ♀. ABDOMEN ovato-conic, the first segment somewhat narrower than the second; in the ♂ ABDOMEN oblong, and the margins of the segments crenate, the last concave above, and tridentate at its apex, which is truncated.

Type, *M. melanocephala*.

††† This genus was first established by Latreille, in 1796. It was not adopted by Fabricius, but all subsequent Entomologists have received it.

## SP. 1. MELANOCEPHALA. Fab.

*rufa, capite abdominisque apice nigris* ♀.

*tota nigra* ♂.

length ♀  $1\frac{1}{2}$ —3 lines. ♂  $3\frac{1}{2}$  lines.

Lat. Hist. 13. 266; Gen. Pl. 13. f. 6 ♀; Nouv. Dict. H. N. 22. 150.

Pl. G. 17. 11; Guerin, Icon. du Reg. An. Insectes, Pl. 69. f. 6.

- ♀ *Mutilla melanocephala*. Fab. Ent. Syst. 2. 372. 27; Piez. 439;  
 Oliv. Ency. Méth. 8. 65. 45; Coquebert, 1. p. 26. Pl. 6. f. 11.  
 ——— *dimidiata*. Lat. Actes Soc. H. N. Paris, P. 11. No. 11.  
 ♂ *Myrmosa atra*. Panz. 85. 14.  
 ——— *nigra*. Lat. Gen. Pl. 13. f. 6.

Head black, coarsely punctured; face frequently ferruginous; the basal half of the antennæ red, beyond which they are piceous; mandibles red, their apex piceous.

Thorax entirely ferruginous, deeply punctured, shining; legs red, spinose, and pubescent.

Abdomen black, hirsute, shining; the first segment deeply punctured, the first, and sometimes the second, or its base and the margins of the rest, red; the second and remainder covered with scattered punctures and a grey pubescence ♀.

The ♂ differs in being entirely black, deeply punctured, covered with scattered grey hair; the wings slightly clouded, iridescent, and their nervures black.

In many Cabinets.

††† The ♀ has been found by myself at Hampstead, Highgate, and at Charlton, near Woolwich; the ♂ by Mr. Walker in the Isle of Wight, and on lime trees near London, by Mr. Newman at Birchwood, and Mr. Westwood at Coombe, and both sexes at Ripley, in Surrey, by Mr. Stephens. Its habits are not known; the ♀ is found in sandy places, where doubtlessly the ♂ would occasionally frequent. The ♂ carries off the ♀ and copulates while flying in this genus as well as in *Methoca*.

(c) *The thorax of the ♀ nodose.*

#### GENUS III. METHOCA. Lat.

♀. HEAD subglobose; eyes oval and lateral; *stemmata* in a triangle high upon the vertex; *antennæ* filiform, inserted at

the lateral posterior margins of the clypeus, and of about the length of the head and the first node of the thorax, the scape very thick, the pedicle small, joints of the clavolet subequal and cylindrical, the basal ones with a few rigid hairs at their extremity; *clypeus* triangular, convex, its anterior margin rounded; *mandibles* arcuate, slender and bidentate at their apex, furnished on the exterior with rigid setæ. ♂. HEAD transverse, flattened in front, convex behind; *eyes* oval, prominent and lateral; *stemmata* large and in a triangle on the vertex; *antennæ* filiform, decreasing towards their apex, longer than the thorax, the scape short and robust, the pedicle very minute, the third joint shorter than the fourth, which is the longest of all, and from which they gradually decrease, and all the joints from the third subarcuate; the *clypeus* and *mandibles* the same as in the female. ♀. THORAX composed of three nodes: the first and second ovate, the latter including a semicircular *dorsolum* and ovate *scutellum*; the third, or *metathorax*, orbiculate; *legs* long and slender; *coxæ* very robust; *femoræ* subclavate; *tarsi* longer than the *tibiæ*. ♂. THORAX oblong; *collar* broad, and transverse, extending at the sides to the origin of the wings; *scutellum* triangular; *metathorax* obtuse; the *superior wings* with one long narrow pointed marginal cell extending nearly to its apex, and three submarginal cells, the first nearly as long as the two following, narrow and receiving at about three-fourths of its length the first recurrent nervure,—the second quadrangular, larger than the third and receiving near its centre the second recurrent nervure,—the third extending to the apex of the wing; the *legs* moderately long, very slender; the *tarsi* the same as in the female. ♀. ABDOMEN ovato-conical, attached by a short petiole to the thorax, the first segment much narrower than the second, the sting long and slender, and when exerted much curved downwards.—♂. ABDOMEN linear, the segments subcrenate, the *hypopygium* produced laterally into two vertical plates acute at their extremity, and below into a central long upcurved

acute spine, which does not extend beyond the apex of the plates.

Type, *M. Ichneumonides*.

††† This genus was first established by Latreille, in his "Histoire," for the female; the male which was afterwards sent to him by Monsr. de Sanvitali he formed into a genus by the name of *Tengyra*, in his Genera, in 1809, and which he placed with *Tiphia* in the first tribe of his Fossores; but Monsr. Wesmael, of Liege, was led subsequently to suspect that it might possibly be the male of *Methoca*, as he always captured them on the same spot; and this was afterwards confirmed by his repeatedly taking them *in copulâ*. The disparity of the sexes is so remarkable, that without this corroboration his supposition could never have been received. This fact Vander Linden communicated in the "Annales des Sciences Naturelles," Jan. 1829, and which he has also published in the preface to the second part of his "Observations sur les Hyménoptères d'Europe." It is singular that since these observations have been made Nees should place the female in the genus *Gonatopus* of the family of the Dryini.

SP. 1. ICHNEUMONIDES. Lat.

*nigra, nitida, thorace pedibusque rufis* ♀.

*nigra immaculata* ♂.

length ♀ 2—3½ lines, ♂ 5½.

♀ Lat. Hist. 13. 269; Nouv. Dict. I. H. N. 20. 488; Genera, 4. 118; Guern, Icon. du Reg. An. Insectes, Pl. 69. f. 7; Curtis, Brit. Ent. V. 7. pl. 329.

*Mutilla formicaria*. Jurine, Obs. Hyménop. P. 266. Pl. 13. fig. 49.

*Gonatopus mutillarius*. Nees ab Esenbeck, Hym. Ichneu. Affin. tom. 2. 384.

♂ *Tengyra Sanvitali*. Lat. Gen. 4. 116; Vander Linden, Obs. pt. 1. p. 13; Guerin, Icon. Pl. 69. f. 8.

Head black, smooth, shining, with a few scattered punctures;

antennæ ferruginous, the three or four last joints piceous; mandibles ferruginous.

Thorax and legs ferruginous, the latter sometimes piceous; the anterior tarsi slightly ciliated, and all the tibiæ spinose.

The abdomen black, and shining; the fifth segment piceous at its margin, and the last ferruginous at its extremity ♀.

The ♂ differs in being entirely black and villose, the head much punctured in front, shining at the vertex; the mandibles rufescent at the apex. The thorax slightly punctured, shining; the dorsolum with two central parallel longitudinal lines, extending its whole length; another on each side, parallel with these, commencing opposite the tegulæ and reaching the apex; the scutellum deeply punctured, shining; the metathorax very rugose, with a longitudinal carina extending its whole length, sometimes obsolete; the tegulæ and tarsi piceous, the wings hyaline, sometimes subfuscous, with their nervures piceous. The abdomen slightly punctured, shining; the base of the segments much depressed, and their margins constricted.

♂ in my own Cabinet, ♀ in many.

††† The female was first taken in July, 1828, by Mr. Curtis, at Black Gang Chine, Isle of Wight; it has since been captured at the same place by Mr. Westwood, the Rev. G. T. Rudd, and Mr. Walker, who has also taken it in September at Lyme Regis, Dorset; and by the Rev. F. W. Hope at Southend, Essex. I have taken it frequently on Hampstead Heath, where I captured in June, 1833, also two specimens of the male, which I believe are the first and only instances of its being found in England. It is remarkable that both the days on which I caught those males turned out very boisterous before noon; and both captures were made before 10 A.M.

## TRIBE II.

## FOSSORES. Lat.

Never more than two kinds of individuals, and both have wings;—the superior ones not longitudinally folded. The tongue never lanceolate or filiform, the feet never adapted to collect pollen; the posterior tibiæ never either very hirsute like a brush, or hollowed like a basket; the first joint of the tarsi attached to them is never much wider than the subsequent ones. The other parts of the body never present hairs suited to gather pollen.

- I. Some have the collar prolonged laterally as far as the origin of the superior wings, sometimes arched or quadrate, sometimes nearly in the form of a node.
1. The latter have their feet short and the antennæ thick, with their joints very close and short.

## FAMILY I.

## SCOLIADÆ. Leach.

The legs of the ♀ are robust, very spinose or densely ciliated; the femoræ are arcuate towards their extremity, and compressed; the antennæ are shorter than the head and thorax.

## GENUS IV. TIPHIA. Fab.

HEAD the width of the thorax, excavate below the antennæ, convex posteriorly; *eyes* oval and lateral, widely separated and entire; *stemmata* united closely in a triangle on the vertex; *antennæ* filiform, in both sexes shorter than the head and thorax, the first joint the longest, the second the shortest, the rest subequal, decurved in the ♀ and straight in the ♂; *labrum* concealed, minute, coriaceous, ciliated; *mandibles* large, prominent, narrow, arcuate and longitudinally canaliculated. THORAX elongate; *collar* transverse, extending as far back as



the tegulæ; *mesothorax* narrow; *metathorax* abruptly truncated and having on each side a profound cavity; *scutellum* small, transverse; *superior wings* with one marginal cell, open in the ♀ and closed by a transverse nervure at its apex, which is distant from the apical margin of the wing in the ♂; two submarginal cells, the first receiving the first recurrent nervure and longer than the second, which receives the second recurrent nervure, and at its apex parallel with that of the marginal cell, sometimes a third submarginal formed by a very slight indication of the cubital nervure continued to the apex of the wing: *Legs* short, thick, the thighs enlarged and compressed, particularly in the ♀, the exterior of the intermediate and posterior *tibiæ* thickly set with short teeth or spines; *tarsi* elongate, their joints furnished with verticillate setæ, the terminal claws bifid, with a small pulvillus placed between them. **ABDOMEN** oval, distinctly petiolated, the petiole armed on each side near its junction with the abdomen with a small tooth; the first segment subpyriform and considerably narrower than the second, which, with the remainder, form a cone; the *hypopygium* of the ♂ contracting itself into an upcurved spine, which does not extend beyond the podex.

Type, *T. femorata*.

††† This genus, the name of which is derived from τῖππη, the name of an insect in Ælian, was first established in 1775 by Fabricius, in his *Systema Entomologiæ*, but he included several other genera in his enumeration of the species, which have since been separated by Latreille and Jurine. Illiger was not aware that the neuration of the wings slightly differed in the two sexes, and consequently divided them into two sections, the one comprising the ♂ and the other the ♀.

SP. 1. FEMORATA. Fab.

*pilosa nigra* (*femoribus quatuor posticis compressis rufis*, ♀)  
*lineâ intermediâ elevatâ metathoracis lineam transversam non attingente* ♀ ♂.

length 3—5 lines.

♀ Fab. Sys. Ent. 353. 1; Ent. Syst. 2. 223. 1; Piez. 232; Rossi, 2. No. 828; Lat. Hist. 13. 267; Nouv. Dict.; Panz. 53. 3. ♀; Jurine, Pl. 9. Gen. 11. ♀; St. Farg. et Serv. Ency. Méth. 10. 655.

*Bethylus femoratus*. Panz. Krit. Rev. 2. 134 ♀.

♂ *T. villosa*. Fab. E. S. 2. 227. 18; Piez. 235. 22; Lat. Hist. 13. 267; Vander Linden, Obs. pt. 1. 10. 2.

*Bethylus villosus*. Panz. 98. 16.

Head, thorax, and abdomen black, pubescent with scattered punctures; antennæ black; the superior surface of the meta-thorax with three longitudinal elevated lines, the central one abbreviated, not extending to the transverse one at their extremity upon the verge of the truncation, the interstices having a few delicate punctures; the tegulæ piceous, as also the nervures of the wings, the wings themselves slightly fuscous; the legs villose, the anterior pair black, with the apex of the tibiæ and the tarsi rufo-piceous, the intermediate and posterior pairs rufous, with their coxæ black, and their tarsi piceous. The margin of the segments of the abdomen and the apical segment rufo-piceous ♀.

Var.  $\alpha$ . with the intermediate and posterior legs piceous ♀.

7 lines. In Mus. Brit. 1 Sp.

Var.  $\beta$ . with the intermediate and posterior legs black, the antennæ from the third joint rufo-piceous, and the nervures of the wings very slight ♀.

$5\frac{1}{2}$  lines. In Brit. Mus. 1 Sp.

Var.  $\gamma$ . the legs and antennæ the same as var.  $\beta$ . but the wings deeply fuscous, the stigma nearly obsolete, and the nervures of the wings slight and very pale ♀.

$4\frac{3}{4}$  lines. In Brit. Mus. 2 Sp.

The ♂ differs in being entirely black, the wings hyaline and their nervures black.

♂ and ♀ in most Cabinets.

††† This insect has occurred in abundance at Birch Wood in Kent, and it has been captured near London and in the New Forest, Hampshire, by Mr. Walker. The sexes have

hitherto been separated as two species, but Messrs. Newman and Davis have repeatedly taken them *in copulâ*, which, together with their conformity of sculpture, has enabled me to unite them as one species. The varieties of the ♀ with black legs were taken by Dr. Leach, I believe, in Devonshire, and the only specimens of this variety I am acquainted with are in the British Museum. Mr. Walker possesses in his cabinet a specimen of the ♂ with red legs, taken by himself in the South of France, which proves that it thus occurs.

SP. 2. MORIO. Fab.

*pilosa nigra, metathorace rugoso.*

length 5 lines.

? *Morio*. Fab. Mant. 1. 280. 15; Ent. Sys. 2. 227. 17; Piez. 235. 21;  
Panz. 55. 1; Vander Linden, pt. 1. 10. 3.

Black, villose and punctured; apex of the mandibles rufescent. The metathorax rugose, without the longitudinal elevated lines; the wings with their stigma very large, and their nervures piceous. The abdomen very villose and shining ♂.

In the Brit. Mus. 1 Sp.

††† This, I think, must be the true *T. morio*, as it is the only one I can find offering any sensible difference to the *T. femorata* in the London cabinets, and the metathorax presenting it at once. It appears very rare, for the only specimen I have seen is in the British Museum, and I believe was taken by Dr. Leach in Devonshire. I have placed a note of interrogation before all the synonymes, as no Entomologist has before detected the true specific distinction of this genus, all previous describers having made the differences contingent upon size, colour, and pubescence, consequently their true place may be under the *T. femorata*, which would make this a new species; but I prefer retaining Fabricius' name as a doubt exists, although his specific

character and description will agree with almost any recently disclosed ♂ of *T. femorata*, or black-legged variety of the ♀. I do not know whether there be any sexual disparity.

SP. 3. MINUTA. V. d. L.

*nigra, breviter griseo pubescens, tibiis apice, tarsisque rufis, et lineâ intermediâ metathoracis ad lineam transversam excurrente*

♂ ♀.

length 2—3 lines.

V. d. Lind. Obs. pt. 1. 12. 4.

Head, thorax and abdomen black, with scattered punctures; antennæ black above, rufo-piceous beneath; mandibles black at the base and apex, rufescent in the middle. The superior surface of the metathorax with three longitudinal elevated lines, all extending to the verge of its truncation; the wings slightly fuscous, with the stigma large, and the nervures piceous; the tegulæ piceous; the legs black, with all the joints rufo-piceous; the anterior tarsi densely ciliated, and the posterior tibiæ with the exterior edge strongly serrated,—the intermediate and posterior legs with a thick hoary pubescence,—the anterior tarsi rufescent, as well as the apex of the joints of the remainder. The abdomen densely pubescent, the terminal segment rufo-piceous ♀.

The ♂ differs in having the antennæ and mandibles quite black, the tarsi more coloured and the body less pubescent.

Ob. The nervures of the wings vary much in this species from the generic type, for ex. :—

♀ with the first transverso-cubital wanting on the left side.

♂ ..... do. ....

..... do. .... right side.

..... do. .... on both sides,

and having the commencement of a pseudo-nervure at the base of the marginal cell inclining obliquely backwards.

♂ ♀ in my own and other Cabinets.

††† This species has occurred in various parts, but never

in abundance; in the year 1833 I took several on Hampstead Heath, among which were two females, with which sex Vander Linden was not acquainted. In the nervures of the wings it is exceedingly variable, as is shown above. I possess all those varieties myself, and others may doubtlessly exist.

## FAMILY II.

## SAPYGIDÆ. Leach.

The feet of both sexes slender, little or not at all spinose nor strongly ciliated; their antennæ at least as long as the head and thorax together and increasing towards their extremity, or clavate.

## GENUS V. SAPYGA. Lat.

HEAD a little wider than the thorax, subrotund; *eyes* deeply emarginate; the *stemmata* placed anteriorly on the vertex; *antennæ* as long as the head and thorax combined, subclavate, slightly excurved at the apex in the ♂, straight in the ♀, inserted in a cavity at the base of the clypeus with an elevated ridge between them, first joint very long,—the second very small,—the rest from the third, which is nearly as long as the first, decreasing regularly in length; *labrum* minute, scarcely apparent; *mandibles* strong, generally tridentate. THORAX subcylindrical, anteriorly truncate, obtuse posteriorly; the *collar* extending laterally to the tegulæ; *scutellum* small, transverse; *superior wings with one marginal cell which passes beyond the third submarginal and is acuminate, and four submarginal cells, the second the smallest and receiving the first recurrent nervure, —the third receiving the second, and the fourth apical.* *Legs* moderate, slender; the *tarsi* long. ABDOMEN elongate, ellipsoid, subsessile.

‡.‡ The etymology of the name of this genus is uncertain, as is the case with the majority of Latreille's names. He established the genus in his "Précis," in 1796, to place

in it a *Scolia* of Fabricius, who however did not adopt it in either of his subsequent works; but in his last, upon the Hymenoptera, viz. the "Syst. Piezatorum," he instituted the genus *Hellus*, making *Sapyga sexpunctata* his type, which was adopted by Panzer in his "Revision." I remember to have seen somewhere, but I cannot now recollect where, that Illiger divides these insects into two sections from the long and subcapitate antennæ of the ♂ of *S. clavicornis*. St. Fargeau remarks, that the ♀ of this genus form holes in the mortar of walls or in putrescent wood, to deposit their eggs and provision them with prey.

Type, *S. punctata*.

SP. 1. PUNCTATA. Klug.

*nigra, abdomine rufo, punctis transversis albis* ♀.

————— *nigro* ————— ♂.

length  $4\frac{1}{4}$ — $5\frac{1}{4}$  lines.

Klug, Monogr. Siricum Germaniæ, 61. Pl. 7. fig. 4. ♀. n. 5 & 6 ♂;

Lat. Hist. 13. 272; Spinola, 1. 76. 1; Panz. 100. 17; Guer. Pl. 69. f. 11.

*Sexpunctata*. Lat. Nouv. Dict. Ed. 2. 30. 179.

♂ *quadripunctata*. Panz. 87. 20.

*Decipiens*. St. Fargeau, Ency. Méth. 10. 338. 2; Klug, Pl. 7. f. 6.

*Decemguttata*. Jurine, Pl. 9. Genus 13.

*Scolia quadriguttata*. Fab. Spec. 454. 15; Ent. Syst. 2. 235. 29.

— *sexguttata*. Fab. Ent. Syst. 2. 235. 30.

*Sphex quadriguttata*. Vill. 3. 240. 52.

*Hellus quadriguttatus*. Fab. Piez. 247. 3.

♀ *Sapyga varia*. St. Fargeau, 10. 338. ?

*Scolia quinquepunctata*. Fab. Spec. 1. 453. 14; Ent. Syst. 2. 235. 27; Villers, 3. 240. 51.

*Sirex pacca*. Fab. Mantissa, 1. 258. 15; Ent. Syst. 2. 129. 17; Villers, 3. 131. 11.

*Hellus sexpunctatus*. Fab. Piez. 246. 1.

— *pacca* ————— 247. 6.

Head and thorax black, pubescent, and coarsely punctured; antennæ black, slightly piceous beneath, with a lacteous spot between them at their base, one on each side at the base of the

clypeus, sometimes forming a lunule, or entirely wanting, and another mark of the same colour lining the lower portion of the emargination of the eyes.

Thorax with a lacteous transverse line on each side of the anterior margin of the collar towards the angles; wings slightly coloured, with the extreme margin of the superior ones more deeply, and the nervures black; legs black and entirely simple.

Abdomen punctured, with the basal segment, or merely its base, black, the two following red with their margins piceous, and the remainder black,—a lacteous ovate spot placed transversely on each side in the middle of the fourth and fifth segments, the former being the largest, and a still larger one in the centre of the sixth segment; the two first ventral segments with a black longitudinal band, the third entirely rufous.

The ♂ differs in having the whole of the clypeus lacteous, the underside of the fourth to the ninth joints of the antennæ luteous, and the abdomen black, with a transverse ovate lacteous spot placed on each side in the middle of the second, third, fourth and fifth segments; those on the second and fifth segments sometimes wanting; a transverse line of the same colour on each side of the third and fourth ventral segments.

In most Cabinets.

††† It is found almost everywhere in the Spring, and towards Midsummer, upon palings and outhouses, &c. but I never saw it settle upon a flower. St. Fargeau says he has taken it with a larva, which it dropt on being captured. I have caught it also entering the cells of *Osmia bicornis*, in a sandy Lane at Bexley in Kent.

SP. 2. CLAVICORNIS. Lin.

*nigra, abdomine flavo fasciato* ♂ ♀.

length  $4\frac{1}{4}$  lines.

♂ ♀ Curtis, B. Ent. vol. xi. Pl. 532.

*Apis clavicornis*. Lin. Syst. Nat. 1. 953. 3. F. S. 1686.

♀ *Scolia prisma*. Fab. Mant. 1. 282. 21; Ent. Syst. 2. 236. 31.

*Hellus prisma*. Fab. Piez. 247. 5.

*Masaris crabroniformis*. Panz. 47. 22.

♂ ♀ *Sapyga prisma*. Klug, Monogr. Sir. Ger. 63. Pl. 7. f. 7. ♀. 8.

♂ ; Latr. Hist. 13. 273. 2 ; Nouv. Dict. 30. 179.

Head, thorax and abdomen black, the two former coarsely punctured ; two yellow spots between the base of the antennæ, which has its two extreme joints luteous beneath.

Thorax pubescent, with a yellow, transverse, abbreviated line on each side, at the anterior margin of the collar ; wings slightly coloured, the nervures black ; the legs black, with a longitudinal yellow mark on the outside of the base of all the femoræ ; the tarsi as well as tibiæ simple.

The abdomen with a yellow spot on each side of the second segment, a subinterrupted band on the third, an interrupted one upon the fourth, and a large central spot upon the sixth, yellow, as well as a transverse ovate mark on each side of the third and fourth ventral segments ♀.

The ♂ differs in having the antennæ capitate and much longer than the thorax, with the underside of the joints from the fourth to the eleventh orange, the knob formed of two joints being quite black, the clypeus yellow. The thorax with only a yellow spot at the extreme angles of the collar ; the anterior tibiæ with a yellow line in front, the others the same as in the ♀. The abdomen the same as in the ♀, with the exception of the spot on the sixth segment of that sex being here removed to the seventh. The venter entirely black. The abdominal fasciæ in both sexes are variable in size, interruption and intensity of colour.

♂. ♀ in my own and other Cabinets.

††† The ♀ of the preceding species was labelled *S. prisma* in many collections, in spite of Klug's excellent description and figure ; but a British specimen of the true one did not exist in any of the London cabinets until Mr. Newman captured a couple of each sex in Herefordshire, in 1833, when he very kindly presented me with a pair. I have



since received the ♀ from Mr. Bakewell, who informed me that Dr. Howitt captured several near Nottingham, and my friend Mr. Smith found three ♂ near Wakefield, in Yorkshire, in June last. It is thus evidently dispersed and only wants looking for to be found in equal abundance with the *S. punctata*. I follow Mr. Curtis in adopting Linné's name, since all doubt is removed as to the identity of his insect with Fabricius' *S. prisma*, by its still being pinned through the label, in his own handwriting, in his collection now at the Linnean Society, besides which his description agrees much better with this insect than with any other. Latreille suspects them to be parasitic upon some of the wild bees which build in old wood; he found this species about the stumps of trees.

2. The following have their posterior legs at least as long as the head and thorax. The antennæ of the ♀ formed of long joints generally distinct and often arcuate.

### FAMILY III.

#### POMPILIDÆ. Leach.

Prothorax transverse, at least as broad again as long, with its posterior margin arcuate. The abdomen obovoid, without any contraction, in the shape of a long petiole, at its base.

#### GENUS VI. POMPILUS. Fab. Lat.

HEAD transverse, of the width of the thorax; *eyes* lateral, oblong; *stemma* placed in a triangle on the vertex; *antennæ* setaceous, long, inserted in the middle of the anterior part of the face and approximate,—the first joint thick, the second very short, the rest cylindrical, the third the longest and the rest regularly decreasing in length, in the ♀ convolute, and slightly

curved in the ♂; *labrum* either entirely concealed or but slightly disclosed; *mandibles* generally unidentate, sometimes bidentate. THORAX gibbo-cylindrical, truncate or obtuse at its extremity; *collar* transverse, extending laterally to the *tegulæ*, and posteriorly curved; *superior wings with one marginal cell, nearly semicircular or subtriangular, and three submarginal cells,—the first as long or longer than the two following,—the second receiving about its centre the first recurrent nervure,—the third, which is either triangular or subquadrate, receives the second,—a fourth submarginal sometimes traced*; the posterior *legs* very long, the sides of the intermediate and posterior *tibiæ* generally spinose or serrated, and the anterior *tarsi* ciliated on the exterior; the *claws* bifid, with a small *pulvillus* within their fork. ABDOMEN ovate in the ♀, elongate in the ♂.

Type, *P. fuscus*.

Obs. The nervures of the wings vary somewhat, not only in the species but also in individuals: the most variable are those species which form the second and third submarginal cells by contracting them considerably towards the marginal, which causes them to become triangular, and the second and third transverso-cubital nervures occasionally anastomose before reaching the radial, which makes the third submarginal cell petiolated; the *P. niger* and *P. viaticus* are particularly liable to this monstrosity; but, as it is not constant, Jurine's second family of the genus *Miscus* cannot be retained. See Obs. on the genus *Miscus*.

††† The name is derived from *πομπιλος*—a sea-fish. Fabricius constructed the genus in 1798 in his "Supplement" to the "Ent. Syst." to receive several of his *Spheces*. Latreille had, however, previously, in his "Précis," constructed the genus *Psammochares* from their characters, but he subsequently adopted Fabricius' name in preference, on

account of its greater euphony. Panzer, in 1806, in his "Revision," called them *Cryptocheilus*, (a very characteristic name,) but by the law of priority it necessarily falls.

The Rev. F. W. Hope has remarked to me that he has observed some of the species nidificate in wood, which St. Fargeau appears to confirm. I have never observed any myself with these habits, but it would necessarily be such as are without the ciliation of the tarsi. The majority make their cells in sand, which they provision with Arachnidæ.

(a) *Abdomen entirely black, or with a grey or silvery pubescence.*

SP. 1. PULCHER.

*cinereo pubescens abdominis segmentis basi atris, alis albis apice nigris* ♀.

*plumbeus, antennis atris, alis anticis apice nigris* ♂.

length  $2\frac{1}{2}$ — $4\frac{1}{2}$  lines.

Fab. E. S. Supp. 249. 19; Piez. 193. 29; Spin. 1. 69. 4; Coqueb. 2. 52. pl. 12. f. 8; V. d. L. pt. 1. 37.

*Sphex plumbea.* Fab. Mant. 1. 278. 64; E. S. 220. 92; Rossi, Mant. 1. 127. 280; Villers, 3. 242. 57; Fab. Piez. 215. 40.

*Larra sexmaculata.* Spin. I. p. 16. II. 75.

Head and thorax black and punctured: a longitudinal line running from the base of the antennæ to the first stemma; the clypeus and face on each side of the antennæ covered with a dense silvery grey pubescence; the mandibles piceous and forcipate; labrum concealed.

The thorax having the metathorax very delicately punctured and shining, with a longitudinal central impression; the wings with their nervures black, and the extremity of the superior pair also black, forming a band which extends inwardly as far as the marginal and third submarginal cells, which latter is constricted

towards the marginal; the legs black, entirely covered with a slate-coloured pubescence; the anterior tarsi ciliated, and the intermediate and posterior tibiæ with a double row of slight spines.

The abdomen black, pubescent, slightly shining, with the margin of the three anterior segments having a fascia formed by a short dense slate-coloured down: the pubescence varies, it sometimes covers the whole of the segments except their base, and sometimes it is very slight, forming merely an interrupted band on the three first.

The ♂ differs in having the face covered with more of the silvery down, the tarsi less strongly ciliated, and the legs less spinose, and the slate-coloured pubescence covering the entire insect, excepting the antennæ and a narrow line at the base of the segments of the abdomen, which are consequently black and shining; the sixth ventral segment is emarginate, and the seventh longitudinally carinated.

In most Cabinets.

††† Found at Southend and in North Wales by the Rev. F. W. Hope, and on the coast of Suffolk by Mr. Johnson; at Barmouth, in September, by Mr. Walker, and at Ramsdown, near Heron Court, Hampshire, by the Hon. Mr. Harris.

SP. 2. NIGER. Fab.

*totus niger, alis hyalinis, apicibus fuscis, abdominis segmentorum marginibus lucidis* ♂ ♀.

length 3—5½ lines.

Fab. Ent. Syst. Sup. 247. 8; Piez. 191. 15; Panz. 71. 19; St. Fargeau, Ency. Méth. 10. 180. 4; V. d. L. pt. 1. 36.

*Sphæx nigra.* Fab. Syst. Ent. 350. 22; E. S. 2. 211. 51; Vill. 3. 328. 45.

Entirely black: head with the labrum slightly exserted, transverse, linear, emarginate and bearded in front; the clypeus

sprinkled with a few rigid setæ, as well as the exterior of the base of the mandibles, which are rufescent in the middle, black at base and apex, the teeth at equal distances and the apical one obtuse.

The thorax gibbous; the metathorax with a slight central abbreviated impressed line deeper at the base; the scutellum forming a truncated triangle; the wings clouded with a broad dark margin at the outer edge, extending inwards to the apex of the marginal and third submarginal cell, which is triangular and frequently petiolated; the legs with a single row of slight spines on the exterior of the anterior tibiæ and tarsi, the coxæ of the intermediate and posterior ones covered on the outside with a silvery down, and their tibiæ and plantæ with a double row of slight spines, and the remaining joints of the tarsi with spines at their apex.

The abdomen with a very slight whitish reflection at the base of the segments from the second and the apical one pilose.

The ♂ differs in having the face covered with a silvery pubescence as well as the metathorax, which is less gibbous; the legs spinose. The abdomen with the fourth ventral segment slightly and the fifth profoundly emarginate, with a longitudinal depression in their centre.

♂ ♀ in my own and other Cabinets.

††† Vander Linden thinks this species may possibly be a mere black variety of the *P. viaticus*; which appears probable at the first suggestion, but which inspection proves cannot be the case, for in the first place it is always considerably smaller, and the mandibles in the *P. niger* are but slightly arcuate, very broad, and the teeth nearly equal, whereas in *P. viaticus* they are very arcuate and the apical tooth considerably longer than the others; the coxæ also are of an opaque black in the latter, and the spines of the legs proportionately stronger, as well as the head and thorax being densely pilose.

This species I have found at Highgate conveying a small sandy coloured larvæ; it does not appear so early as *P. viaticus*, being seldom to be found before the summer solstice. Mr. Walker has taken it in the Isle of Wight, and at Barmouth, in September.

SP. 3. BIFASCIATUS. Fab.

*ater, immaculatus, alis albis, fasciis duabus nigris, metathorace nitido.*

length 3—4 lines.

Fab. E. S. Sup. 248. 16; Piez. 193. 26; Panz. 86. 12; Latr. Hist.

13. 281. 4; V. d. Lind. pt. 1. 40.

*Sphex bifasciata*. Fabr. Ent. Syst. 2. 212. 58.

— *fusciata*. Villers, 3. 258. 94.

Entirely black: head delicately punctured; the clypeus with a few rufescent setæ, as well as the exterior of the mandibles, their apex testaceous; labrum concealed.

Thorax punctured; metathorax gibbous, scarcely perceptibly punctured and shining, having sometimes a small variole at the centre of its base; the superior wings with their nervures pitchy, a narrow dark transverse fascia covering the transverso-medial nervure and the geniculation of the interno-medial, another, much wider, traversing the wing at the marginal and submarginal cells, which it nearly occupies, and a narrow dark edge at the apex of the wing in some specimens, leaving between it and the second fascia a milky spot; the legs without the cilia to the anterior tarsi, and the posterior tibiæ quite smooth, or having only a few lateral short hairs.

The abdomen with the last segment covered with longish hair, and the apex slightly rufescent ♀.

The ♂ differs in having the fasciæ of the wings less distinctly marked.

♂ in the Cabinet of Mr. Stephens.

♀ in my own and other Cabinets.

†† Found at Coombe, in the New Forest, and elsewhere ; the ♂ appears to be rare. This species cannot be a variety of *P. exaltatus*, as a comparison of the two, or their descriptions, will distinctly show.

SP. 4. VARIEGATUS. Lin.

*ater, immaculatus, alis albis, fasciis duabus nigris, metathorace obscuro et crassè punctato seu transversa scalpto.*

length 4 lines.

Illiger, F. E. 2. 99. 820. var. 2 ; V. d. L. pt. 1. 41.

*Sphex variegata.* Lin. F. S. 1655 ; S. N. 1. 944. 18 ; Villers, 3. 231. 30.

*Pompilus hircanus.* Fab. E. S. Sup. 251. 30 ; Piez. 195. 40 ; Panz. 87. 21 ; Ency. Méth. 10. 180. 7.

Entirely black : head punctured ; mandibles with their apex rufescent ; labrum concealed.

Thorax punctured ; dorsolum and scutellum shining ; metathorax gibbous, very deeply punctured and opaque ; superior wings with a transverse dark fascia occupying the transverso-medial and the geniculation of the interno-medial nervures ; another, much broader, traversing the wing at the marginal and submarginal cells which it occupies, and with the exterior edge, which is also dark, encloses a milky spot ; the legs, with the anterior tarsi, having a few very short cilia, and the intermediate and posterior tibiæ with a double row of very short spines on their exterior.

The abdomen punctured ; the two last segments with some scattered rigid hairs, placed most thickly towards the apex of the terminal one.

I am unacquainted with the ♂.

♀ in my own Cabinet.

†† Taken at Coombe, in August, 1833. This insect greatly resembles the preceding, from which however it is

sufficiently distinguished by its metathorax and legs. Vander Linden describes a ♂ which he supposes to belong to this species, but as I do not concur with him I do not insert his description.

SP. 5. PETIOLATUS. V. d. L.

*niger, immaculatus, abdomine breviter petiolato, alarum cellula cubitali tertia antice parum angustata, tibiis posticis haud serrulatis.*

length 3—5½ lines.

V. d. L. pt. 1. 44.

Entirely black: head punctured, with a longitudinal impression extending from the base of the antennæ to the anterior stemma; the clypeus with a few scattered griseous hairs; the labrum concealed; the apex of the mandibles rufescent.

The thorax punctured; the metathorax obtuse, delicately transversely striated, the striæ intermixed with punctures and a slight central impression at its base; the tegulæ piceous; the wings very slightly coloured and having an iridescent reflection, the nervures piceous, and the third submarginal cell much larger than the second and but slightly constricted towards the marginal; very short cilia upon the anterior tarsi, and the intermediate and posterior tibiæ with a few short and very slight spines.

The abdomen delicately punctured, shining, and very distinctly petiolated ♀.

The ♂ does not at all differ except in the sculpture of its metathorax, which is more deeply punctured; the face is covered with a silvery down; the metathorax and coxæ have a sericeous reflection; the apex of the anterior tibiæ are fulvous and their tarsi piceous; the sixth ventral segment is emarginate.

♂ in my own Cabinet, ♀ in my own and others.

††† Vander Linden supposed the ♂ of this species to be the *P. punctum*, which I shall presently describe; but as I



possess one wholly agreeing with the ♀ in habit, which the *P. punctum* does not, I prefer considering mine as the true ♂. The ♂ and ♀ taken at Bexley, in Kent, and the ♀ by Mr. Westwood, at Hammersmith.

SP. 6. CINCTELLUS. Spin.

*niger, cano pubescens, clypeo albido, maculá nigrá; fronte puncto utrinque ad marginem internum oculi, prothoracis lineolá utrinque, albidá; pedibus rufis; alis albis, anticis ante apicem fasciá fuscá* ♀.

*niger, cano pubescens, fronte puncto utrinque ad marginem internum oculi, tibiaram posteriorum basi, et abdominis segmento septimo supra, albidis; pedibus nigris* ♂.

length  $1\frac{1}{4}$ —3 lines.

Spinola, Ins. Lig. 2. p. 39; V. d. Lind. pt. 1. 49.

Entirely covered with a slate-coloured down: head black, a deep longitudinal line extending from the base of the antennæ to the anterior stemma, which has on each side a minute variole and a white spot within the internal margin of the eyes just below the vertex; the clypeus white, with a black mark extending half way down from the base, truncated at its extremity; the mandibles white with their apex rufescent; labrum concealed.

The thorax black, pubescent, delicately punctured; the posterior margin of the collar with a white spot on each side, sometimes obsolete; the metathorax with a central longitudinal impression and covered with a dense silvery pubescence; the wings hyaline, with a slight iridescent reflection, and having a broad dark transverse band towards their extremity, which is pale; the legs red, with their coxæ black and covered with a silvery down, and having their extreme apex red, the knees and terminal joints of the tarsi piceous, the anterior pair slightly ciliated, and the intermediate and posterior tibiæ with a double row of short black spines.

The abdomen black, with a delicate slate-coloured down, punctured, and slightly shining.

The ♂ differs in being entirely black, with a white spot on each side upon the inner margin of the eye, sometimes obsolete; the face covered with a silvery pubescence as well as the metathorax and coxæ; the wings have the fascia less distinct; the inside of the anterior tibiæ and the tarsi fulvous, and a white spot, sometimes obsolete, at the base on the outside of the posterior tibiæ; the cilia and spines of the legs less apparent and the last segment of the abdomen white above; the sixth ventral segment deeply emarginate and the seventh has a longitudinal carina.

♂ ♀ in my own and other Cabinets.

††† This species seems to prefer old red-brick walls covered with parasitic plants, for I have generally taken it in such situations. It occurs also in sandy spots.

(b) *Abdomen black, with white spots.*

SP. 7. PUNCTUM. Fabr.

*niger, facie utrinque ad marginem internum oculi lineâ albidâ signatâ, anoque puncto albo ♂.*

length 5 lines.

Panz. 86. 12; V. d. L. pt. 1. p. 45.

*Sphex punctum.* Fab. Spec. 1. 448. 33; Villers, 3. 238. 46.

*Evania punctum.* Fab. E. S. 2. 194. 6.

*Ceropales punctum.* Fab. Piez. 187. 9.

Head densely punctured, slightly pubescent; antennæ robust, slightly curved at the apex; the face with two broad longitudinal white stripes within the interior orbit of the eyes, extending across the clypeus, which is slightly emarginate in front; labrum concealed.

Thorax minutely punctured; metathorax more densely so and slightly covered with a sericeous down; the tegulæ piceous; the wings fuliginous, the third submarginal cell larger than the second and very slightly constricted towards the marginal; the

legs black and simple; the anterior tibiæ and tarsi piceous, and all the coxæ and trochanters loosely covered with a sericeous down.

The abdomen of an opaque black; a white spot at the base of the seventh segment and the first narrowed into a long petiole; the sixth ventral segment emarginate, and the seventh with a longitudinal central carina ♂.

♂ in my own Cabinet.

††† I am unacquainted with the ♀ which Vander Linden considered to be the *P. petiolatus*, but which insect I have shown above to be distinct. Mine was taken in the vicinity of London.

SP. 8. HYALINATUS. Fab.

*niger, prothoracis lineolâ utrinque lutosâ, ano puncto albo, alis hyalinis, femoribus quatuor posticis rufis* ♂.

length  $3\frac{1}{4}$  lines.

Fab. Ent. Sys. Supp. 247. 7; V. d. Lind. pt. 1. 46. 11.

*Sphex hyalinata*. Fab. Ent. Sys. 2. 212. 56.

*Liris hyalinata*. Fab. Piez. 230. 11.

Black: head punctured; antennæ about as long as the thorax, robust; apex of the mandibles rufescent; face covered with a silvery pubescence; labrum concealed.

The thorax punctured; the collar marked on each side with a transverse luteous line; the metathorax covered with a sericeous reflection; the wings perfectly hyaline or having a very slight tinge over the marginal and submarginal cells, the third submarginal larger than the second; the legs black, with the inside of the anterior tibiæ, the apex of the intermediate, and the major part of the posterior femoræ towards the apex, red; the posterior tibiæ with a few slight spines; all the calcaria white.

The abdomen has a white spot at the base of the terminal segment and all the ventral segments entire ♂.

The ♀ I am unacquainted with.

♂ in my own and Mr. Davis' Cabinet.

††† I am indebted to the kindness of A. H. Davis, Esq. for this species; it was taken in the north of England.

SP. 9. RUFIPES. Lin.

*ater, abdominis segmentis utrinque maculâ albâ, alis apice nigris, pedibus posticis rubris* ♂ ♀.

length 3—6 lines.

Fab. E. S. Supp. 250. 27; Piez. 195. 37; Latr. H. 13. 281. 6; Panz. 65. 17; Ency. Meth. 10. 180. 3; V. d. L. pt. 1. 59; Curtis, Brit. Ent. 5. 238.

*Sphex rufipes*. Lin. F. S. 1659; S. N. 945. 29; Villers, 3. 235. 37; Fab. S. E. 351. 29; Ent. Syst. 2. 214. 66.

— *fuscata*. Fab. E. S. 2. 212. 57.

*Pompilus fuscatus*. Fab. Ent. Sys. Supp. 248. 14; Piez. 192. 22.

Black: the head hirsute, delicately punctured, with a longitudinal impressed line extending from the base of the antennæ to the anterior stemma; mandibles piceous; labrum triangular, slightly exerted.

The thorax hirsute, punctured; the metathorax obtuse, delicately punctured, shining; the wings with their nervures black, a broad black band on their external margin and the surface having an opaline reflection; the legs black, with the posterior femoræ and tibiæ red, and the intermediate pair being more or less red inside; the anterior tarsi strongly ciliated, and the intermediate and posterior tibiæ with a double row of spines.

The abdomen black and shining, with a transverse ovate white spot at the base of the second (sometimes obsolete) and third segments, the latter being the largest (one sometimes also on each side of the fourth segment), and a central one at the base of the sixth ♀.

The ♂ differs (also sometimes wanting the spots on the second segment) in having the spots on the third segment converted into an interrupted band (sometimes scarcely so, or else with all the white markings excepting that on the terminal segment wanting), otherwise like the ♀, but having the customary ♂ characteristic

of more silvery pubescence; the sixth ventral segment emarginate and the seventh has a longitudinal central carina.

In my own and other Cabinets.

††† The colour of the legs differs much in this species, scarcely two specimens being alike, and sometimes the posterior pair are also quite black, as exhibited in a specimen in the Rev. F. W. Hope's rich cabinet. This species has been taken by the Hon. Mr. Harris and Mr. Curtis, at Ramsdown, near Heron Court, Hampshire, and by the Rev. F. W. Hope, at Southend, and in North Wales.

(c) *Abdomen more or less red at the base.*

SP. 10. NOTATUS. Rossi.

*niger, antennis thorace paulò longioribus, abdominis segmento secundo supra fuscâ rubrâ sæpe obsoletâ, pedibus partim nigris partim rubris* ♂.

♂ length  $3\frac{3}{4}$  lines.

Vander Lind. pt. 1. 47. 12.

*Sphex notata.* Rossi, F. E. Mant. 1. 127. 281.

*Pompilus gutta.* Spin. 2. 40.

Black: head punctured and having a longitudinal impressed line extending from the base of the antennæ to the anterior stemma; the antennæ slender, longer than the thorax; the apex of the mandibles rufescent; labrum concealed.

The thorax punctured, slightly pubescent; the metathorax finely granulated and covered with a silvery pubescence, most dense at the sides; the tegulæ piceous; the wings iridescent, slightly tinged towards their extremity, their nervures black; the legs with their coxæ covered with a dense silvery pubescence, and the anterior femoræ inside towards their apex, the whole of their tibiæ and tarsi, the intermediate femoræ and tibiæ, excepting the base of the former and the knees, and the entire

posterior femoræ, red; the sides of the posterior tibiæ with a few slight dispersed hairs.

The abdomen with a broad red band at the base of the second segment; the sixth ventral segment has a small emargination on each side of its centre, which is slightly produced ♂.

In my own and Mr. Stephens' Cabinet.

††† I am unacquainted with the ♀ of this insect; I took a single specimen, in 1833, at Highgate: Mr. Stephens', I believe, was captured at Ripley, in Surrey.

SP. 11. SERICATUS. N. Sp.

*ater argenteo sericeus; abdominis segmento secundo fasciâ latâ rufâ ♂.*

length  $4\frac{1}{4}$  lines.

Atrous: the head having the face covered with a dense silvery pubescence which extends a short way towards the vertex on the margin of the eyes; the cheeks covered behind with the same: the labrum concealed.

The thorax, with the metathorax obtuse, and having a central longitudinal impression; the collar, metathorax, the sides of the thorax, mesothorax beneath, and all the coxæ of the legs, densely covered with the silvery down; the legs with their anterior tarsi simple, and the intermediate and posterior tibiæ having a double row of very slight spines.

The abdomen with the margin of the first segment piceous, and the base of the second of a deep red; the venter with the margin of the fourth segment slightly emarginate and those of the fifth and sixth deeply so, with a small fossulet on each side of the emargination of the sixth; the apical segment pointed at its extremity ♂.

In my own Cabinet.

††† I am unacquainted with the ♀. The dense silvery

pubescence with which this insect is so splendidly covered sufficiently distinguishes it from every other British *Pompilus*; in general habit it most closely approaches to the *P. viaticus*. I have captured it but once, somewhere in the vicinity of London.

SP. 12. VIATICUS. Lin.

*ater, pubescens, alis fuscis, apice nigris, abdomine antice coccineo, cingulis nigris* ♂ ♀.

length 4—7 lines.

Fab. E. S. Supp. 246. 4; Piez. 191. 12; Panz. 65. 16; Illig. 2. 96.

814; Ency. Méth. 10. 179. 1; V. d. Lind. pt. 1. 72.

*Sphex viatica*. Lin. F. S. 1651; S. N. 1. 943. 15; Fab. E. S. 2. 210.

47; Rossi, F. Et. 2. 62. 814.

— *rufo-fasciato*. De Geer, Ap. Retz. 65. 247; De Geer, 2. 822. Pl. 28. f. 6.

*Pompilus fuscus*. Latr. H. 13. 280. 1.

Atrous, opaque: head, with the cheeks and exterior of the mandibles, covered with long hair, the latter rufescent in their centre; the labrum transverse, exserted.

The thorax has the collar covered with long hair; the metathorax truncated posteriorly and with a slight central longitudinal impression at its base; the wings obscure, with a broad black band at their edge extending inwards to the marginal and submarginal cells,—the third submarginal sometimes triangular and sometimes petiolated; the legs with the anterior tarsi ciliated, and the intermediate and posterior tibiæ having a double row of spines, which extend also along the first joint of the tarsi.

The abdomen, with the first, second and third segments coccineous, the first having a piceous margin, and the second and third a black one, making an angle which points inwards at the centre; the apical segments hirsute at their extremity ♀.

The ♂ agrees precisely with the exception of the usual ♂ characteristics of a silvery face, a sericeous pubescence about the metathorax and coxæ, a greater length and narrowness of abdo-

men, the legs less spinose and the anterior tarsi not ciliated; the venter has its fifth and sixth segments emarginate, the former more slightly than the latter, and the sixth has a deep fossulet on each side of its emargination and a longitudinal carina at the base of the seventh, the apex of which is truncated.

In most Cabinets.

††† This is a very common species; it appears very early in the year, and I have frequently captured it conveying large spiders: it stings severely. A variety, having the apex of the posterior femoræ red, is found on the continent. According to the Linnean Cabinet, this is not the *Sphex viatica* of that author, our *Ammophila hirsuta* being it, but as his description perfectly suits it, I have retained his name, for the Cabinet, from a variety of unfortunate accidents, is not always to be depended upon.

SP. 3. GIBBUS. Lin.

*niger, abdomine ferrugineo, apice fusco, metathorace subtiliter punctato, alis anticis apice nigris* ♂ ♀.

length  $2\frac{1}{4}$ — $4\frac{1}{2}$  lines.

Fab. E. S. Supp. 249. 17; Piez. 193. 27; Panz. 77. 13; Ency. Méth. 10. 179. 2; V. d. Lind. pt. 1. 68. 35.

*Sphex gibba*. Lin. F. S. 1658; S. N. 946. 33; Fab. S. E. 350. 23; E. S. 2. 212. 59; Rossi, Illig. 2. 97.

Black: head delicately punctured, pubescent; apex of the mandibles piceous; the labrum transverse; linear almost concealed.

Thorax very short and covered at its sides and metathorax with a very close short whitish down; the metathorax very obtuse, delicately punctured, and having a slight longitudinal impression; the wings with their nervures black, and a dark band at their external edge, the third submarginal cell very much narrowed towards the marginal, or rather triangular; the legs with their



anterior tarsi slightly ciliated, and their intermediate and posterior tibiæ, as well as the first joint of the tarsi, spinose.

The abdomen with the first, second, and base of the third segment, red, the margin of the red segments sometimes a little darker.

The ♂ differs only in the usual characteristics of the silvery pubescence of the face, the anterior tarsi not ciliated, the legs less spinose and the greater length of the abdomen.

In most Cabinets.

SP. 14. CRASSICORNIS. N. Sp.

*niger, abdomine ferruginco, apice fusco; alis anticis apice nigris; antennis crassis.*

length  $2\frac{1}{4}$ — $3\frac{1}{2}$  lines.

Black: head delicately punctured; the antennæ as thick as the anterior tibiæ and the clavolet nearly as robust as the scape, the joints very short; the apex of the mandibles rufescent; the labrum transverse, exserted.

The thorax short, pubescent, covered on the metathorax and beneath, and on the coxæ of the legs, with a sericeous reflection; the metathorax very delicately punctured and having a deep longitudinal central impression; the wings obscure, with their nervures piceous,—the apical edge very dark, the band extending inwards as far as the marginal and submarginal cells, their third submarginal triangular; the legs with their anterior tarsi ciliated on the exterior, and the intermediate and posterior tibiæ having on their outside a double row of spines.

The abdomen, with the first, second, and base of the third segments, red; the margin of the remainder piceous; and the whole abdomen covered with a whitish reflection caused by a short close down.

The ♂ I am unacquainted with.

♀ in the Cabinets of the Rev. G. T. Rudd, Rev.

F. W. Hope, Mr. Haslehurst, and my own.

†† This species approaches very closely to the preceding, but I consider it sufficiently distinguished from it in the thickness of the antennæ; it has also more of the whitish down upon its body. I at first thought it what Vander Linden calls the *P. pectinipes* of Linné, but the ciliation of the anterior tarsi cannot certainly be called “*fortement pectinés*,” as they are scarcely more so than in the preceding species, and to which it is decidedly more closely allied than to the *P. viaticus*, with which he compares his *P. pectinipes*; besides which it is very different from the specimens in the Linnean Cabinet; but the thickness of the antennæ furnish so remarkable a character that it could not possibly have been overlooked. I took five specimens in 1832, at Hampstead, since when I have not captured it; but the Rev. F. W. Hope has taken it this year, at Southend, in Essex: and the Rev. C. Bird showed me a remarkable variety of it, captured at Burghfield, by S. W. Haslehurst, Esq. of Trinity College, Cambridge, which has upon the left side the nervures of *Aporus*; but I have already shown above, under *P. niger* and *viaticus*, that this is not an unusual divarication in this genus.

SP. 15. FUSCUS. Lin.

*niger, glaber, abdomine basi ferrugineo, alis fuscis* ♂ ♀.

length  $3\frac{1}{2}$ —7 lines.

Fab. E. S. Supp. 246. 3; Piez. 189. 11; Panz. 65. 15; Ency. Méth. 10. 182. 16; V. d. Lind. pt. 1. 66. 33.

*Sphex fusca*. Lin. F. S. 1652; S. N. 944. 16; Fab. S. E. 349. 19; E. S. 2. 210. 46; Rossi, 2. 95. 813.

Black: the head punctured, pubescent; the mandibles rufescent in the middle; labrum slightly exposed, subemarginate.

Thorax delicately punctured, pubescent; metathorax somewhat obtuse, with a deep impression at the centre of its base,

and very delicately transversely striated; the wings with their nervures piceous, and a fuscous nebulosity covering their disk; the legs with their anterior tarsi slightly ciliated, the intermediate tibiæ and first joint of their tarsi very spinose; and the posterior tibiæ strongly serrated, and the first joint of their tarsi also very spinose.

The abdomen shining, with the first and second segments, and the base of the third, red; the apical segments somewhat hirsute.

The ♂ does not differ except in the usual characteristics, and the posterior legs having only a few dispersed spines; the apical segment of the abdomen is furcate and has on each side some curved hairs, and the margin of the sixth ventral segment has two lateral incisions.

In most Cabinets.

††† I have an insect almost intermediate between the *P. fuscus* and *P. affinis*, it having the wings of the former, and the metathorax coarsely punctured, with a few transverse striæ in the centre. I consider it merely a variety of the above, unless I should discover more that resemble it. This is a common species, but differing rather in habits from the others of the genus, as it is found almost exclusively on the banks of hedge rows. The ♂ is generally much smaller than the ♀.

SP. 16. AFFINIS. V. d. L.

*ater, abdominis basi rufo-ferrugineo, metathorace irregulariter rugoso, alis albis apice nigris* ♂ ♀.

length 5—7 lines.

V. d. Lind. Obs. pt. 1. 67. 34.

Black: head punctured, pubescent, a longitudinal impressed line running backwards from the base of the antennæ, but not extending beyond the foot of the tubercle upon which they are placed, and which in front it divides into two prominences; the

apex of the mandibles piceous; labrum slightly exerted, sub-emarginate.

The thorax delicately punctured, pubescent; the metathorax very coarsely wrinkled transversely, with a central longitudinal impression; the nervures of the wings black, the wings themselves slightly fuscous, with a broad dark band at their edge which extends inwardly as far as the marginal and submarginal cells; the legs with the anterior tarsi slightly ciliated, and the intermediate tibiæ and first joint of the tarsi spinose; the posterior tibiæ strongly serrated, and the first joint of their tarsi also spinose.

The abdomen has a whitish reflection, and the first, second, and base of the third segments, red,—the margin of the second being more deeply coloured; the remainder black, with their margins piceous, and the last segment having its apex covered with fulvous hair ♀.

The ♂ differs only in the usual characteristics and the metathorax being less coarsely wrinkled, the central longitudinal impression deeper, and the sixth ventral segment very slightly emarginate.

In the Cabinets of Mr. Curtis, Mr. Hope,  
Mr. Stephens, and my own.

†† This species has been found by myself in the vicinity of London, I think in Copenhagen Fields; by Mr. Stephens at Ripley; by the Rev. F. W. Hope at Southend, in Essex; and by Mr. Curtis in Norfolk.

SP. 17. EXALTATUS. Fab.

*niger, abdominis basi rufo, alis apice fuscis, puncto albo.*

length  $2\frac{1}{2}$ — $6\frac{1}{2}$  lines.

Fab. E. S. Supp. 251. 31; Piez. 195. 41; Panz. 86. 10; Revis. 2. 119; Lat. H. 13. 281. 3; Ency. Méth. 10. 182. 15; V. d. Lind. pt. 1. 64. 30.

*Sphex exaltata.* Fab. S. E. 351. 31; E. S. 2. 214. 69; Villers, 3. 239. 47.

— *albomaculata.* Schrank. Ins. Austr. 383. 75; Villers, 3. 249. 80.

*Pompilus variegatus.* Var. 1. Illiger, F. E. 2. 99. 820.

Black: head delicately punctured; mandibles rufescent, with their base black; labrum concealed.

Thorax opaque, delicately punctured; the metathorax with a very slight longitudinal impression; the tegulæ piceous; the wings iridescent, with their nervures black, and a dark cloud covering the marginal, submarginal, and discoidal cells, enclosing with the black external edge of the wing a white spot towards its extremity; the legs with the anterior tarsi simple, and the intermediate and posterior tibiæ slightly serrated on the exterior.

The abdomen, with the first and second segments, and the third on the sides at the base, red,—the apical segments being slightly ferruginous ♀.

Var.  $\beta$ . with the inside of the anterior legs, and the posterior femoræ, and base of the tibiæ, red ♀.

The ♂ differs in wanting generally the white spot at the extremity of the wings, and also in having the posterior tibiæ simple, and the sixth ventral segment slightly emarginate.

In most Cabinets.

††† This species is very variable in the marking of the wings, for the white spot is not always present and is sometimes only slightly indicated, and it is also very variable in size, which two circumstances have frequently led to its being separated into different species. It is one of the most common.

SP. 18. FASCIATELLUS. Spin.

*niger, abdomine antice rufo, alis hyalinis fasciâ ante apicem fuscâ* ♀.

length  $4\frac{1}{2}$  lines.

Spinola, 2. 37. Pl. 5. f. 22; V. d. Lind. pt. 1. 65. 31.

Black: head punctured; apex of the mandibles rufescent; labrum concealed.

Thorax punctured, somewhat gibbous and very short; metathorax the same, and very delicately punctured and shining; the wings with their nervures black, and a broad transverse fascia covering the marginal, second and third submarginal, and a portion of the third discoidal cells, not extending to the posterior margin of the wing, and another very slight transverse mark covering the geniculation of the externo- and transverso-medial nervures; the legs black, the anterior tarsi very slightly ciliated, and the intermediate and posterior tibiæ very strongly serrated.

The abdomen, with the first, second, and base of the third segments, red.

The ♂ I am unacquainted with.

In the Cabinet of Mr. Hanson and my own.

††† This species is very distinct from the preceding when compared with it, its thorax being much more gibbous, the wings differently marked, the nervures traced differently, and the posterior tibiæ more strongly serrated. I have caught it at Hampstead and Highgate, but it is rare. I have not now taken it for three years. I have seen a specimen in the possession of Mr. Hanson.

#### GENUS VII. CEROPALES. Lat.

HEAD compressed, of the width of the thorax; *eyes* oval, placed laterally high; the *stemmata* in a triangle on the forehead; *antennæ* filiform in the ♀, gradually but very slightly increasing in thickness towards the apex in the ♂, inserted in the middle of the anterior part of the face, rigid, a little curved, and the division of the joints scarcely distinguishable; *labrum* nearly triangular, somewhat obtuse at its base, attached to the anterior edge of the clypeus, entirely exerted; the *mandibles* with a sharp tooth below their apex. The THORAX gibbous; *collar* transverse, extending laterally to the tegulæ; *scutellum* very prominent; *metathorax* inclined; *superior wings* having

one marginal cell, the extremity of which is not detached from the margin of the wing, and four submarginal cells, the first a little longer than the second, which is oblong and receives the first recurrent nervure,—the third much narrowed towards the marginal cell and receiving the second recurrent nervure,—the fourth reaching the extremity of the wing; legs moderately long, the posterior ones disproportionately so; the posterior tibiæ slightly spinose; the claws of all the legs small, but furnished with a large pulvillus. The ABDOMEN oval; the hypopygium of the ♀ prolonged beyond the podex and contracted into a narrow obtuse canal, whence a tube is frequently exerted, the extremity of which is soft and which is probably the ovipositor.

Type, *C. maculata*.

††† This genus was established by Latreille in his “Précis,” and adopted by Fabricius in his “Systema Piezatorum,” who had previously arranged these insects in his genus *Evania*, to which they have so very slight a resemblance. St. Fargeau considers them parasitic, the anterior legs being unfurnished with cilia, and he mentions having observed them entering backwards into the cells of the predatory fossore, which, he thinks, proves that their object was to deposit their eggs; they are generally found upon Umbelliferæ.

SP. 1. MACULATA. Fab.

*nigra, thorace maculato, abdominis primo segmento punctis duobus, secundo margine, anoque albis* ♂ ♀.

length  $2\frac{1}{4}$ — $3\frac{1}{2}$  lines.

Latr. Hist. 13. 283. 1; Fab. Piez. 185. 1.

*Evania maculata*. Fab. S. E. 345. 2; E. S. 2. 193. 2; Rossi, 2. 84. 799.

*Pompilus frontalis*. Panz. 72. 9.

*Ichneumon multicolor*. Oliv. Ency. Méth. 7. 209. 17.

Black : head punctured, subpubescent ; antennæ black, with a cream-coloured spot on the scape beneath, and the face with a longitudinal line of the same colour occupying the inner orbit of the eyes and traversing the clypeus (sometimes not) on each side, the latter covered with a silvery pubescence.

Thorax punctured, with a band at the posterior margin of the collar, sometimes obsolete or interrupted, a small lunate spot occupying the post-dorsolum and another on each side at the extreme apex of the metathorax, all cream coloured ; the metathorax granulated, with a slightly elevated longitudinal line in its centre ; the wings subhyaline, iridescent, with their nervures piceous and their stigma ferruginous, their extreme margin being slightly coloured ; the legs red, with the coxæ and trochanters black, as well as the knees, apex of the tibiæ and articulations of the tarsi of the posterior pair, their coxæ having also a longitudinal cream-coloured line, but the legs vary much, being sometimes black and of all the intermediate tints.

Abdomen with an ovate transverse spot on each side of the first segment, a band at the margin of second, and others abbreviated on each side at the margin of the fourth, fifth, and sixth segments, all cream coloured. The markings vary much, being sometimes nearly obsolete.

The ♂ differs in having the cream-coloured markings more distinct and larger, and wanting the abbreviated band on the margin of the fourth segment.

In most Cabinets.

†† This insect varies considerably, scarcely two individuals being exactly alike. It has been taken by F. Walker, Esq., in September, at Barmouth and Penzance ; by the Rev. F. W. Hope, in North Wales ; by Mr. Davis, at Birchwood in Kent ; and by Mr. Stephens, at Ripley in Surrey.



## SP. 2. VARIEGATA. Fab.

*nigra, albo maculata, abdomine rufo apice nigro, maculis tribus albis.*

length  $3\frac{1}{4}$  lines.

Latr. H. 13. 284. 2; Fab. Piez. 186. 2.

*Evania variegata.* Fab. E. S. Supp. 241; Panz. 77. 10.

The head black; the face marked with cream colour, which occupies the inside of the eyes and the whole of the clypeus, with the exception of a narrow black band that runs down the centre, but suddenly terminates before its junction with the labrum, which is of the same colour. The antennæ black, with the basal joint white beneath.

The thorax black; the collar with an interrupted transverse band, the post-dorsolum, and the tubercles, all cream coloured; the tegulæ rufo-testaceous; the wings iridescent, a little coloured on the disk and slightly coloured towards the margin. The two anterior pairs of legs red, with the extreme joint of the tarsi piceous; the posterior pair red, with the knees and apex of the tibiæ piceous; the posterior tarsi black; the coxæ black, the anterior pair in front, and the intermediate and posterior pairs with a lateral spot of a cream colour; the calcaria rufous.

The abdomen, with the two first segments, red; the posterior margin of the second segment having on each side a transverse lunule of a cream colour; the remainder black, with their margin rufo-piceous, and nearly the whole of the apical segment occupied by a cream-coloured spot ♀.

I am unacquainted with the ♂.

In the Cabinet of British Museum.

††† The only British specimen I know is in the National Cabinet. It was taken, I believe, in Devonshire, by Dr. Leach.

## GENUS VIII. APORUS. Spin.

HEAD subrotound, of the width of the thorax; eyes lateral, distant; *stemmata* placed in a triangle upon the vertex;

*antennæ* inserted in the middle of the anterior part of the face, shorter than the thorax, slightly curved, filiform; *labrum* concealed; *clypeus* porrect; *mandibles* arcuate, bidentate.\* THORAX somewhat gibbous; *collar* transverse; *scutellum* minute, placed below the mesothorax; *metathorax* obtuse; *superior wings* with one marginal cell—small, subtriangular, and two submarginal cells, the first long, the second subquadrate, slightly contracted towards the marginal cell, receiving both recurrent nervures—the commencement of a third slightly traced; the *legs* long, the posterior pair in particular; the anterior *tarsi* of the ♀ ciliated on the outside; and all the *tibiæ* armed with spines, the posterior ones with a double row; the bifid *claws* furnished with a small pulvillus placed between them. ABDOMEN ovate, subsessile.

Type, A. unicolor.

††† This genus was established by Spinola in 1808; it was adopted by Latreille, in his "Genera," in 1809. It closely resembles *Pompilus* in habit, particularly the *P. gibbus*.

SP. 1. BICOLOR. Spin.

*ater, abdominis segmentis tribus anterioribus saturatè rubris.*

length  $2\frac{1}{2}$ — $3\frac{1}{2}$  lines.

Spinola, 2. 34; Lat. Gen. 4. 64; St. Fargeau, Ency. Méth. 10. 183. 1; V. d. L. Obs. pt. 1. 80. 3.

Head black, punctured, with a slight silvery pubescence covering the face, excepting the clypeus.

Thorax black, punctured; the wings fuscous, the extremity having a broad black border extending inwards nearly as far as the apex of the second submarginal cell; the legs black.

\* Spinola says tridentate, but St. Fargeau bidentate. Not having a specimen I am unable to say which is right, but I conclude the latter, as he corrects Spinola.

The abdomen black, opaque; with the first and second segments, and the base of the third, red; and the base of the first and second slightly covered with a silky pubescence ♀.

The ♂ differs in having the anterior part of the face, excepting the clypeus, the metathorax, under part of the thorax, the coxæ, and trochanters, all covered with a dense silvery pubescence, and the margin of the first and base of the second segment rufo-piceous.

♂ ♀ in the Cabinet of Mr. Curtis.  
♀ in Mr. Stephens' and of  
the British Museum.

†† Taken by Mr. Dale, in Dorsetshire. This insect appears to be rare in Cabinets. I have as yet been unsuccessful in obtaining a British specimen.

#### FAMILY IV.

##### SPHECIDÆ. Leach.

Prothorax forming a sort of neck, very distinctly separated from the mesothorax, narrowed in front. The base of the abdomen constricted into a long petiole. Mandibles internally dentate.

1. The oral organs forming a sort of proboscis longer than the head, geniculated at about one half their length. Palpi slender, their joints cylindrical.

#### GENUS IX. AMMOPHILA. Kirby.

HEAD suborbiculate, subdepressed, wider than the thorax, particularly in the ♀; *eyes* oval, distant; the *stemmata* placed in a triangle on the vertex; *antennæ* filiform, arcuate in the ♀, slightly curved in the ♂, inserted in the middle of the anterior part of the face, all the joints cylindrical, with the exception of the two first, the first being subovate, the second globose, the

rest gradually decreasing in length from the third, which is the longest of all; the *face* below the antennæ covered with silver pile in the ♂; *labrum* almost entirely concealed by the *clypeus*, which is large, almost triangular, and generally covered with short depressed hairs; *mandibles* long, narrow, arcuate, acuminate at the apex, forcipate when closed, tridentate, the interior tooth the smallest, the intermediate large, truncate, the apical tooth the largest. THORAX oval, pubescent; *collar* infundibuliform; *mesothorax* shorter than the metathorax; the *scutellum* minute, transverse; *metathorax* obtuse; the *superior wings* having one marginal cell ovate, and three submarginal cells,—the first as long or longer than the two following,—the second receiving both the recurrent nervures,—the third very small and considerably narrowed towards the marginal; *legs* long, spinose, and the anterior *tarsi* strongly ciliated, the claws which terminate the tarsi bifid, and having a pulvillus between them in the ♂, but scarcely perceptible in the ♀. The ABDOMEN very distinctly petiolated (the petiole in one species biarticulate), either clavate or ellipsoidal.

Type, *A. sabulosa*.

††† This genus, the etymology of which is from *αμμος*—*sand*, and *φιλέω*—*I love*, was established by the Rev. Mr. Kirby, in 1798, for some insects which he separated from *Sphex* and *Pepsis* of Fabricius, who, however, did not do him the justice to adopt it in his subsequent works; nor was it adopted by Latreille in his *Histoire*, but he receives it in his “*Genera*,” published in 1809. Even Spinola considered one of the species as a *Pepsis*, notwithstanding the vast discrepancy of habit. Jurine retains it as *Sphex*, forming of the insects which compose it his first family of that genus; but if he did not know Mr. Kirby’s genus, I feel surprised he did not form one for it, as it is distinctly separate according to his own characters.

St. Fargeau observes upon the habits of these insects,

that they construct their burrows in sand alone, and supply their larvæ with Arachnidæ and the larvæ of Lepidoptera, and select by preference those of the Noctuæ, sometimes as large as themselves. They sting them towards the middle of the body, which renders them torpid, but does not kill them, and prevents their motion. The *Ammophila* then extending itself in its whole length upon the larva, seizes it with its mandibles near the head, and supports the remainder of the body with its legs. But thus encumbered it can no longer fly; it therefore proceeds but slowly, dragging it along. Should it perceive any obstacle in its path, such as a stone or tuft of plants, it quits its load an instant and springs lightly forward to reconnoiter and explore its way, but returns immediately to resume its burden. He remarks having watched a ♀, thus loaded, clear a wall eight or ten feet high, but not without frequent mischances. The caterpillar fell several times to the ground, when the *Ammophila* placed it upon a projecting stone to rest itself and recruit its own strength; but it renewed its task with extraordinary perseverance and succeeded in accomplishing it. I can corroborate this interesting anecdote by a similar fact,—which I will mention under the *A. sabulosa*. I have never observed these insects convey caterpillars, for whenever I have caught them with their prey it has consisted invariably of spiders.

(a) *The petiole of the abdomen two-jointed.*

SP. 1. SABULOSA. Lin.

*nigra, hirta, segmento secundo tertioque ferrugineo* ♀ ♂.

length  $7\frac{1}{2}$ —11 lines.

Latr. N. Dict. tom. 1. 450.

*Sphex sabulosa*. Lin. F. S. 1648; S. N. 1. 941. 1; Villers, 3. 219. 1;

Fab. S. E. 346. 1; E. S. 2. 198. 1; Picz. 205. 1; Panz. 65. 12;

De Geer, 2. pt. 2. 822. Pl. 28. f. 7—15; Rossi, 2. 90. 808; Illig. F. E. 2. 91; Latr. H. 13. 292. 1.

— *dimidiata*. Christ. 313. Pl. 31. f. 4.

— *lutaria*. Panz. 65. 14 ♂.

*Ichneumon*. Geoffroy, 2. 349. 63.

*Ammophila vulgaris*. Kirby, Trans. Lin. Society, vol. 4, p. 195. 1.

Black: head punctured, pubescent, with a deep longitudinal impression arising between the antennæ at their base, and extending to the anterior stemma, and thence enclosing the whole of the stemmata.

Thorax punctured, pubescent; the tubercles, an oblique ovate spot on each side beneath the wings, and on each side at the insertion of the abdomen, covered with a dense sericeous down; the scutellum longitudinally striated; the metathorax with a slight central longitudinal elevation, the sides having rather coarse oblique wrinkles, diverging from the centre; the tegulæ piceous; the wings hyaline, with the nervures piceous, and a broad black band on the exterior edge extending inwardly as far as the marginal cell; legs black; the coxæ covered with a short sericeous down, as well as the undersides of the mesothorax; the anterior tarsi strongly ciliated on the exterior; the tibiæ spinose, the posterior pair less strongly so than the four anterior.

The abdomen clavate, finely punctured, pubescent; the first joint of the petiole and base of the second black; the remainder of the second, and the whole of the second segment of the abdomen, and base of the third, red; the rest black, the anal segment having at its extremity several rigid hairs ♀.

The ♂ differs in having the whole body considerably more pubescent, the anterior portion of the face covered with a dense sericeous down; the metathorax more irregularly rugose; the legs less spinose, and it has a black longitudinal stripe along the top of the second joint of the petiole and second segment of the abdomen, but which varies much in the depth of its colour, being sometimes obsolete.

In most Cabinets.

††† This is a very common species, and found, I believe, in all sandy districts. I have observed the ♀ dragging a very large inflated spider up the nearly perpendicular side of a sand bank, at least twenty feet high; it met with similar mischances to those mentioned in the observations upon the genus, but it dragged its prey backwards and solely by the mandibles, and its object in quitting it seemed to be to ascertain if it was still in the right tract, for it invariably flew forward to the burrow formed for its deposit. It was so intent upon its labour, that it allowed me to watch it very closely, and I respected its perseverance; for, although a magnificent specimen, I sacrificed my Entomological cupidity to my admiration of its wonderful instinct and industry. The ♀, whilst forming her burrow, makes a loud whirring buzz: this circumstance I was first led to observe by the Rev. G. T. Rudd, who pointed the insect out to me in the act; and I have since found that it continues this sound in its flight if disturbed, whereas it wings its way noiselessly at other times. It is extremely elegant in its motions, giving them a very graceful undulation and lightness.

(b) *The petiole of the abdomen being merely an abrupt contraction of the base of the first segment.*

SP. 2. HIRSUTA. Scop.

*hirsuta, nigra, metathorace rugoso, abdomine antice rufo.*

length  $6\frac{2}{3}$ —10 lines.

Kirby, Lin. Trans. 4. 195. 4; Samonelle, Comp. Pl. 8. f. 5; V. d. Lind. pt. 1. 89.

*Sphex hirsuta.* Scopoli, Ent. Carn. 772; Villers, 3. 223. 70.

— *arenaria.* Fab. Mant. 1. 273. 2; E. S. 2. 199. 2; Villers, 3. 225. 16; Rossi, 2. 92. 809; Panz. 65. 13.

— *viatica.* De Geer, 2. 152. Pl. 28. f. 16; Lat. Hist. 13. 293. 2.

*Pepsis arenaria.* Illig. F. E. 2. 92. 809.

*Ammophila viatica*. Latr. N. Dict. 1. 450.

♂ ——— *argentea*. Kirby, Trans. Lin. Society, 4. 195. 4.

Black: head coarsely punctured, covered with a thick black hirsuties.

Thorax very hirsute, coarsely punctured; scutellum a little smoother; metathorax with a central longitudinal ridge, the sides rugose; tegulæ piceous; wings transparent, with a broad marginal dark band, the nervures fuscous; legs black; femoræ pilose; anterior tarsi strongly ciliated on the exterior, and all the rest furnished on each side with rigid bristles; the interior of the posterior tibiæ lined towards their extremity with a close brown velvety pubescence.

The abdomen smooth, shining, ovate, attached by a short petiole, which is black; the first, second, and base of the third segments, red; the remainder black, the anal segment having a few rigid setæ at its extremity ♀.

The ♂ differs in having the hirsuties griseous, the face covered with a close silvery pubescence, and the longitudinal ridge of the metathorax obsolete; the legs being less spinose, and covered with a short close sericeous down; the wings less coloured; the abdomen clavate, and covered with a short silky down; the petiole longer, and the third segment with only the margin black.

In most Cabinets.

††† This is a very common species. I have frequently taken them *in copulâ*.

SP. 3. AFFINIS. Kirby.

*nigra, metathorace in extremo depresso, et transversâ seu obliquè striato, abdominis basi rufo.*

length  $7\frac{1}{2}$ — $10\frac{1}{2}$  lines.

Kirby, Lin. Trans. 4. 195. 2; V. d. Lind. Obs. pt. 1. 87. 5.

♂ *Sphex lutaria*. Fabr. Mant. 1. 273. 3; E. S. 2. 199. 3; Villers, 3. 225. 17.

*Pepsis lutaria*. Fab. Piez. 208. 2.



Black, punctured, pubescent : head with the stemmata placed in a close triangle on the forehead, in the front of the anterior one there is an impressed line extending to the base of the antennæ.

The thorax, with the dorsolum having an impressed line furcate at its base, extending backwards from the collar to the disc ; the metathorax delicately, either transversely or obliquely, wrinkled, and having towards its extremity a fossulet, which extends to the truncation, the striæ or wrinkles diverge on each side from the centre ; the wings darkly clouded, their edge having a broad black margin which extends inwardly as far as the marginal and submarginal cells ; the nervures piceous ; the anterior tarsi strongly ciliated, and all the tibiæ spinose.

The abdomen, with the petiole and the basal half of the first segment, and the three apical segments, black ; the posterior portion of the first segment, and the second and third segments, of a deep dull red ♀.

The ♂ differs in having the face covered with a dense silvery pubescence ; the legs and abdomen also covered with a close down, of a yellowish hue ; the superior surface of the metathorax with a subturbinate enclosure, transversely delicately striate with a central longitudinal impression, the sides of the enclosure rugose ; the petiole and nearly the whole of the first segment of the abdomen black, a portion of the sides only red, the second and third segments red, with the margin of the latter black.

♂ ♀ in my own and other Cabinets.

††† This species has occurred in Essex, Hampshire, and Suffolk ; it is very distinct from the preceding.

#### GENUS X. MISCUS. Jurine.

The characters of this genus are precisely those of the first section of *Ammophila*, with the exception of the *third submarginal cell being petiolated*.

Type, *M. campestris*.

††† Jurine having observed some *Spheces* and *Pompili* with the third submarginal cell petiolated, established this genus for their reception, and it is from this character that the name is derived, viz. *μίσκος*, from *μίσχος*—*a stalk*. He divided it into two families, the first to receive the former and the second the latter. Experience has proved that the last will not stand, as they are merely accidental varieties of the neuration of the wing in *Pompilus* (see obs. under *P. niger* and *viaticus*); but the former I retain, for all that I have examined are specifically distinct from the *Ammophila* with two joints to the petiole, and the petiole of the third submarginal cell always accompanies those peculiar specific differences. St. Fargeau has made it the third subdivision of the second division of *Ammophila*, in the tenth volume of the *Encyclopédie Méthodique*, which is the more surprising, as in dividing *Gorytes* and *Crabro* he almost splits hairs; but I here restore the genus, and shall consider it a good one, until I find individuals of the same species with the nervures of *Ammophila sabulosa*, which I have never yet discovered, although I have examined many both British and continental specimens.

SP. I. CAMPESTRIS. Lat.

*niger, metathorace in medio depresso et a latere obliquè striato, abdominis segmento secundo et tertio rufo.*

length 7—8½ lines.

V. d. Lind. pt. 1. 92.

*Ammophila campestris.* Latr. Gen. 4. 54; Nouv. Dict. 1. 450; St. Fargeau, Ency. Méth. 10. 453.

Black, pubescent, punctured: head with a central impressed line in front of the anterior stemma extending to the face; stemmata placed upon the vertex.

The thorax having the dorsolum very delicately transversely

striated; the metathorax with a central longitudinal slight depression and obliquely striated, the striæ diverging from the centre, its apex densely sericeous, and the pectus has a sericeous patch on each side beneath the wings; the tegulæ piceous; the wings clouded, with a dark border at their margin, their nervures black; legs spinose, and the anterior tarsi ciliated.

The abdomen has the petiole black as well as the extreme base of the first segment, the remainder of which, and the entire second, and base of the third, red ♀.

The ♂ differs in having the face beneath the antennæ densely covered with a sericeous pubescence; the sculpture in general more strongly marked; the metathoracic impression sometimes obsolete, with the petiole, and the superior surface of the two first segments, black; sometimes the extreme base of the second red, and the rest entirely black.

♂ and ♀ in my own and other Cabinets.

††† Found in Dorsetshire, and in the New Forest. The Rev. G. T. Rudd informs me, that he knows but one spot in the New Forest where it is to be taken. The *Ammono-phila vulgaris*, with which alone it could be confounded, is abundant in the same district; but that they are specifically different the most superficial examination will immediately detect, and until I have strong proofs to the contrary I shall hold *Miscus* a good genus.

2. Maxillæ and labium shorter, or scarcely longer than the head, geniculated merely at their extremity; nearly all the joints of the palpi obconical.

#### GENUS XI. SPHEX. Auctorum.

HEAD large, transverse, of the width of the thorax; eyes large, oval; *stemmata* placed in a triangle at the vertex; *antennæ* filiform, inserted at the middle of the face near the base of the

*clypeus*, which has the form of a truncated triangle, the apex extending high in the face, the anterior margin rounded; *labrum* concealed when the mandibles are closed, but somewhat turbinate, and having a central longitudinal carina; the *mandibles* large, arcuate and bidentate, each tooth having at its base, within, a small process, the apical tooth acuminate, and the inner one triangular, sometimes obtuse at its extremity. THORAX ovate; the *collar* transverse, attenuated and depressed, and constricted in front into a sort of neck; the *dorsolum* having an epaulet, generally pubescent, passing over the *tegulæ*; the *scutellum* transverse; the *metathorax* slightly inclined, truncate posteriorly; *the superior wings with one marginal cell long and narrow, rounded at its apex, and three submarginal cells—the first as long as the two following—the second quadrate, receiving the first recurrent nervure towards its end—the third forming a truncated triangle, with its posterior margin slightly rounded, and receiving the second recurrent nervure in its middle—a fourth cell sometimes commenced*; the *legs* moderately long and stout, and generally having the anterior *tarsi* ciliated, and the intermediate and posterior *tibiæ* with a double row of spines. The ABDOMEN ovato-conical, distinctly and abruptly petiolated, the petiole formed of the anterior half of the first segment; the *hypopygium* flattened at its extremity, and obtuse, and produced beyond the podex.

Type, *S. flavipennis*.

††† The name is derived from σφῆξ, *a wasp*; it is very old, and long remained a grand heterogeneous repository, until by degrees several genera were separated from it; but it now comprises, thanks to Jurine, only such as possess the above characters, which form those of his second family of the genus *Sphex*.

## SP. I. FLAVIPENNIS. Fab.

*nigra, fronte aureâ, abdomine rufo, petiolo apiceque atris, tarsis ferrugineis.*

length  $7\frac{1}{2}$  lines.

Fab. E. S. 2. 201. 10 ; Latr. Hist. 13. 293. 3 ; Jurine, 129. Pl. 8. Gen. 5. fam. 2 ; Ahrens, Fauna Europ. 6. 18 ; V. d. L. pt. 1. 94.

*Pepsis flavipennis.* Fab. Piez. 210. 13.

Black, delicately punctured, pubescent : head with the mandibles ferruginous and their apex piceous ; the face covered with a dense aurichalceous pubescence.

Thorax with the scutellum very prominent, and a longitudinal depression in the middle ; the post-dorsolum lunulate, and also very elevated ; the metathorax covered with a dense griseous hirsuties, which conceals its sculpture ; the legs black, with the tarsi ferruginous—the anterior tarsi ciliated outside, and the intermediate and posterior tibiæ spinose ; the tegulæ ferruginous ; the wings fuscous, with their nervures rufo-piceous.

The abdomen with the petiole and base of the first segment black ; the remainder of the first segment, and the second and third, red ; the rest black, with their margins piceous.

I am unacquainted with the ♂.

♀ in the Cabinet of Mr. Stephens.

††† This insect, which is unique as British, Mr. Stephens thinks was taken in Norfolk.

## GENUS XII. DOLICHURUS. Latr.

HEAD subglobose, of the width of the thorax, slightly depressed in front, convex posteriorly, having a *tubercle* rising abruptly at the base of the clypeus, concave on its superior surface ; *eyes* oval, placed at the sides of the head ; *stemma* seated near the vertex ; *antennæ* filiform, longer than the thorax, inserted at the lateral angles of the tubercles of the face, the scape thick, and nearly as long as the third joint, the pedicle subglobose, the third, fourth, fifth, and sixth joints subequal, the remainder regularly decreasing in length, and all from the

second cylindrical; the *clypeus* transverse, convex, truncate in front; *labrum* concealed; *mandibles* long, narrow, arcuate, acuminate at their apex, and dentate within. THORAX oval; the *collar* transverso-quadrate, narrowing into a kind of neck; the suture that separates the dorsolum and scutellum very advanced, extending between the tegulæ of the superior wings; the *scutellum* semicircular, flat; the *metathorax* truncated posteriorly; the *superior wings with one marginal and four submarginal cells—the marginal cell long and narrowed beyond the second submarginal, the first submarginal having the commencement of a nervure springing from the first transverso-cubital and returning backwards—the second and third submarginal cells much narrowed towards the marginal, and each receiving a recurrent nervure—the fourth extending to the apex of the wing*; the *legs* long and slender; the *coxæ* subglobose; the *femoræ* obclavate, slightly flattened on the interior surface. THE ABDOMEN slightly elongate, conical, attached to the thorax by a broad, short, flat petiole; the first, second, and third segments constricted at their margin; the terminal segment prolonged into an obtuse point, whence the sting is exerted.

Type, *D. corniculus*.

††† The etymology is  $\delta\omicron\lambda\iota\chi\eta$ , *long—ουρα*, a tail, from the prolongation of the apex of the abdomen. It is rather singular that Latreille should have given the genus a masculine termination, the Greek substantive from which it is derived being feminine. The insect which led to its construction had been described by Spinola as a *Pompilus*, but both Latreille and Jurine, to whom he sent it upon finding subsequently other specimens, considered it immediately a new genus allied to *Alyson*, whence he called it *Alyson ater*, forgetting, I suppose, that he had previously described it as *Pomp. corniculus*; but I strongly suspect that his *A. ater* is the *Pison ater* of the continent. The specific name will consequently remain the same as first described by Spinola.

## SP. 1. CORNICULUS. Spin.

*ater, nitidus, immaculatus* ♂ ♀.

length 3—4½ lines.

St. Fargeau, Ency. Méth. 10. 450.

*Pompilus corniculus*. Spin. 2. 52.*Pison ater*. Lat. Gen. 4. 58.*Dolichurus ater*. Lat. ib. 387; V. d. L. pt. 1. 95.

Black: head subpubescent, deeply punctured.

Thorax deeply punctured; the dorsolum having on each side a longitudinal impression which terminates suddenly near the suture that separates it from the scutellum; the metathorax with its superior surface enclosed by an elevated line forming a truncated triangle, the interior whereof is occupied by three irregular longitudinal carinæ, between which and at the sides it is transversely wrinkled; the tegulæ rufo-piceous; the wings slightly coloured; the legs covered with a short pubescence; the tibiæ and tarsi simple, and the latter with the apex of their joints rufo-piceous.

Abdomen smooth, shining, the posterior margin of the segments rufo-piceous.

The ♂ differs only in having the abdomen slightly punctured.

♂ and ♀ in the Cabinet of the Brit. Mus.

††† It was somewhat difficult to decide which might be specific characters, having only one specimen of each sex to examine; but I have taken such as are generally so, viz. the sculpture. I shall be happy if the discovery of a second species should prove me wrong, hitherto but one specimen of each sex has occurred; they were taken by Dr. Leach many years ago, I believe in Devonshire.

## FAMILY VI.

LARRIDÆ. Leach.

The labrum entirely concealed, or but slightly exerted.

The mandibles are deeply emarginate on the exterior. The abdomen ovoido-conical or conical.

1. Three submarginal cells.

### GENUS XIII. LARRA. Fab.

HEAD large, compressed, a little wider than the thorax, with two deep sulcations in the face for the reception of the first joint of the antennæ; the *vertex* occupied by a quadrate space, enclosed in front and on the sides by an elevated ridge, terminated posteriorly by a transverse fossulet occupying the situation of the posterior *stemma*, which are obsolete and approximate, the anterior *stemma* is seated in front of the enclosure, and very minute; *eyes* oval, lateral, slightly converging at the vertex; *antennæ* filiform, inserted at the base of the clypeus, with the basal joint very incrassate; *clypeus* transverse, the anterior margin inflexed and then reflexed; the *mandibles* large, arcuate, with a dentation on the exterior towards the base. THORAX oval; the *collar* transverse, almost concealed beneath the gibbosity of the dorsolum in the ♂; the *scutellum* transverse; the *metathorax* very long, truncated posteriorly; the *superior wings* with one marginal cell appendiculated, and three submarginal cells, the first as long as the two following—the second receiving both the recurrent nervures near its centre—the third lunulate—sometimes a fourth scarcely commenced; the *legs* moderately long, spinose; the *femoræ* obclavate; the anterior *tarsi* strongly ciliated on their exterior, the joints of the rest having a fascicle of rigid hair at their extremities. ABDOMEN ovato-conical, acuminate at its apex in the ♀, furcate in the ♂.

Type, *L. anathema*.

††† This genus, of which the etymology is exceedingly doubtful, was first established, in 1793, by Fabricius, in his "Entomologia Systematica," and immediately adopted by



Latreille in his "Précis." Panzer, in his "Kritische Revision," 1806, again divided it, from a slight difference in the oral organs, restricting the genus *Larra* to the *L. anathema*, and calling the others *Tachytes*; but I entertain, with Latreille, considerable doubt whether they ought to be divided generically, as their wings are the same: and in a series of foreign species I find the other characters merge insensibly into each other, leaving the length of the metathorax the only tangible one. But I humbly follow in the wake of eminent Entomologists and retain it for the present.

SP. 1. ANATHEMA. Rossi.

*nigra, subpubescens, alis violaceis, abdomine antice ferrugineo, segmentis ad latera lucidis.*

length  $7\frac{1}{2}$ — $10\frac{1}{2}$  lines.

Coquebert, Illustr. Dec. 2. Pl. 12. f. 11.

*Sphex anathema.* Rossi, 2. 101. 822.

*Liris anathema.* Illig. 2. 101. 822.

*Larra ichneumoniformis.* Fab. E. S. 2. 221. 4; Piez. 220. 4; Panz. 76. 18; Latr. Nouv. Dict. 17. 324; Coquebert, Dec. 2. f. 10.

Black: head punctured, pubescent; face within the sulci smooth, shining, a deep central longitudinal impression extending from the transverse fossulet at the vertex to the occiput; antennæ black, covered with a brown pubescence, excepting the scape, which is glabrous, and beneath rufo-piceous; the clypeus slightly covered with an aurichalceous down.

Thorax punctured, pubescent; metathorax finely granulated, with a longitudinal central carina, which changes into an impression at the truncation; the tegulæ testaceous; wings deeply coloured, chiefly towards the anterior margin; legs black, pubescent; the tarsi piceous, with the apical joint black.

Abdomen smooth and shining, the two first segments red, the margin of the three first slightly constricted, and of all, from the third, piceous in the centre, all the segments covered laterally with a dense sericeous down ♀.

The ♂ differs in having the pubescence thicker in the face; the wings less coloured; the legs less spinose, and the abdomen entirely opaque, caused by its being wholly covered with minute punctures; and the margins of the segments broadly covered with the sericeous pubescence.

♂ ♀ in the Cabinet of British Museum  
and of Mr. Stephens.

††† These insects were caught many years ago, in Devonshire, by Dr. Leach; Mr. Halliday, in the "Entomological Magazine," states that he has captured it in Ireland.

#### GENUS XIV. TACHYTES. Panz.

HEAD transverse, depressed in front, a little wider than the thorax, with a depression on each side of the face, at the base of the clypeus, extending half way to the vertex, bending in a slight curve from the eyes to the base of the antennæ, covered, as also the *clypeus*, sparingly in the ♀, but more densely in the ♂, with an aurichalceous pubescence; *eyes* oval, converging at the vertex; *stemmata* placed low, but within the return of the interior margin of the eye, the anterior one somewhat lower, the posterior pair obsolete-confluent; *antennæ* filiform, inserted at the base of the clypeus, the basal joint gradually incrassate, obconical, the rest cylindrical, the second short, and the apical one acuminate, the whole slightly covered with a silvery pubescence; the *clypeus* transverse, the anterior margin inflexed, with the edge suddenly reflexed; *labrum* concealed; *mandibles* large, arcuate, acuminate, with a dentate process on the exterior, towards the base. THORAX oval; the *collar* almost concealed beneath the gibbosity of the anterior part of the mesothorax; the *scutellum* transverse; the *metathorax* posteriorly truncate, nearly as broad as long; *superior wings with one marginal cell slightly appendiculated, and three submarginal cells—the first and second subequal, and the latter contracted towards the mar-*

ginal cell, and receiving both the recurrent nervures—the third lunulate; the legs moderate, all spinose; the tarsi longer than the tibiæ, the anterior pair ciliated, the bifid claw having a large pulvillus within its fork. ABDOMEN ovato-lanceolate, subsessile, about the length of the thorax, with the superior surface depressed, and the apex acuminate in the ♀, but furcate in the ♂; the *podex* in the ♀ with the disk flat, and the lateral margins reflexed, separated from the hypopygium by a horizontal incision, whence a cylindrical tube is exerted.

Type, *T. pompiliformis*.

†† These insects were separated from *Larra*, under the name of *Tachytes*, by Panzer, in his “Revision,” in 1806; Illiger did the same in his edition of the “Fauna Etrusca,” in 1807, but called them “*Lyrops* ;” Panzer’s name consequently has the precedence. I fully agree with Latreille in considering that there was scarcely occasion to disunite them, for they are closely linked by exotic species: the name is derived from the rapidity of their motions—*ταχύτης*, quickness.

SP. 1. POMPILIFORMIS. Panz.

*niger, abdominis basi rufo.*

length  $2\frac{1}{2}$ — $4\frac{3}{4}$  lines.

V. d. Lind. Obs. pt. 2. p. 22. 5.

*Larra pompiliformis*. Panz. 89. 13; Spin. 2. 173.

— *dimidiata*. Panz. 106. 13.

Black, finely punctured: head with a longitudinal impression extending from the base of the antennæ to near the occiput; the interior margin of the eyes and the clypeus covered with an aurichalceous pubescence; the apex of the mandibles rufopiceous.

Thorax having the metathorax delicately granulated upon its superior surface, the truncation transversely striate, with a deep fossulet at the centre of its base; the tegulæ testaceous; the

wings slightly fuscous, the nervures piceous; legs black, the anterior tarsi strongly ciliated on the outside, and the four posterior ones with all the joints spinose at their extremities, and the two or three exterior joints rufo-piceous, the anterior pair of the calcaria rufous, and the intermediate and posterior black.

The abdomen having the posterior margin of the segments depressed, and slightly covered with a silvery pubescence, chiefly towards the sides, the two first segments and the base of the third rufous, the latter sometimes entirely red ♀.

The ♂ does not differ, with the exception of the metallic pubescence being denser, and that but very seldom more than the two first segments of the abdomen are rufous, and the legs less spinose.

††† Abundant upon Hampstead Heath. Found at Southend, and in North Wales, by the Rev. F. W. Hope; at Black Gang Chine, Isle of Wight, and at Barmouth, by Mr. Walker; in the New Forest, and near Yarm, in Yorkshire, by the Rev. G. T. Rudd. I have frequently caught it with a small sandy-coloured caterpillar.

SP. 2. UNICOLOR. Panz.

*ater, immaculatus, abdominis segmentorum marginibus lucidis.*

length 3—4½ lines.

*Larra unicolor.* Panz. 106. 16.

*Var. Tachytes pompiliformis.* V. d. Lind. pt. 2. 22. β.

Atrous: head rather coarsely punctured; a deep longitudinal furrow extending from the base of the antennæ to the anterior stemma, and passing beyond it to the centre of the vertex; the lower portion of the face, in front, covered by a sericeous pubescence.

The thorax loosely punctured; the metathorax longitudinally striated at its base, which becomes reticulated or subrugose towards the verge of the truncation, where the striæ are trans-

verse; the tegulæ piceous; the wings fuscous, their nervures piceous; the legs black, with the apical joints of the tarsi piceous, the anterior tarsi ciliated, and the intermediate and posterior tibiæ with a double row of spines on the outside.

The abdomen punctured, subpubescent, the margins of the segments depressed, and sericeous on the sides ♀.

The ♂ differs in having more of the silvery pubescence, and the apical joints of the tarsi ferruginous.

In the Cabinets of Mr. Walker, the Rev. G. T. Rudd, Mr. Curtis, and my own.

††† Vander Linden considers this insect as merely a black variety of the *T. pompiliformis*, but it is certainly distinct, for the third submarginal cell is much narrower than in that insect, in which it occupies but little less than one-third of the marginal cell, not including the appendiculation; whereas in the *unicolor* it does not occupy more than one-seventh of that cell, besides which, the metathorax is much more deeply and somewhat differently sculptured. Found at Black Gang Chine, Isle of Wight, by the Rev. G. T. Rudd, Mr. Walker, and Mr. Curtis.

## 2. Two submarginal cells.

### GENUS XV. MISCOPHUS. Jurine.

HEAD large, seen from above subquadrate, with a depression on each side in front for the reception of the antennæ; eyes oval, distant, very slightly converging; the *stemmata* placed high upon the vertex, in an equilateral triangle, the posterior ones far back, nearly in a line with the return of the posterior margin of the eyes; antennæ filiform, inserted at the base of the clypeus; the *scapus* obconic, the second joint slightly incrassate, the rest cylindrical, subequal; the *clypeus* transverse, with the anterior margin reflexed; *labrum* concealed; the *mandibles* unidentate, tuberculated within, and having a

strong tooth on the exterior towards the base. THORAX oval; the *collar* considerably lower than the mesothorax; the *scutellum* transverse; the *metathorax* truncate posteriorly, broader than long; the *superior wings* with one marginal cell, ovate, and two submarginal cells—the first receiving the first recurrent nervure near that which separates it from the second submarginal cell, which is triangular and petiolated, and receiving the second recurrent nervure near its apex; legs moderate, subspinose, the tarsi long, the anterior ones ciliated on the outside. The ABDOMEN subovate, subsessile, the apex pointed, the posterior margin of the segments very slightly depressed.

Type, *M. bicolor*.

††† This genus was first established by Jurine in 1807. It has been adopted by all subsequent authors, and appears to be derived from *μίσχος*, a *petiole* or *stalk*, from the petiole of its second submarginal cell.

SP. 1. BICOLOR. Jurine.

*niger, abdominis basi rufo.*

length 3 lines.

Jurine, 206. Pl. 11. G. 25; Latr. Nouv. Dict. 21. 212; Guerin, Dict. Classique H. N. 10. 632; V. d. Lind. Obs. pt. 2. 25.

*Larra dubia.* Panz. 106. 14.

Black, delicately punctured: head having the antennæ black; mandibles rufous, a little darker at the apex; each of the stemmata placed in a foveolet.

Thorax punctured; the metathorax having on its superior surface a central longitudinal carina, with three or four diverging on each side obliquely from its base, occupying together a subcordiform space, the apex of which terminates at the verge of the truncation, which is transversely striate, and has a deep longitudinal fossulet in its centre; the tegulæ piceous; the wings slightly coloured, deeper towards the margin; legs black,

the anterior tarsi ciliated on the exterior, and the posterior tibiæ with a few dispersed spines.

The abdomen delicately punctured, with the basal segment entirely, and the base of the second, rufous, gradating in the latter towards the margin to piceous; the remainder black, with their margins piceous, a slight silvery pubescence at the lateral margin of the second and third segments ♀.

I am unacquainted with the ♂ of this insect.

♀ In the Cabinets of Mr. Westwood,  
Mr. Stephens, and my own.

††† Two specimens of this insect were taken by Mr. Westwood at Coombe, in 1825, and he has again taken this year two or three more, with one of which he has obligingly supplied me.

#### GENUS XVI. DINETUS. Jurine.

HEAD transverse, depressed in front, about the width of the thorax; *eyes* oval, converging at the vertex; *stemmata* placed in a triangle towards the vertex; *antennæ* filiform in the female, with the first joint incrassate, and larger in the males, with a deep lateral impression, in which sex also the four following joints are submoniliform, the five next slightly compressed, and convolute, and the remaining three filiform, the ten first joints in the male, and all in the female, covered with a dense silvery pubescence, as well as the lower portion of the face, and the *clypeus*, which is transverse, convex, rounded in front; the *labrum* concealed; the *mandibles* tridentate, with an emargination at the base exteriorly. THORAX oval; *collar* transverse; *scutellum* transverse, small; *metathorax* truncate posteriorly; *superior wings* with one marginal cell largely appendiculated, and two submarginal cells—the first submarginal oblong, receiving the first recurrent nervure—the second small, triangular, receiving the second recurrent nervure; the legs moderate, the *femoræ* ob-

clavate. The ABDOMEN ovate, subsessile, the posterior margins of the segments depressed.

Type, *D. pictus*.

††† This genus was established by Jurine in 1807; it had been previously moved about from genus to genus, according to the peculiar views of the several writers, which tends to prove how very unstable all kinds of subdivisions among these insects were previous to the publication of Jurine's book. The name is from *διηγρός*, to move in a circle, I presume from its flight; but I have not had the pleasure of seeing it alive, therefore I cannot say; but if such be the case, it resembles *Astata* in that peculiarity.

SP. 1. *PICTUS*. Fab.

*lævis, niger, thorace maculato, abdomine ferrugineo fasciis tribus flavis, ano nigricante ♀.*

*fronte flavâ, antennis cochleatim retortis ♂.*

length 3—3½ lines.

Jurine, 209, Pl. 11. G. 26; Latr. Nouv. Dict. 9. 471; Guer. Dict. Class. 5. 515.

*Crabro pictus*. Fab. E. S. 2. 299. 20; Panz. 17. 19 ♂. 72. 10 ♀.

— *ceraunius*. Rossi, Mant. 2. App. 123. 11.

*Sphex guttata*. Fab. E. S. 2. 215. 72.

*Pompilus pictus*. Fab. Piez. 196. 43.

— *guttatus*. Fab. E. S. Sup. 252. 34; Piez. 196. 44.

*Larra picta*. Latr. H. 13. 296; Spin. 1. 73. 4.

Black: head punctured; base of the mandibles yellow, apex rufo-piceous, and a yellow line at the superior edge of the posterior margin of the eyes; the face and clypeus covered with a silvery pubescence.

Thorax punctured; an interrupted transverse band upon the collar; the tegulæ, the tubercles, and a transverse line at the scutellum, yellow; the metathorax, with a central slight longitudinal impression terminating in a deeper point, with oblique



transverse striæ on each side of it, and its superior surface and sides covered with a dense silvery pubescence, converging at the extremity, and enclosing the superficies of the metathorax at the apex; the wings slightly coloured, iridescent, the nervures piceous; the legs black, with the apex of the anterior femoræ and the exterior of all the tibiæ yellow; the tarsi rufo-testaceous, the basal joints of the intermediate and posterior pairs somewhat darker; the anterior tarsi strongly ciliated outside, and all the legs spinose.

The abdomen with the three first segments rufescent, the second and third having on their posterior margins on each side a transverse ovate yellow spot, the three following segments black, with the margins of the fifth and sixth yellow.

The ♂ differs in having the whole head yellow with the exception of the vertex, and an angular space descending towards the antennæ, and the occipital portion black; the antennæ black, with the first joint yellow, the remainder fulvous beneath; the collar entirely, and a point beneath the base of the wings, yellow, as well as all the tarsi and the anterior legs; the legs more spinose, the silvery pubescence denser, and the wings not quite so deeply coloured; the abdomen yellow, with the margins of the segments testaceous, the fourth and base of the fifth black, a yellow spot on each side of the former; the venter piceous.

♂ ♀ in the Cabinets of the British Museum,  
Mr. Curtis, Mr. Stephens, and Mr. West-  
wood.

†† This insect used to occur at Windsor, where it was taken by the Messrs. Griesbach, since when it has not been found. I know no other English locality.

#### FAMILY VII.

NYSSONIDÆ. Leach.

Mandibles not emarginate beneath. In the form of the abdomen and labrum they resemble the Larridæ.

## GENUS XVII. ASTATA. Latr.

HEAD large, transverse, compressed, a little wider than the thorax; the *face* covered in the ♂ with a long silvery grey pubescence; *eyes* large, oval, converging at the vertex in the ♀, united in the ♂; *stemmata* forming an equilateral triangle placed low towards the face, and at the angle formed by the union of the eyes in the ♂, in which sex they are very closely approximated, and the anterior stemma nearly as large as the posterior two united; the *antennæ* filiform, inserted at the base of the clypeus, arcuate in the ♀, porrect in the ♂, the first joint thick, obconic, the second very small, the third the longest of all, cylindrical, as well as the remainder, which regularly decrease in length; the *clypeus* transverse, short, slightly reflexed and truncate in front, convex in the centre, and depressed on each side; *labrum* concealed; *mandibles* slightly arcuate, bidentate, with a superior canal running longitudinally and dividing the teeth throughout its whole course, the inner tooth obtuse, the apical one more acute. The THORAX ovate; the *collar* transverse, slightly advanced in front in the form of a neck; the *metathorax* truncated; the *superior wings* with one marginal cell, narrow, short, and appendiculated; and three submarginal cells—the first narrow, longitudinal, divided obliquely about its centre by an obsolete nervure that runs from the base of the stigma to the middle of the first transverso-cubital—the second submarginal cell triangular, and receiving both the recurrent nervures—the third very distant from the apex of the wing; the inferior wings very broad, and of considerable expansion in the ♂; the *legs* moderately long, very spinose in the ♀, particularly the two posterior pairs, less so in the ♂; the anterior *tarsi* strongly ciliated on the exterior in the ♀, the intermediate and posterior pairs also strongly spined, as well as the plantæ above and all the joints on each side below. The ABDOMEN subsessile, somewhat conical, the upper surface much flattened in the ♂, its base concavo-truncate, and viewed from above forming an equilateral triangle; the margins of

the segments very much depressed, and the terminal one having the margins of its apex reflexed and separated from the hypopygium by a horizontal incision.

Type, A. boops.

††† This genus was established by Latreille, in his "Précis." Its name is derived, from its incessant motion, from  $\alpha$  priv. and  $\varsigma\alpha\tau\omicron\varsigma$ —*standing*, i. e. *not standing*. Jurine figured the genus in his work, in 1807, by the name of *Dimorpha*, either from not knowing Latreille's book or not recognising the insect from the characters, and Panzer has followed him in his "Revision;" but subsequent Entomologists have adopted Latreille's name, it having the priority.

SP. 1. BOOPS. Schrank.

*atra, abdominalis basi rufo.*

length 4—7 lines.

V. d. Lind. pt. 2. 27.

*Sphex boops.* Schrank, Enum. Insect. Austriæ indigen. 384. 77; Villers, 3. 249. 82; Rossi, 1. 128. 284.

*Tiphia abdominalis.* Panz. 53. 5.

*Larra pompiliformis.* Donovan, Brit. Insects, 12. 73. Pl. 4.

*Astata abdominalis.* Latr. Hist. 13. 297. 1; Nouv. Dict. 3. 25; St. Farg. Ency. Méth. 10. 144.

— *victor.* Curtis, Brit. Ent. 6. Pl. 261.

Black, punctured, pubescent: the head having the face and cheeks covered with a silvery griseous pubescence, the vertex quite smooth and shining, with a longitudinal impressed line in the centre, and only a few scattered punctures towards the occiput.

The thorax having the dorsolum and scutellum smooth and shining, the former being thickly punctured in front, and with a very few points scattered over its disk and behind, as well as the scutellum, the latter frequently with a deep longitudinal impression in its centre; the post-dorsolum also smooth; the metathorax reticulated, formed by longitudinal and transverse elevated lines, the former being the most prominent and generally somewhat

irregular; the wings with the nervures black, and having a broad dark band commencing at the end of the marginal and submarginal cells, decreasing in colour towards the apex; legs robust, pubescent, the extreme joints of the tarsi generally piceous, the anterior pair ciliated on the outside, and the intermediate and posterior tibiæ and tarsi very spinose.

The abdomen with the segments depressed at the margin, and the first, second, and base of the third, red ♀.

The ♂ differs in having the dorsolum punctured throughout and the base of the first segment of the abdomen black, the legs less spinose, and the cilia to the tarsi wanting; and in the colour of the wings, which generally covers the whole space occupied by the nervures, their edges being hyaline, the colour in the ♀ thus commencing where that of the ♂ ceases; sometimes, however, the whole wing is hyaline, which I have never observed to be the case in the ♀.

♂ ♀ in most Cabinets.

††† I possess a singular variety of the ♂, in which the dorsolum and scutellum are divided by a deep longitudinal central impression. This insect, even long after Mr. Curtis figured it, was a desideratum to many Cabinets. The oldest British specimen known, is recorded by Donovan to have been taken at Coombe; it is now in Mr. Stephens' Cabinet. Mr. Westwood has taken a single specimen in the same locality this year. When I first took it at Hampstead I saw a few specimens only. This was in 1832. The next year I discovered its "*Metropolis*," about a quarter of a mile from where I first caught it, and here it absolutely swarmed, which I have found to be the case ever since. The ♂ are innumerable compared with the ♀, and, whenever I have succeeded in capturing the latter with its prey I have always found it to consist of the larva of *Pentatoma bidens*, whereas Mr. Curtis took it in the Isle of Wight with the larva of *P. prasina*; and my friend Mr.

F. Smith has captured it this year at Hampstead carrying off *Epeolus variegatus*, a little bee which I have myself never observed there—this proves that its larva is supplied with a variety of food. It is difficult to detect the ♀ burrowing, for, like *Ammophila*, she selects a cavity already formed, in the interior of which she constructs her burrow free from observation. Their flight is extremely rapid, and the ♂ settles upon small clods, whence it momentarily makes wide circumvolations.

GENUS XVIII. NYSSON. Latr.

HEAD transverse, about the width of the thorax; *face* covered with a silvery down; *eyes* oval, prominent; *stemmata* placed in a triangle on the vertex, slightly elevated; *antennæ* inserted at the angles of a small elevation at the base of the clypeus, generally slightly increasing towards the apex, with the scape obconic, the second joint subglobose, and the rest regularly increasing in length and thickness from the third to the terminal one, which in some ♂ is emarginate, and in others seated obliquely upon the penultimate; the *clypeus* transverse, rounded anteriorly, and in some having the margin slightly reflexed; *labrum* concealed; *mandibles* arcuate, unidentate, and acuminate at their apex. The THORAX oval; the *collar* transverse, linear; the *scutellum* transverse, lower than the dorsolum; and the *metathorax* inclining gradually, having a spine on each side towards its posterior extremity; *superior wings* with one marginal and three submarginal cells—the first submarginal considerably longer than the other two—the second petiolated, and receiving both the recurrent nervures—the third forming an elongate hexagon, and distant from the extremity of the wing; the *legs* moderately long, and very slender, the tibiæ and tarsi densely covered with down. The ABDOMEN subsessile, ovoïdo-conic, and incurved at its extremity, with its terminal segment furcate in the ♂; the first ventral segment plane, the second very much produced in front, and forming an obtuse angle.

Type, N. spinosus.

†-† This genus was established by Latreille, in 1796, in his "Précis," and was subsequently adopted by all Entomologists, excepting Fabricius, who, to prove the *stability* of his characters, shifted the species to and fro from *Crabro* to *Oxybelus* and *Pompilus*.

SP. 1. SPINOSUS. Fab.

*niger, antennis propè thoracis longitudinem, abdomine fasciis tribus flavis.*

length  $4\frac{1}{2}$ — $5\frac{1}{4}$  lines.

Latr. Hist. 13. 305; Nouv. Dict. 23. 160; Oliv. Ency Méth. 8. 408;

V. d. Lind. pt. 2. 30.

*Crabro spinosus.* Fab. S. E. 373. 2; E. S. 2. 293; Piez. 307; Rossi,

Mant. 1. 139. 308; Panz. 62. 15.

*Sphex spinosa.* Villers, 3. 246. 71.

*Mellinus interruptus.* Panz. 72. 13.

Black: head coarsely punctured, pubescent; apex of the mandibles red; antennæ black, about as long as the thorax.

Thorax punctured, pubescent; collar having a transverse yellow band; scutellum longitudinally striate; metathorax rugose; tegulæ black; wings fuscous, with a somewhat deeper cloud over the marginal cell and exterior edge, nervures piceous; legs black, entirely simple, with the apex of the femoræ, the tibiæ, with the exception of a black ring around the anterior and intermediate pairs, (sometimes obsolete,) and all the tarsi, red.

The abdomen delicately granulated, the first segment deeply punctulate and having an interrupted (sometimes not) yellow fascia towards its margin, a continuous yellow band, attenuated about the centre, near the margins of the two following segments, and the margins themselves piceous.

The ♂ differs in having the clypeus covered with a dense silvery pubescence, as well as the whole of the underside of the mesothorax and the coxæ; the collar sometimes without the yellow band, the tibiæ with more black, the posterior pair having also a black ring, and sometimes the knees only red, and all the abdominal bands sometimes interrupted.

♂ ♀ in most Cabinets.

††† The name of this species is bad, being derived from a generic character, viz. the spines upon the metathorax; but this Fabricius did not know, as he placed it in his magazine *Crabro*. Although much like the following species, it is readily distinguished from it by its comparatively greater length of antennæ and more slender habit. These are characters which have not been before noticed, and I therefore suspect that there is much confusion in the synonymes; I have retained them nearly as they were applied by the several authors. It is common in June in many parts; the ♂ I once took, in considerable numbers, at Coombe; the ♀ I have never found so common as the next species, nor have I taken her with her prey.

SP. 2. INTERRUPTUS. Latr.

*niger, antennis paulò capite longioribus, abdomine fasciis tribus flavis.*

length  $3\frac{3}{4}$ — $4\frac{1}{2}$  lines.

Latr. Hist. 13. 306. 3; Nouv. Dict. 23. 161.

*Nysson scalaris.* Illig. 2. p. 157.

Black: head pubescent, punctured; the clypeus with a silvery down; antennæ a little longer than the head.

The thorax punctured, pubescent; collar and tubercles yellow; a small space at the base of the metathorax regularly striate; tegulæ testaceous; wings fuscous, their nervures piceous; legs red, with the coxæ, trochanters, and femoræ, except their apex, black; the mesothorax silvery beneath.

The abdomen finely shagreened, the two first segments with deeper, dispersed punctures, and the margin of the three first having each a yellow fascia, interrupted in the first and attenuated in the centre of the other two; the fasciæ frequently all entire ♀.

The ♂ scarcely differs, the silvery pubescence alone of the clypeus and lower part of the mesothorax being denser, and the antennæ somewhat shorter.

♂ ♀ in most Cabinets.

†,† Much doubt has hitherto existed as to the distinction of this from the preceding species. Latreille thinks they are the same, which either shows the confusion of the descriptions or else his inability to detect specific differences, for they are exceedingly distinct although very like. The most prominent difference is the comparative length of the antennæ. This species also is much more compact than the preceding, and the antennæ of the ♂ are shorter than those of the ♀, exclusive of the minuter differences of colour. In habit it links the *N. spinosus* with the *trimaculatus*, and I consequently place it between them. Its name is likewise inappropriate, as the bands of the abdomen are more frequently continuous than interrupted. I have found it very common at Highgate; and from not taking it with its prey I am induced to consider it may be parasitic, and perhaps upon a species of *Odynerus*. The ♀ I have taken entering holes in the sand, and the ♂ flying in hedges.

SP. 3. TRIMACULATUS. Rossi.

*ater, abdomine utrinque maculis tribus flavis.*

length 3—4 lines.

V. d. Lind. pt. 2. 30. 2.

*Crabro trimaculatus.* Rossi, 2. 95. 892.

*Nysson maculatus.* Illiger, 2. 156. 892.

—— *nigripes.* Spinola, 2. 45. 36.

—— *interruptus, var.* Oliv. Ency. Méth. 8. 408. 2.

Atrous: head coarsely punctured, pubescent; antennæ black, a little longer than the head; the face with a slight silvery down; apex of the mandibles red.

Thorax very coarsely punctured, pubescent; the collar, tubercles, a short transverse line at the scutellum, yellow; the base of the metathorax longitudinally striate; the under part of the mesothorax, and the superior surface of the lateral spines of the metathorax, covered with a dense silvery down; the tegulæ black; wings hyaline, the exterior margin coloured, the nervures



piceous; legs black, with the knees, and the extremity of all the joints of the tarsi, rufescent.

Abdomen punctured, with the first segment having on each side towards the margin a triangular spot, and the second and third a transverse mark of a bright yellow, the margin of the fourth and of the fifth piceous.

The ♂ differs in having the last joint of the antennæ inserted rather obliquely in the preceding one, and being narrower; the face and clypeus covered with a silvery down; the collar, tubercles, and scutellum, wanting the yellow marks, and the fourth segment having on each side a small yellow transverse line.

In the Cabinets of Mr. Westwood, Mr.  
F. Smith, and in my own.

††† I expect the yellow markings of the thorax are variable, for I have a specimen of a ♂ with a central spot on the collar; but this can only be determined by a multitude of specimens, and it is a rather rare species; it is very distinct from the preceding in form, and is besides smaller. The only place where I take it is Highgate, upon the leaves of brambles, where it alights for a moment, turns itself briskly round, and flies off again. On the wing it is easily taken, but when settling it is rather difficult to be secured, as like *Hedychrum*, *Anobium*, and other insects, it mimics death upon the least alarm, and falls down amongst the foliage.

SP. 4. GUTTATUS. Oliv.

*niger, thorace maculato, abdomine punctis sex transversis flavis segmentoque primo rufo.*

length  $4\frac{1}{2}$  lines.

Oliv. Ency. Méth. 8. 409. 7.

Black: head punctured, pubescent; the face with a slight silvery down.

Thorax coarsely punctured; the collar, tubercles, and a short line at the scutellum, of a cream colour; the metathorax longitudinally striate at its base; and the upper surface of the lateral spines covered with a dense aurichalceous down; the tegulæ piceous; wings slightly coloured, their margins more deeply so, and the nervures piceous; legs red, with all the coxæ, and base of the two anterior pairs, black.

The abdomen punctured, the first segment red, the remainder black, a small ovate transverse spot on each side of the first segment, and a transverse line on each side of the two following, towards the margin, of a cream colour.

♂ in the Cabinet of the British Museum.

†.†.† This appears to be a very rare species; it slightly approaches the following in colour, but it is twice as large, exclusive of other differences.

SP. 5. DIMIDIATUS. Jurine.

*niger, abdominis segmento primo rufo, et secundo utrinque maculâ transversâ albâ signatâ.*

length 2—3 lines.

Jurine, Pl. 2. 9. 22; Oliv. Ency. Méth. 8. 409. 9; V. d. Lind. pt. 2. 33.

Black: head punctured; antennæ black; face with a silvery pubescence; mandibles rufescent.

Thorax punctured, pubescent; tubercles lacteous; base of the metathorax longitudinally striate and enclosed in the form of a semicircle by an elevated ridge; superior surface of the lateral spines with a silvery down; tegulæ piceous; wings slightly coloured, darker at the edge, nervures piceous; legs black, with the anterior and intermediate tibiæ and tarsi, and the joints of the posterior tibiæ, and apex of the joints of their tarsi, rufopiceous.

The abdomen punctured, pubescent, the margins of the segments slightly constricted; the first segment, and base of the second, red (sometimes the entire segment is either entirely red

or black), the remainder black, with a transverse lacteous line on each side of the second towards the margin (sometimes, but rarely, a minute lacteous spot on each side of the third segment), and the margin of the third, fourth, fifth, and apex of the anal segment, fuscous ♀.

The ♂ differs in the face having a dense silvery pubescence; the antennæ with the last joint bi-emarginate beneath, and having sometimes a lacteous mark within and beneath the first joint, and one (but rarely) on each side of the first segment of the abdomen, as well as a minute one on each side of the third segment, which latter, as well as the mark beneath the first joint of the antennæ, is generally deficient.

♂ ♀ in my own and other Cabinets.

†-† I captured this species in abundance at Hampstead, in 1833, but neither last year nor this (1835) could I find it in the same locality; but I took a solitary specimen, in May last, at Highgate. It has also occurred in several other parts of the country. All practical Entomologists are well acquainted with the curious fact of the periodical abundance of certain insects, which are then scarcely seen again for some time. This circumstance is fully confirmed by many insects of this tribe, which in some years are found in profusion, but which are exceedingly transient in their duration. It was in company with *Arpactus tumidus* that I found the above; they were also equally abundant and have likewise since disappeared; but 1833 was a year very rich in these insects generally.

#### GENUS XIX. OXYBELUS. Latr.

HEAD transverse, subglobose, depressed in front, of the width of the thorax; eyes oval, slightly prominent; *stemma* placed in an obtuse angle upon the vertex, the posterior pair on a line with the hinder margin of the eyes; the *face* covered with a silvery pubescence; *antennæ* short, arcuate, filiform, or very

slightly increasing towards the apex, inserted at the base of the clypeus but not approximate,—the scape thickest, elongate, obconic, the second joint very small, also obconic, the third scarcely longer, attenuated at its base, the remainder subequal and subcylindrical; the *clypeus* transverse, its anterior margin rounded, inflexed at the centre, which gives it the appearance of being emarginate, which is increased by a small process on each side, most conspicuous in the ♂, and having a short tubercle in the centre of its base, prolonged in some species into a longitudinal carina, and in the ♂ generally projecting in an aquiline form; *labrum* concealed; *mandibles* slightly arcuate, acuminate, and having a subdentate process towards the base of the interior. The *THORAX* rotundate; the *collar* linear, transverse; the *scutellum* transverse, lunulate, having on each side below its posterior margin an incurved squama, which in some species is not separated, but forms a bifid plate; the *metathorax* truncated, with a mucro at its base, frequently obtuse, sometimes emarginate at its apex, and canaliculated above, generally resembling the lip of a vessel; the *superior wings with a narrow marginal cell slightly appendiculated, and one submarginal cell confluent with the second discoidal and receiving the single recurrent nervure*; the *legs* moderately long and stout; the anterior *tarsi* strongly ciliated, and the intermediate and posterior *tibiæ* spinose, the bifid claws having a large pulvillus within their fork. The *ABDOMEN* ovato-conic, subtruncate at its base; the margins of the segments somewhat constricted; the apical segment acute in the ♀, and obtuse in the ♂.

Type, *O. lineatus*.

††† This genus, the name of which is doubtlessly from ὄξυ βέλος, in reference either to the acuteness of its sting or the velocity of its flight, was established by Latreille, in his *Précis*, in 1796. It is one of the genera which, for the want of specimens, I am unable to determine the distinction

of species with all the accuracy I could wish, from not knowing whether the characters of colour and of the form of the metathoracic mucro are constant. Those which I have described appear to be specifically distinct; but as individuals, in several genera of these aculeates, take a wide range of variation, I hesitate speaking positively until I shall have had the opportunity of examining numerous specimens. There seems to be but one common species in this country.

SP. 1. UNIGLUMIS. Lin.

*niger, abdominis segmentis tribus punctis duobus albis sublateralibus, pedibus rufis.*

length 2—4 lines.

Latr. Hist. 13. 307. 2; Nouv. Dict. 24. 312; Fab. Piez. 316. 2; Oliv.

Ency. Méth. 8. 595. 8; V. d. Lind. pt. 2. 35. 5.

*Vespa uniglumis.* Lin. S. N. 951. 18; F. S. 1681; Villers, 3. 271. 14; Christ. 246.

*Crabro uniglumis.* Fab. S. E. 376. 12; E. S. 2. 300. 23; Oliv. Ency. Méth. 6. 518. 34.

Black: head punctured, pubescent, an impressed longitudinal line passing from the base of the antennæ to the anterior stemma, which it surrounds and continues beyond to the centre of the vertex, the lower part of the face covered with a silvery down; the antennæ black, the terminal joints generally fulvous, sometimes only beneath.

The thorax pubescent, punctured; the dorsolum with a central and two lateral longitudinal impressed lines, the latter abbreviated; the scutellum, and post-dorsolum, with a central longitudinal carina, which extends to the base of the mucro; an incurved short hyaline squama on each side of the posterior margin of the post-dorsolum; the mucro at the base of the metathorax short, generally obtuse, slightly curved and grooved above, the sides of the metathorax reticulated; the tubercles generally white; the tegulæ testaceous; the wings very slightly coloured,

their nervures testaceous; the legs with the coxæ and femoræ black, the tibiæ and tarsi ferruginous, their pulvilli piceous, and the knees of the tibiæ frequently pale yellow or fulvous, which in the anterior pair extends sometimes in a line down their front; the anterior tarsi ciliated, and the intermediate and posterior tibiæ with a triple row of spines.

The abdomen very delicately punctured and shining; the first segment with an ovate spot, the two following with a transverse line on each side, and the following two with a band, generally interrupted, of a lacteous colour, frequently obsolete in the last two segments, and sometimes, but rarely, the white markings are entirely deficient in all but the two or three first segments ♀.

The ♂ differs in having more of the silvery pubescence on the face; the tegulæ with generally a white spot in front; the legs with more of the yellow at the knees, the intermediate tibiæ frequently marked with yellow on the exterior, and the posterior tibiæ with a large brown or black splash on the outside; and the abdomen with seldom more than the two first segments marked with white, but is sometimes entirely deficient, leaving it quite black.

In most Cabinets.

††† This insect is always found where sand abounds; its prey consists of *Diptera*, which it has a peculiar mode of carrying by the hind legs the while it either opens the aperture of its burrow or else forms a new one with its anterior pair. Its flight is low, and in skips; it is very active.

SP. 2. FEROX. N. Sp.

*niger, argenteo-sericeus, abdomine flavo maculato, pedibus flavis, mucrone metathoracis acuto* ♂.

length  $4\frac{1}{4}$  lines.

Black: head very pubescent and punctured; the whole face and cheeks covered with a dense silvery down.

The thorax slightly covered with a silvery pubescence; the dorsolum with a central carina, which traverses it longitudinally and crosses the centre of the scutellum and post-dorsolum, terminating at the base of the metathoracic mucro; the tubercles yellow, and the incurved squamæ at the posterior angles of the post-dorsolum yellow at their base, their apex pale; the tegulæ testaceous, with a yellow spot; the central mucro acute and canaliculated above; the wings very slightly coloured, their nervures testaceous; the legs with the base of the anterior and intermediate, and the whole of the posterior femoræ, black; the apex of the anterior and intermediate femoræ, and all the tibiæ, yellow, with the exception of the interior of the intermediate pair at their apex, and that portion of the posterior pair, piceous; the tarsi ferruginous, with their first joint at its base yellow.

The abdomen punctured, shining, and covered with a slight silvery pubescence, the first segment with an ovate spot, and the three following with a transverse line on each side yellow, the margins of the segments depressed ♂.

I am unacquainted with the ♀.

♂ in my own Collection.

††† This appears to be a rare species; it was taken somewhere in the neighbourhood of London.

SP. 3. NIGRIPES. Oliv.

*niger, squamisque etiam nigris, mucrone obtuso incurvo, abdominis segmento primo punctis duobus flavis.*

length  $3\frac{1}{2}$  lines.

Oliv. Ency. Méth. 8. 596. 12.

Black: head punctured; antennæ with their apex piceous.

Thorax punctured, with the posterior part of the dorsolum having a central longitudinal carina which crosses the scutellum and post-dorsolum and terminates at the mucro at the base of the metathorax, which is curved, very obtuse, canaliculated

above; and the post-dorsolum has on each side an incurved black squama; wings slightly coloured, the nervures piceous; the centre of the metathorax has a triangular enclosure which is smooth, its sides rugose; the legs black, with the inside of the anterior pair fulvous; all the tarsi piceous, with their extreme joint red; the anterior tarsi ciliated, and the intermediate and posterior tibiæ strongly spinose.

The abdomen delicately punctured, slightly pubescent, with a transverse ovate spot on each side of the first segment towards the margin, and a transverse line on each side of the second, yellow ♀.

I am unacquainted with the ♂.

♀ in the British Museum.

††† This is unique in the collection of the British Museum. I cannot learn where it was taken; it is an old specimen.

SP. 4. BELLICOSUS. Oliv.

*niger, flavo-maculatus, mucrone canaliculato, ad apicem dilatato et emarginato* ♀.

length  $4\frac{1}{2}$  lines.

Oliv. Ency. Méth. 8. 595. 9.

Black: head punctured; antennæ with the margins of the joints rufo-piceous; mandibles testaceous at their base.

Thorax punctured, subpubescent; the scutellum semicircular, with the margins slightly reflexed and having a central longitudinal carina; the mucro at the base of the metathorax curved, grooved above, with the apex dilated and slightly emarginate; the collar, tubercles, and the bifid squama at the posterior margin of the scutellum, yellow, the latter however more deeply coloured on its edge; the tegulæ testaceous; the wings slightly coloured, with the nervures piceous; legs rufo-testaceous, with the coxæ and trochanters black, variegated with yellow; the femoræ, the anterior entirely within, and the remainder with an internal line, and the base of all the tibiæ, yellow; the pulvilli black.



The abdomen delicately punctured, pubescent, with an ovate transverse yellow spot on each side of the first segment, and a transverse yellow line on the sides of the three following ♀.

I am unacquainted with the ♂.

In the Cabinet of the British Museum.

†† This is an unique specimen. I cannot learn where it was taken.

SP. 5. ARGENTATUS. Curt.

*niger, argenteo-sericeus, thorace abdomineque flavo maculato, pedibus testaceis, mucrone metathoracis acuto* ♀.

length 4 lines.

Curtis, Brit. Entomology, vol. 10. 480.

Black, entirely covered with a dense silvery pubescence: head punctured; antennæ with a fulvous spot at the apex of the first joint beneath, as well as the two apical joints entirely; mandibles rufo-piceous.

Thorax with the tubercles yellow, a yellow transverse plate beneath the scutellum, bidentate at its posterior margin; the central mucro at the base of the metathorax acute, canaliculated above and slightly curved; the scutellum wanting the central carina; the tegulæ testaceous; the wings pale, with their nervures testaceous; the legs rufo-testaceous, with the anterior femoræ entirely, and the intermediate femoræ beneath, black; the outside of the anterior tibiæ, and the knees of the intermediate and posterior pairs, yellow.

The abdomen delicately punctured; the two first segments with a large ovate yellow spot on each side, the three following with a yellow band, the first interrupted and the terminal segment piceous.

I am unacquainted with the ♂.

In the Cabinets of the British Museum  
and of Mr. Matthews.

††† Taken near Liverpool, on the opposite shores of the Mersey, by Mr. Matthews; that in the Museum came, I believe, from Devonshire.

SP. 6. QUATUORDECIM GUTTATUS. Oliv.

*niger, flavo-guttatus, mucrone metathoracis brevi obtuso et emarginato.*

length  $3\frac{1}{2}$  lines.

Oliv. Ency. Méth. 8. 596. 13.

Black: head punctured, pubescent; antennæ piceous, with the apex of the basal joint having a fulvous spot, and the joints from the centre to the apex becoming gradually fulvous; the mandibles yellow at their base, then rufous, and their apex black.

Thorax punctured, with a transverse line on each side of the collar; the tubercles, the tegulæ, a spot on each side of the scutellum, two lines running in a curve from the lateral edges of the scutellum to the base of the inferior wings, and two incurved squamæ at the posterior margin of the scutellum, all yellow; the mucro at the base of the metathorax short, obtuse, and emarginate at its apex; wings slightly coloured, with their nervures brownish; legs black, with the inside of the anterior and intermediate femoræ, and the exterior of all the tibiæ, yellow: the tarsi ferruginous.

The abdomen delicately punctured, with a transverse yellow spot on each side of the five first segments; the margin of the third, fourth, and fifth segments rufo-piceous, and the apical segment rufo-testaceous ♀.

I am unacquainted with the ♂.

♀ in the Cabinet of the British Museum.

††† I do not know where this was taken.

SP. 7. NIGRICORNIS. N. Sp.

*niger, thorace abdomineque flavo maculato, pedibus flavis, mucrone metathoracis acuto ♂ ♀.*

length  $3\frac{1}{4}$  lines.

Head entirely black, punctured, pubescent.

Thorax black, punctured, pubescent, with a spot on each side of the collar; the tubercles, and the squamæ at the posterior margin of the scutellum, yellow; the mucro at the base of the metathorax acute; the wings slightly coloured, their nervures rufo-testaceous; the legs yellow, with the inside of the anterior femora and the upper part of the intermediate and posterior tibiæ black; the tarsi ferruginous, the anterior ciliated, and the intermediate and posterior tibiæ spinose.

The abdomen black, delicately punctured, the first segment with a large ovate yellow spot on each side, and a transverse yellow line on each side of the three following.

The ♂ differs in having more pubescence on the face, the inside of the anterior tibiæ at their apex ferruginous, and the inside of the intermediate, and posterior, at their apex with a piceous spot, in the latter forming nearly a ring, which on the exterior of the limb is rufo-piceous, and the segments of the abdomen from the second less marked with yellow.

♂ ♀ in the British Museum.

††† I do not know where this species was taken, and for which Mr. Samouelle has given me the name.

SP. 8. NIGROÆNEUS. N. Sp.

*niger, flavo-pictus, mucrone metathoracis acuto, abdomine nitente æneo irradiante* ♂.

length 2—2½ lines.

Black: head deeply punctured; the face covered with a silvery pubescence; antennæ black, and from the fifth joint beneath fulvous; the mandibles testaceous, with their apex rufescent.

Thorax entirely black, deeply punctured; the margin of the squamæ at the apex of the scutellum pale; the mucro at the base of the metathorax short, thick, acute, and slightly curved; the metathorax rugose; the tegulæ piceous; the wings iridescent, with their nervures brown; the legs black; the outside of the

anterior and intermediate tibiæ entirely, and but half way from the knee downwards in the posterior pair, bright yellow; the anterior tarsi testaceous, and the intermediate and posterior pairs rufo-piceous.

The abdomen black, delicately punctured, shining with an æneous reflection; a bright yellow transverse ovate spot on each side of the two first segments, and a very minute dot on each side of the third.

♂ in the British Museum.

††† I do not know the locality of these insects. I have seen them only in the British Museum; the brassy tinge upon the abdomen is peculiarly distinct, and it is from that circumstance, upon my pointing it out, that Mr. Samouelle named them.

#### FAMILY VIII.

CRABRONIDÆ. Leach.

The head frequently very large. The labrum does not project. The abdomen is either oval or elliptical, or sometimes becomes gradually clavate.

I. Antennæ inserted below the middle of the face. Clypeus short and broad.

1. Eyes emarginate or reniform.

#### GENUS XX.—TRYPOXYLON. Latr.

HEAD transverse, as wide as the thorax; *eyes* large, deeply emarginate or reniform; *stemmata* placed towards the vertex; *antennæ* filiform in the ♀, subclavate in the ♂, inserted at the base of the clypeus, the first joint obconic, the second subglobose, the remainder cylindrical, very slightly increasing in thickness, more conspicuously so in the ♂ (or sometimes quite clavate), the terminal joint acuminate or obtuse; the *clypeus*

triangular, rounded in front and convex; the *mandibles* arcuate, unidentate, acuminate; the *labrum* concealed. The *THORAX* ovate; the *collar* transverse and separated from the *dorsolum* by a deep suture; the *dorsolum* narrowing towards the collar; the *scutellum* large, lunulate; the *metathorax* obtuse, and much narrower than the mesothorax; the *superior wings* with one *marginal cell* becoming narrower beyond the *submarginal cell* and terminating acutely, and one *submarginal cell* which receives the *recurrent nerve*—a second and third *submarginal* generally slightly traced, as also a second *recurrent nerve* which is received at the middle of the second *submarginal cell*; the *legs* slight and short, the anterior tarsi and posterior tibiae simple. The *ABDOMEN* very elongate and clavate, the margins of the segments very much constricted above—that of the first forming a sort of subpyriform node.

Type, *T. figulus*, *L.*

††† This genus, the name of which is from *τρυπάω*, *I pierce*—*ξύλον*, *wood*, was established by Latreille in his “*Précis*” from the repository *Sphex*; it was adopted by Fabricius, in 1804. Jurine, in 1807, separated and figured the same insect by the name of *Apius*, from not recognising it by the characters laid down by Latreille. The “*Histoire*” of the latter, in which the type was described, was indeed published prior to the publication of Jurine’s book, but it was then too late for the latter to alter his plates. They are supposed to be parasitic, but the observations under the *T. figulus* will show this to be incorrect, at least in its strict sense.

SP. 1. FIGULUS. Lin.

*atrum*, *labio segmentorumque marginibus lucidis.*

length  $3\frac{1}{2}$ — $6\frac{1}{2}$  lines.

Latr. Hist. 13. 330; Nouv. Dict. 34. 568; Règne Anim. 5. 329; Fab. Piez. 181. 2; Spin. 1. 65. 1.

*Sphex figulus*. Lin. 942. 11; F. S. 1650; Fab. E. S. 2. 203. 19; Villers, 3. 221. 4; Christ. 291; Rossi, 2. 93. 810; Schrank, F. B. 2. 322. 2160; Panz. 80. 16.

— *leucostoma*. Schrank, Enum. Austr. 771.

*Apius figulus*. Jurine, 140. Pl. 9. G. 8.

Entirely black: head opaque, finely punctured, with an impressed longitudinal line running from the base of the antennæ to the anterior stemma, the terminal joint of the antennæ slightly curved and acuminate, and a silvery pubescence covering the clypeus and cheeks.

Thorax opaque, punctured, pubescent; the scutellum with a slight depression in the centre; the metathorax with a longitudinal central impression obliquely striated on each side, not extending beyond the subcordiform space upon its surface; the wings slightly coloured, with their nervures black and their extreme margin very dark; legs simple, with a small pulvillus placed between the bifid claws at their apex.

Abdomen shining, with the posterior margins of the segments chiefly at the sides covered with a sericeous pubescence ♀.

The ♂ does not differ except in the usual characteristics.

♂ ♀ in most Cabinets.

††† This is perhaps the most abundant fossorial insect I am acquainted with, it being always found where there is a wall, paling, or outhouse. St. Fargeau says it is parasitic, and which I supposed to be the case until this year [1835] I captured several ♀ conveying their prey, consisting of a spider; but I still doubt whether the insect makes it own cell. Latreille says not, and I think he is correct, and which confirms the observation of Bergman, for it seems to frequent the cells of other burrowers. St. Fargeau doubts this being the *Sphex figulus* of Linné, although his description perfectly agrees with it; and notwithstanding the French author's objection to the bright margins of the segments of the abdomen, I have never captured a specimen which did

not possess this character. St. Fargeau's may therefore be either another species or a rubbed specimen. Linné's description of its habits is also correct, which is shown above, and that it "*nidum argilla claudit*" is proved by what I shall mention lower down; but Bergman must certainly have been placed in a remarkable situation to observe it in its cells, "*quæ primo purgat circumroditque, deinde fundum argilla obducit.*" The following anecdote proves also that it is not confined to one kind of prey. Mr. Johnson has detected it frequenting the holes of a post preoccupied by a species of *Odynerus*, and into which it conveyed a small round ball, or pellet, containing about fifty individuals of a species of *Aphis*; this the *Odynerus*, upon her return, invariably turned out, flying out with it, held by her legs, to the distance of about a foot from the aperture of her cell, where she hovered a moment and then let it fall; and this was constantly the case until the *Trypoxylon* had sufficient time to *mortar* up the orifice of the hole, and the *Odynerus* was then entirely excluded; for although she would return to the spot repeatedly she never endeavoured to force the entrance, but flew off to seek another hole elsewhere: this circumstance leads me to suspect that when the *Odyneri* burrow in wood they do not form their own cells, otherwise instinct would have led it to make a forcible entry. Previous to having detected the *Trypoxylon* with its prey I suspected this circumstance might refer to the *Pemphredon lugubris*, which I know to provide its larvæ with *Aphides*; but Mr. Johnson assured me it was a *Trypoxylon*.

SP. 2. AURIFRONS. N. Sp.

*atrum, aureo-sericeum, antennis fulvis, abdominis segmentorum marginibus ferrugineis ♂.*

length 7 lines.

Black: head deeply punctured; antennæ black, with the second, third, fourth, and fifth joints entirely and the sixth beneath fulvous, and the whole of the face from the emargination of the eyes covered with a dense aurichalceous pubescence, as well as the cheeks, commencing parallelly with the pubescence of the face and extending to the base of the mandibles, which are rufescent.

Thorax delicately punctured, pubescent; the metathorax having a few delicate transverse striæ within a small depression at its base; the collar, tubercles, an epaulet on each side over the tegulæ, and a spot on each side at the base of the metathorax, covered with a dense aurichalceous down, and the lateral edges of the metathorax having an oblong silvery spot inclining inwards towards the point of insertion of the abdomen; the tegulæ testaceous; the wings fuscous; the legs black, with the anterior and intermediate knees, apex of the tibiæ, and tarsi fulvous, the apical joint of the latter somewhat darker.

The abdomen having the margins of the segments from the third rufescent, and their base on each side covered with a chalceous pubescence.

♂ in the Cabinet of the British Museum.

††† I have some doubt as to this being a British or even European insect; but as it is included in the British Collection of the British Museum I necessarily describe it. Its history is not known. Should it prove British, it will be a noble addition to our *Fauna*.

SP. 3. CLAVICERUM. St. Farg.

*nigrum, antennis clavatis, tarsi pedumque anticorum parte anticâ pallide testaceis.*

length  $2\frac{1}{2}$ — $3\frac{1}{2}$  lines.

St. Fargeau, Ency. Méth. v. 10. p. 750. 1.

Black, minutely and delicately punctured: the head with an impressed line extending from the anterior ocellus to the con-



fluent depression of the face; the emargination of the eyes much depressed, and also a channel on each side extending from the base of the antennæ to this emargination for the reception of their scape; these parts, as also the face beneath the antennæ and the clypeus, are covered with a silvery pubescence; the antennæ subclavate, the terminal joint short and straight and somewhat obtuse at its apex; the clypeus slightly produced in its centre, which is emarginate; the mandibles and palpi testaceous, the former black at their extreme base.

The thorax has a silvery reflection at its sides; the base of the metathorax is enclosed, the enclosure divergently striated and having a central longitudinal impression interrupted at the apex of the basal enclosure; the tegulæ testaceous; the wings very iridescent and clouded towards the margin; the legs black, with the knees of the anterior femora, front of the anterior tibiæ, and the anterior tarsi, testaceous, the two posterior pairs piceous.

The abdomen black and shining, and the margins of the three first segments much constricted, with a silvery pubescence at the base and sides ♀.

The ♂ differs only in having the antennæ more clavate and obtuse at the extremity, and the knees of the femora being less coloured.

♂ ♀ in my own Cabinet.

††† This species I have taken at Hampstead and Darenth, and a friend of mine has found it at Camberwell. It frequents, like its congener, holes in posts and palings, especially where *Heriades campanularum* nidificates.

2. Eyes entire.

A. One or two cubital cells complete.

a. Mandibles very narrow or toothed at their extremity only; one recurrent nervure.

## GENUS XXI.—CRABRO. Fab. Lat.

**HEAD** very large, subrotund, in some species subquadrate, vertical in front; *eyes* very large, subtriangular, with the angles rounded, approximated at the base of the antennæ, and very distant at the vertex, which is flat and at right angles with the face; *stemmata* generally placed in the centre of the vertex; *antennæ* geniculated, inserted at the base of the clypeus, and filiform in the females, in some males subfusiform, with the basal joints (excepting the scape, which is obconic, and the second joint) fornicate and fimbriated within, the apical joints serrated on the exterior—in others some of the joints are frequently emarginate beneath, and in some males they consist apparently of only twelve joints; *clypeus* transverse, longitudinally carinated in the centre and covered with a metallic pubescence; *mandibles* bidentate, the inner tooth the largest and projecting considerably beyond the external one, both obtuse, and a dentate process towards the base within, in others merely unidentate. **THORAX** ovate; *collar* linear transverse; *scutellum* lunulate; *metathorax* very short, obtuse, with a subquadrate or subcordiform enclosure at its base, sometimes obsolete; *superior wings with one marginal cell slightly appendiculated, and one submarginal cell very long and receiving towards its extremity the single recurrent nervure*; *legs* short and robust, generally very spinose; *tarsi* longer than the *tibiæ*, the first pair of which in some males are dilated into a concavo-convex plate. **ABDOMEN** sessile, lanceolate or subclavate; in some the first segment prolonged into a kind of petiole and in others distinctly petiolated, the petiole constituting the first segment, which is subpyriform and nodose at its extremity. Type *C. cribrarius*. Lin.

†† The name *Crabro* is that of the hornet in Pliny. Fabricius first established it as a genus in his *Systema Entomologia* in 1775, but as usual it was a heterogeneous repository until Jurine's system was introduced. It is

certainly the most eccentric genus amongst the fossorial Hymenoptera; it varies in habit so very much from the type that, exclusive of the generic character of the wings, there is nothing to hold it together; but this is amply sufficient. British Cabinets had separated my section B. of the synopsis of the species from the rest, by the name of *Rhopalum*; but as it differs in nothing but the subpyriform petiole of the abdomen, and to which we have a connecting link in the *C. dimidiatus*, I reject it. The arrangement by colour is preserved only on account of its bringing the larger species together, but it certainly is not that of their affinities; nor even will my synopsis of the species reduce them to this order, as it is wholly artificial and constructed solely for the purpose of arriving readily at their descriptions: but they are so exceedingly anomalous that they will not at all arrange in a consecutive series. St. Fargeau has divided the species with which he was acquainted into eleven genera, nine of which we possess; but as I do not consider the characters he has selected to establish them of generic value, I have reduced them to synonyms, but which will show where they can be applied. His generic divisions do not always correspond with their characters, and these errors I have pointed out wherever they occur in British species. But it will perhaps be expected that I should show better reasons for wholly rejecting all the genera he has introduced. The most pertinent is to be found in my admitting merely the neuration of the wings as a generic character. Yet of those derived from the errors of his system I will cite a few in justification, and refer for the rest to the synonyms and observations under each species—thus, the sexes of my *C. Lindenius* would be separated and placed under his *Ceratocolus* and *Solenius*. The only tangible characters whereby he separates his genera

*Corynopus* and *Physoscelus* are, by the former genus having in the ♂ apparently twelve joints to the antennæ, and the ♀ having the anus somewhat canaliculated and acuminate, and in the latter genus the ♂ having thirteen joints to the antennæ, and the ♀ with the anus convex above, and of the ordinary form: but the ♂ in the former has certainly thirteen joints to the antennæ like the latter; and I would ask, if a slight divarication in the form of the anus be sufficient to constitute a generic difference? if so, the *C. podagricus* ought certainly not to have been placed by him in his genus *Crossocerus*, from which it differs materially in the form of that part, and, with my *C. capitosus*, in general habit approximates to these two species. But it is extremely irksome to find fault, and I therefore close my remarks with doing him the justice to retract what I have said at page eight of the Introduction relative to the antennæ of some *Crabrones*, as the ♂ *C. vagus* and ♂ *C. Lindenii* have apparently but twelve joints, for I could not discover a thirteenth even with the assistance of my friend Mr. Bowerbank's very powerful microscope. This anomaly is exceedingly remarkable, and is at variance with what is observed in all the others of the fossorial Hymenoptera. St Fargeau incorrectly considers the type to be the *C. cephalotes*, Pz., of which Fabricius, who is the author of the genus, first takes notice in his "Systema Piezatorum;" and my observations under this insect may be referred to with regard to his confusion of the synonymy. I must further observe, that, to avoid unnecessary repetition in the specific character, it will be understood, that the stemmata are placed in an equilateral triangle, and the clypeus is covered with a silvery pubescence unless otherwise stated.

## SYNOPSIS OF THE SPECIES.\*

- A. *Abdomen sessile or but slightly petiolated.*
- I. *Anterior tibiæ ♂ scutellate.*
- a. *Antennæ ♂ subfusiform.*
1. CRIBRARIUS. Head and thorax longitudinally striated.
2. PATELLATUS. Head and thorax punctured.
- b. *Antennæ ♂ filiform.*
- II. *Anterior tibiæ ♂ simple.*
3. SCUTATUS. Metathorax with a distinct subcordiform enclosure at its base.
4. CETRATUS. Metathorax without an enclosure at its base.
- III. a. *Anterior tarsi ♂ (first joint particularly) dilated.*
5. VEXILLATUS. Head constricted posteriorly into a kind of neck.
6. TARSATUS. Head subquadrate, not much constricted posteriorly.
- b. *Anterior tarsi ♂ simple.*
1. *Stemmata in an equilateral triangle.*
- a. *Abdomen marked with yellow.*
- IV. § *Metathorax rugose.*
7. CEPHALOTES. Both sexes with a golden pubescence on the clypeus, intermediate tibiæ of ♀ entirely yellow.
8. SEXCINCTUS. The ♂ with a silvery pubescence on the clypeus.

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\* As the first three divisions of the table (all these divisions are numbered in the front margin for the convenience of reference) are primarily derived from the structure of the males, it will, perhaps, be useful to add characters whereby the females may be known. They would tabulate thus:—

Under division 14. { CRIBRARIUS. ♀ head transverse, dorsolum longitudinally striated.  
 PATELLATUS. ♀ head transverse, dorsolum punctured.

Under division 12: SCUTATUS. ♀ where it would be distinguished from the *spinipectus* by its superior size, yellow mandibles, and yellow spot on the clypeus:

The females of *cetratus*, *vexillatus* and *tarsatus* are not known:

- §§ *Sub-cordiform, base of metathorax smooth and shining.*
- V.  
 † *Abdomen but slightly petiolated.*
12. SUBPUNCTATUS. Cheeks with a spine on each side beneath.
13. VAGABUNDUS. Cheeks without the spine.
- VI.  
 †† *Abdomen with a distinct petiole.*
14. DIMIDIATUS.  
*b. Abdomen entirely black.*  
 \* *Base of metathorax smooth and shining.*  
 † *Abdomen more or less ovate.*  
 ‡ *A minute tooth on each side at the apex of the peristethium.*
- VII.  
 15. LEUCOSTOMA. Entirely black excepting the scape of the antennæ, which is yellow laterally.
32. EXIGUUS. Legs variegated with yellow.
- VIII.  
 †† *The peristethium edentate.*
29. WALKERI. The lower portion of the internal orbits of the eyes, the clypeus and palpi, yellow.
24. WESMAELI. The inner orbits of the eyes black, and palpi rufo-piceous.  
 †† *Abdomen more or less clavate.*  
 ‡ *A minute tooth on each side at the apex of the peristethium.*
- IX.  
 19. PODAGRICUS. Posterior tibiæ very incrassate at the apex, base of metathorax distinctly enclosed.
- X.  
 †† *Peristethium edentate.*
20. CAPITOSUS. Head very large and quadrate, wider than the thorax, base of metathorax not enclosed and shining.
28. GENICULATUS. A yellow spot in the centre of the clypeus.
25. PUBESCENS. Head and thorax covered with long pubescence.
26. OBLIQUUS. The disk only of the two divisions of the subcordiform enclosure of the base of the metathorax smooth.
27. PROPINQUUS. Clypeus black.  
 \*\* *Base of metathorax striated.*  
 † *Obliquely.*  
 ‡ *Peristethium edentate.*
- XI.  
 16. ELONGATULUS. Mandibles and palpi piceous, two anterior femora and tibiæ only yellow in front.
17. LUTEIPALPIS. Mandibles and palpi yellow, four anterior femora and tibiæ yellow in front.
18. PROXIMUS. Mandibles testaceous, palpi piceous, all the tibiæ and base of the tarsi yellow; the four anterior tibiæ with a black streak behind.

21. *HYALINUS*. Scape of the antennæ laterally fulvescent, mandibles black, knees only of the four posterior tibiæ yellow.  
 †† *The peristethium furnished with a minute tooth on each side.*
- XII.
23. *SPINIPECTUS*.
- XIII. †† *Transversely.*
22. *TRANSVERSALIS*.  
 2. *Stemmata describing a curve.*
- XIV.  
 a. *Abdomen marked with yellow.*
9. *XYLURGUS*. Head quadrate; anterior portion of the dorsolum punctured, posterior portion and scutellum longitudinally striated; metathorax rugose ♂ ♀; antennæ ♂ with 3—6 joints emarginate beneath.
10. *LINDENIUS*. Head quadrate; anterior portion of dorsolum transversely, and posterior portion, scutellum, and base of metathorax, longitudinally striated ♂ ♀; antennæ ♂ simple.
11. *VAGUS*. Head quadrate; dorsolum and scutellum punctured ♂ ♀; antennæ ♂ with the fifth and sixth joints emarginate beneath.
- XV.  
 b. *Abdomen entirely black.*
30. *ALBILABRIS*. Abdomen ovate, with an æneous tinge; base of metathorax longitudinally striated, head narrower than thorax.
31. *PANZERI*. Abdomen ovate, with an æneous tinge; base of metathorax longitudinally striated, head wider than thorax.
33. *BREVIS*. Abdomen ovato-conical; cordiform base of metathorax smooth and shining.
- B. *Abdomen distinctly petiolated and the first segment terminating in a node.*
- XVI.
34. *TIBIALIS*. Abdomen entirely black; apex of posterior tibiæ red.
35. *RUFIVENTRIS*. Abdomen more or less red; apex of posterior tibiæ black.
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## SP. 1. CRIBRARIUS. Lin.

*niger, flavo maculatus, stematibus in lineam curvam positis, mesothoracis dorsolo longitudinaliter striato* ♀.

♂ *antennis subfusiformis, tiliarum scutello obscuro, flavo marginato, punctis hyalinis.*

length  $6\frac{1}{2}$ — $8\frac{1}{2}$  lines.

Fab. S. E. 374. 6; Spec. 1. 470. 8; Mant. 1. 296. 13; Ent. Sys. 2. 297. 14; Piez. 311. 16; Panz. 15. 18 ♂. 19 ♀; Latr. H. N. 13. 323. 1; Nouv. Diet. ed. 2. 8. 353; Dumeril. Consid. Générales, Pl. 31. f. 3; V. d. Lind. pt. 2. 40. 1.

*Crabro patellarius.* Schrank, F. B. 2. 330. 2174.

——— *palmatus.* Panz. 46. 3.

*Sphex cribraria.* Lin. F. S. 1675; S. N. 1. 945. 23; Vill. 3. 234. 34; Schrank, Enum. Austriæ, 779.

——— *patellaria.* Schreb. Naturforscher, 20. 95. 1.

*Guepe ichneumon.* De Geer, 2. 2. 810. 2. Pl. 28. f. 1—5. ♂.

*Thyreopus cribrarius.* St. Farg. An. S. E. de F. 3. 752. 1.

Head black, pilose: the stemmata placed in a curve a little behind the centre of the vertex, which is irregularly concave, longitudinally striated in front and punctured behind; the face slightly canaliculated; the antennæ black; the scape sometimes with a little yellow towards the apex behind and very pilose; the inner orbit of the eyes below and the clypeus covered with a dense silvery pubescence.

The thorax black, pilose; the collar smooth and shining, with a few scattered punctures; the dorsolum longitudinally striated, with a central and two lateral slight longitudinal carinæ which become obsolete on the disk; the scutellum shining and having a few scattered punctures; the metathorax has at the centre of its base a small triangular space, shining and rugose, the apex of which continues in a longitudinal incisure, dilating about the middle into a fossulet and separating the metathorax into two halves, the sides of which are irregularly longitudinally striated; the collar with an interrupted band and a spot on the front of the scutellum yellow, the latter sometimes wanting; the tegulæ piceous; the wings hyaline and darkish towards the margin; the legs yellow with the femora black, and a black spot beneath the



anterior tibiæ ; the tarsi with their apical joints flavo-ferruginous, the anterior pair ciliated on the exterior, and all the tibiæ spinose.

The abdomen ovate, black, with five yellow bands ; the second more or less interrupted, the third consisting of an ovate transverse spot on each side, the rest generally entire ♀.

The ♂ differs in having the clavolet of the antennæ subfusiform, their first five joints concave below, the fifth and three following serrated on the exterior, and the first and second fimbriated within ; the collar longitudinally striated, generally entirely black, as well as the scutellum ; the anterior trochanters produced beneath at their apex into an obtuse tooth, their femora compressed, irregularly dilated behind and having at their base a long broad irregular process convex above, with a transverse ridge below just beyond its middle, between which and the apex it is transversely concave, the apex itself obliquely truncated, and at the base below, in front, a long narrow spine ; the anterior tibiæ dilated behind into an ovate concavo-convex plate ; the tibiæ with a black or piceous litura at the knee, in front yellow, the plate of a slate colour, fusco-piceous towards the exterior margin, and the margin itself testaceous, the superficies sprinkled with pale dots ; their tarsi also dilated, the first irregularly triangular and concave above, and the whole tarsus longitudinally carinated below towards the front, the apical joint having the pulvillus placed near the exterior claw ; the interior claw very eccentric and considerably larger than its companion, its base below produced into a broad flat fornicate appendage, the basal joint rufo-testaceous, the rest piceous ; the intermediate femora flattened within and slightly dilated at their base behind ; the abdomen, which is subcylindrical, curved downwards at its apex, has seven yellow bands, the second and third interrupted, and the second the broadest of all and least interrupted, the fourth being the narrowest, forming merely a transverse waved line, the band on the first segment sometimes but very rarely wanting.

♂ ♀ in most Cabinets.

††† Abundant in most sandy districts in May and June,

and in some parts as late as August; the ♀ is generally captured entering her burrows, and the ♂ either in company or settling on the leaves of plants, or both are found on *Umbelliferæ*.

SP. 2. PATELLATUS. Panz.

*niger, flavo-maculatus, stematibus in lineam curvam positis, dorsolo punctato* ♀.

*antennis subfusiformis, tiliarum scutello obscuro, punctis lineisque hyalinis* ♂.

length  $4\frac{1}{2}$ —6 lines.

Panz. F. G. 46. 4; V. d. Lind. Pt. 2. 43. 3.

*Crabro dentipes*. Panz. F. G. 46. 9 ♀.

—— *peltarius*. Schr. F. B. 2. 336. 2185.

*Thyreopus patellatus* ♂ ♀. St. Farg. An. d. l. S. Entom. de F. 3. 756. 3.

Head black, pubescent, minutely punctured, the vertex irregularly concave; the stemmata placed in a curve beyond its centre behind; the face smooth, shining, and canaliculated; the antennæ black, with the scape beneath yellow; the inner orbits of the eyes and clypeus, which is carinated in its centre, covered with a dense silvery pubescence; the mandibles yellow or yellow-testaceous at the base; piceous or rufo-piceous at their apex.

The thorax black, subpubescent; the dorsolum and scutellum shining, with scattered delicate punctures; the metathorax with a deep longitudinal incisure, somewhat wider at its base; the anterior half of the metathorax obsoletely enclosed in a semi-circle, which is reticulated and shining, the posterior portion smooth and shining, with scattered punctures; the collar with a mark on each side; the tubercles and the scutellum in front, sometimes yellow, but more frequently black; the tegulæ testaceous; the wings slightly fuscous, the edge darker and their nervures testaceous; the legs yellow, with their femora black, and the anterior and intermediate tibiæ black beneath, the posterior pair ferruginous at their apex within; the tarsi having

their basal joints yellow and the rest ferruginous, getting darker towards the apex; the anterior tarsi strongly ciliated and all the tibiæ very spinose.

The abdomen elongate-ovate, the first segment narrowed into a petiole at its base, with five yellow bands variously interrupted, the second and third (the first of which is the broadest, and the last the narrowest of all) generally most, the fourth and fifth frequently entire; the apex of the anus ferruginous ♀.

The ♂ differs in having the clavolet of the antennæ subfusiform, its first six joints concave beneath, the seventh to the tenth serrated on the exterior, and the five first fimbriated within; the thorax with seldom any yellow markings; the sculpture of the metathorax much stronger, its posterior portion generally transversely striate: the anterior coxæ produced at their apex into a long acute tooth; their trochanters flat beneath; their femora dilated posteriorly, flat and having at their base beneath a long curved spine; their tibiæ dilated posteriorly into a concavo-convex sublobate plate; the tarsi dilated, the first joint concave above, the apical joint produced within into a compressed plate, the apex below obsoletely bidentate, within emarginate, and above having a long curved spine; the trochanters and femora yellow, the latter black in front; the tibiæ yellow in front, with a black stripe behind, their plate slate-coloured behind, where it has some abbreviated transverse pale striæ and maculæ, and piceous in front; their tarsi testaceous; the intermediate coxæ and trochanters yellow; the femora yellow before and behind, black above and below, with the rest like the ♀.

♂ ♀ in most Cabinets.

†† Both sexes abundant in the spring in sandy situations; the ♂ is generally found settling upon the leaves of bushes or shrubs.

SP. 3. SCUTATUS. Fab.

*niger, clypeo flavo-maculato, metathoracis basi obliquè striato, peristethii apicè denticulato* ♀.

♂ *antennis filiformis, tiliarum scutello albo apicè nigro:*

length 3—4 lines.

Fab. Mant. 1. 296. 15; Ent. Sys. 2. 298. 16; Piez. 312. 19; Panz. F.

G. 15. 22; Oliv. Ency. Méth. 6. 515. 17; V. d. Lind. Pt. 2. 44. 5. ♂.

*Sphex palmaria*. Schreb. Naturforscher, 20. 100. 6. Pt. 2. fig. 9. a, b.

*Crossocerus scutatus*. St. Farg. 3. 764. 1. ♂.

———— *gonager*. St. Farg. 3. 785. 22. ? var. ♀

The head black, delicately punctured, subpubescent, a longitudinal impression extending from the base of the antennæ to the anterior stemma and continuing behind as far as the posterior ones; the stemmata placed in an equilateral triangle on the vertex; the antennæ simple, black, the scape yellow, excepting a narrow piceous stripe above; the inner orbit of the eyes and clypeus covered with a silvery pubescence, the latter carinated in the centre and entirely yellow; the mandibles and lower portion of the cheeks also yellow, the former ferruginous at their apex.

The thorax delicately punctured; the metathorax having a cruciform impression, consute within, dilating at its base (the extreme base of the metathorax) into an impressed triangle longitudinally striated, the subcordiform space between it and the transverse line that forms the cross, shining, convex on each side, and obliquely striate on its lateral edges, the posterior portion of the metathorax smooth, shining, or very slightly transversely striated; the apex of the peristethium armed on each side with a minute tooth; the collar with a transverse line, the tubercles, a large lunule below, the neck beneath, the scutellum in front, and the pectus all yellow; the tegulæ testaceous; the wings slightly coloured, darker towards the edge, the nervures piceous; the legs yellow; the anterior tibiæ dilated into an ovate concavo-convex plate, covered with a short whitish pubescence, yellow on its anterior margin, its anterior apex with a piceous lunule and posteriorly pale and transparent; the first joint of the tarsi also dilated into a narrow lobe, which is black, and the extreme joints piceous; the intermediate femora and tibiæ piceous within; the posterior coxæ black at the base, the femora entirely black, their tibiæ also black except their base, and their tarsi piceous, with the base of the first joint yellow.

The abdomen black, oblong, curved downward at the apex, the first segment narrowing considerably anteriorly ♂.

The ♀ differs only in wanting the yellow colour upon the cheeks; and the base of the coxæ (their extreme apex is fuscous), the trochanters and femora are black; it has no yellow on the scutellum itself, but only a transverse line behind it, and the two or three basal joints of the tarsi are pale; in all other respects it is like the ♂.

♂ ♀ in my own Cabinet and that  
of the Rev. G. T. Rudd.

††† I captured both sexes at Birchwood this year in the beginning of August; the ♀ does not appear to have been before known, for that described as such by Van der Linden is different.

SP. 4. CETRATUS. N. Sp.

*niger, tibiarum scutello parvo nigro, margine albo* ♂.

length  $3\frac{1}{2}$ —4 lines.

Entirely black and shining, sparingly punctured and pubescent: the head with an impressed line in front of the anterior stemma extending to the sulcation of the face, and another behind it proceeding a little beyond the posterior ones; the stemmata placed in an equilateral triangle; the clypeus (which is entire) and inner orbits of the eyes covered with a silvery pubescence; the first few joints of the flagellum of the antennæ ciliated beneath.

The angles of the prothorax rounded: the metathorax gibbous without a distinct enclosure at its base, and having a central longitudinal consute incisure, and the lateral lobes irregularly slightly obliquely striated; the anterior tibiæ and first joint of the tarsi dilated externally, with a pale margin; the calcaria of the posterior legs sometimes fuscous; the wings hyaline, iridescent, with the apical half somewhat clouded.

The abdomen with the centre of the segments somewhat thickened, and the last curved downwards ♂.

♂ In my own Cabinet and  
that of Mr. Chant.

††† This very distinct and, as far as I can discover, undescribed species, has occurred in the vicinity of London. The ♀ I am unacquainted with. It will not come into any of St. Fargeau's genera.

SP. 5. VEXILLATUS. Panz.

*niger, capite triquetro, abdomine flavo maculato, antennis filiformis* ♂.

length 4 lines.

Panz. F. G. 46. 5; Illig. Faun. Etr. 2. p. 149; V. d. Lind. pt. 2. 45. 6.

*Crabro clypeatus*. Fab. Mant. 1. 296. 14; Ent. Syst. 2. 297. 15; Piez.

312. 18; Rossi, F. Etr. 2. 90. 880; Oliv. Ency. Méth. 6. 515. 16;

Latr. Hist. Nat. 13. 323. 2; Nouv. Dict. 2 ed. 8. 358.

*Apis clypeata*. Schreb. Naturforsch. 15. Pl. 3. fig. 19, 20.

*Thyreus vexillatus*. St. Farg. 3. 762. 1.

Head black, deeply punctured, pubescent, narrower than the thorax, triangular above and at the sides, ovate in front, and forming a neck behind; a longitudinal depression extending from the base of the antennæ to the anterior stemma; the antennæ black, with the scape and pedicel yellow in front; the clypeus and the inner orbits of the eyes covered with a silvery pubescence, which extends to near the vertex.

Thorax ovate, deeply punctured, prolonged very much in front and narrowed, forming with the collar a truncated triangle; the scutellum less distinctly punctured and shining; the metathorax truncated, the centre having a deep longitudinal impression; the tubercles yellow; the tegulæ testaceous; the wings fuscous; the legs yellow with a black spot on the outside of the anterior and intermediate femora, the posterior femora also black inside, and the interior of their tibiæ of a fuscous brown; the anterior tibiæ slightly dilated on the exterior, as well as the three

first joints of the tarsi, the first especially, which forms a subrotund concavo-convex plate slightly coloured on the margin.

The abdomen black, ovate, punctured, with seven yellow bands, the first, second, third, and fourth slightly (the second the least) interrupted, the rest entire; the second ventral segment with a quadrate yellow spot, and the third with a yellow band ♂.

♂ In the collection of the  
British Museum.

††† The ♀ of this species does not seem to be known; that considered as such, viz. the *C. philanthoides*, Panz., by him in his Kritische Revision, and by Van der Linden, I with St. Fargeau much doubt as being possible. The ♂ which I know as British, only from the specimens in the British Museum captured by Dr. Leach, appears to be either very local or very rare; the former the most probable. Fabricius mistook this for the *Sphex clypeatus* of Linné, which is different.

SP. 6. TARSATUS. N. Sp.

*niger, tarsi anticis palmatis, metathoracis basi obliquè striato* ♂.  
length  $2\frac{1}{2}$  lines.

Head black, smooth, and shining, with a few minute scattered punctures, a deep longitudinal impression extending from the base of the antennæ to the anterior stemma, behind which it passes to a little beyond the posterior ones; the stemmata placed in an equilateral triangle on the vertex; the antennæ simple, fimbriated beneath, black, the scape yellow on the outside; the clypeus (which is carinated in the middle), inner orbit of the eyes, and lower portion of the cheeks, covered with a sericeous pubescence; the mandibles black.

The thorax black, delicately punctured and shining; the dorsolum with three abbreviated parallel slightly elevated longitudinal lines at its base; the metathorax having a cruciform impression, consute within, dilating at the base of the cross or

extreme base of the metathorax into an impressed triangle, which is longitudinally striate, the subcordiform space between it and the transverse line that forms the cross convex on each side, and obliquely striated at the base of the posterior portion of the metathorax—the longitudinal line dilates into a deep fossulet, on each side whereof it is deeply transversely striate; the apex of the peristethium armed on each side with a minute tooth; the collar with a transverse interrupted line, and the scutellum with a lunule, both yellow; the tegulæ piceous, and the ligament at the base of the wings yellow; the wings iridescent, with a darkish cloud towards their apex, the nervures piceous; the anterior legs yellow, with their coxæ and trochanters black, and a line on the exterior of their femora and tibiæ and at the apex of the tibiæ within also black; their tarsi whitish, the first joint dilated on the exterior into a half-heart shape reversed, and the following triangular, the four first covered with a silvery pubescence and the first joint with a black patch towards its exterior margin, the last joint also black; the four posterior legs black, with their knees and lower portion of their tibiæ yellow; the tarsi of the intermediate pair whitish, with the apex of the two first joints and the whole of the last black, the posterior tarsi black, with the base of the first joint whitish.

The abdomen oblong, black, minutely punctured, and having a slight griseous pubescence, the first segment gradually narrowed at its base into a petiole. ♂

♂ in my own Cabinet.

†† I am unacquainted with the ♀ of this species. The sex described is very like what Van der Linden and St. Fargeau consider the *Sphex palmipes* of Linnæus; but mine sufficiently differs from the insect described by the former by having the base of the metathorax striated: nor does he notice the minute tooth on each side of the peristethium, which this has in common with several species. I have captured it at Highgate settling on the leaves of the burdock and other plants.



## SP. 7. CEPHALOTES. Fab.

*niger, flavo-maculatus, clypeo aurato, metathorace rugoso, tibiis intermediis flavis* ♂ ♀.

♂ *articulis antennarum subtus emarginatis.*

length  $5\frac{1}{2}$ —7 lines.

Fab. Piez. 308. 5. ♀ ; V. d. Lind. pt. 2. 55. 13. ♂ ♀ ; St. Farg. 3. 697. 1. ♂ ♀.

Panz. F. G. 62. 16. ♀ ?

*Crabro sexcinctus.* V. d. Lind. pt. 2. 145. 13. ♂ ♀.

————— Panz. F. G. 64. 13. ♂ ?

Head black, large, subquadrate, minutely and closely punctured, pubescent, slightly shining; the vertex between the eyes concave; the stemmata placed in a triangle in its centre, an elevated longitudinal ridge between the posterior ones, having a central delicate longitudinal impressed line extending nearly to the occiput, a slight carina in front of the anterior one passing to the verge of the vertex; the antennæ black, with their scape entirely yellow; the face deeply canaliculated, smooth, and on each side the orbits of the eyes within, the clypeus (which is strongly carinated in the centre, emarginate in front, and bisinuate on each side), and the lower sides of the cheek, covered with a dense golden pubescence, less thickly set on the latter; the mandibles yellow, with their apex piceous.

Thorax black, pubescent, the dorsolum with a central longitudinal slight carina, thickly and rather delicately longitudinally striated; the scutellum smooth and shining at its base, then punctured and posteriorly longitudinally striate; the metathorax with two or three longitudinal slight carinæ, the interstices of which are smooth, and which dilate, forming a small diamond shaped inclosure about its middle, the sides of the whole length of these carinæ rather delicately reticulated, the extreme posterior portion transversely striate, the anterior half separated in the form of a semicircle by an obsolete ridge; the peristethium longitudinally striated at its base and sides; its posterior extremity covered with scattered punctures and shining, and having

on each side a very short transverse elevated carina; the collar with a transverse interrupted band, and the tubercles, yellow; the tegulæ piceous; the wings slightly coloured, their nervures testaceous; the legs with their femora black, the extreme apex yellow, as well as the tibiæ, the anterior pair of which are below black, and the extreme apex of all rufo-testaceous; the tarsi rufo-piceous, deepening in colour towards their apex, and their basal joints yellow, the anterior pair very slightly ciliated, the intermediate and posterior tibiæ spinose.

The abdomen black, with five yellow bands, and the anus, yellow, and all but the fifth more or less interrupted, the second and fourth generally least so, and sometimes all entire, yet slightly attenuated in the middle, and the first waved anteriorly; the sides of the obtuse canaliculated spine that terminates the abdomen furnished with rigid golden setæ.

The ♂ differs in the antennæ, which are formed nearly as in the ♂ of the 9th species; the scape has a black spot above the pedicel, yellow below, and the whole of the clavolet fuscous beneath, as also its apical joints above excepting the extreme joint, which is entirely black; the pedicel slightly produced on the exterior; the third joint smaller than the fourth and both produced into an obtuse tooth at their extremity, the latter slightly so at the side of its base, both much curved and concave beneath, the fifth and sixth also curved, the tooth of the fifth as large or larger than that of the fourth but more acute, and that of the sixth most acute of all, the following cylindrical and equal; the clypeus produced in front and obtuse, sinuate on each side; the pubescence of the face the same as in the ♀; the sculpture of the thorax more strongly marked; the yellow band of the collar sometimes reduced to a mere spot on each side, sometimes wanting entirely; the tubercles also sometimes black; the anterior femora of a yellowish red above and within, which behind is succeeded by a black stripe, that followed by a yellow, which has another black one below it; their tibiæ rufescent in front, yellow above and a black stain behind; the intermediate femora

rufo-flavous above and in front, and black behind and beneath ; their tibiæ yellow in front with sometimes a black spot, a black line above and rufescent behind and below, the posterior ones the same as in the ♀, except a reddish yellow stain towards the apex of the femora above ; the anterior tarsi pale yellow, ferruginous at their base, their apical joint more deeply coloured, the intermediate pair flavo-rufous, and their basal joint produced a little on the outside towards the apex, and at the margin of this process armed with robust spines, the posterior pair entirely rufo-piceous. The abdomen subclavate ; it has an additional band to that of the ♀, and all as variously interrupted.

♂ ♀ in most Cabinets.

††† Panzer evidently had two species (see my observations under *C. Lindenius*) in view in describing this, for he distinctly figures a ♀ and implies its being the ♂ in the description, having mistaken the colour of the clypeus as sexual. The two species are in fact extremely alike unless closely examined, and then it is found that besides the clypeus the position of the stemmata gives a difference. It is not so common as many of the species. I have found it at Caenwood near Hampstead, and at Birchwood in Kent ; I suspect it nidificates in putrescent wood.

SP. 8. SEXCINCTUS. Fab.

*niger, flavo-maculatus, metathoracis basi rugoso, antennarum articulis subtus emarginatis* ♂.

length 5 lines.

Fab. S. Ent. 374, 5 ; E. S. 2. 295. 9 ; Piez. 309, 10 ; Oliv. Ency. Méth. 6. 513. 11 ; Panz. F. G. 64. 13 ; St. Farg. 3. 703. 6.

Head black, pubescent, subquadrate, minutely and closely punctured, the stemmata placed in a triangle in the centre of the vertex, which is concave between the eyes, in the centre of which there is a very delicate slightly elevated line, extending

from the anterior stemma to the face behind ; between the posterior stemmata it is slightly elevated, in the centre of which there is a minute longitudinal impression, proceeding to near the occiput, the face canaliculated, smooth and shining ; the antennæ black, the scape yellow, with a black stain above, and the pedicel yellow beneath, and slightly produced on the exterior ; the first, second, third, and fourth joints of the clavolet produced beneath at the apex, and much curved, or rather emarginate, the teeth beneath of the first and second the most obtuse, its first joint shorter than its second, which is also slightly produced at its base above, the fourth joint very slightly shorter than the third, and its tooth the most acute of all ; the whole clavolet fuscous beneath, and the apical joints also above, with the extreme one quite black ; the interior of the orbit of the eyes, the cheeks, and the whole clypeus, covered with a dense silvery down, the latter carinated in its centre, produced in front into an obtuse tooth, and the sides sinuate ; the mandibles black, their apex piceous.

The thorax black, pubescent ; the dorsolum with a central longitudinal carina, and, as well as the scutellum, longitudinally striate ; the metathorax with a central incisure, the margins of which are ridged, which ridges, about the middle, curve round on each side, each inclosing a lobe ; at the base of the metathorax, the inner space of which is slightly rugose, the incisure dilates, where the ridges turn off, into a deep fossulet, continuing to the apex, the sides of which, forming the posterior portion of the metathorax, are very coarsely transversely striate ; the peristethium has at its apex, on each side, a transverse carina ; the collar with sometimes a transverse yellow interrupted band ; the tegulæ testaceous, the wings coloured, darker towards their edges ; the nervures piceous. The anterior femora ferruginous above and in front, black behind, yellow beneath, and, still deeper below, a black stripe ; their tibiæ yellow above and in front ; towards the apex, in front, ferruginous, and black behind ; the intermediate femora black, with a ferruginous streak above ;

their tibiæ yellow in front, somewhat ferruginous beneath, and black behind; the posterior femora entirely black, with sometimes a slight yellow streak above; their tibiæ yellow above and in front, ferruginous behind, and with a black litura; the anterior and intermediate tarsi flavo-rufescent, their apical joint piceous, and the first joint of the intermediate pair produced on the outside towards the apex, and its margin armed with robust spines.

The abdomen elongate, black, with six yellow bands variously interrupted; the second generally the widest, and the fifth almost always entire ♂.

I am unacquainted with the ♀.

♂ in my own Collection.

†.† This I consider to be most probably an accidental variety of the ♂ of the preceding, notwithstanding the differently coloured pubescence of the clypeus; and if it should prove so, the synonymy must stand as Van der Linden has given it. My specimens differ from St. Fargeau's merely in the mandibles wanting the yellow spot, the tubercles being black, and the tibiæ being slightly stained behind, all of which are variable characters, as is sufficiently evinced in the series I have of the preceding species. It appears to be rare; I have hitherto taken only two specimens, and those near Hampstead.

SP. 9. XYLURGUS. N. Sp.

*niger, flavo-maculatus, clypeo aurato (♂ argentato), metathorace rugoso, stematibus in lineam curvam positis.*

♂ *antennarum articulo tertio ad sextum subtus emarginatis.*

length  $3\frac{3}{4}$ — $5\frac{3}{4}$  lines.

? *Crabro fossorius.* V. d. Lind. pt. 2. 51. 10. (The description without the synonymes.)

Head black, large, subquadrate, minutely and densely punc-

tured; the stemmata placed in a curve on the vertex; between the posterior ones a slight longitudinal elevation, which has in its centre an impressed line passing backwards a little behind them; the forehead, which is concave, has a very slight central longitudinal carina; the face is canaliculated; the antennæ black, with their scape yellow; the clypeus (which is longitudinally carinated in the centre, slightly emarginate in front, and sinuated on each side), the inner orbit of the eyes, and the anterior portion of the cheeks, covered with a dense golden pubescence, the cheeks less thickly so; the mandibles yellow at the base, and black at the apex.

The thorax black, pubescent; the dorsolum having at its base three longitudinal parallel slightly elevated lines, an abbreviated scratch on the disk on each side, parallel with the base of the tegulæ, and minutely and densely punctured in front; behind, as well as the scutellum, longitudinally striate, with interspersed punctures; the metathorax with a longitudinal central incisure, the edges of which are elevated, and the interior consute, with about its centre a transverse slight ridge, another diverging on each side, from this, in a curve upwards, enclosing a subcordiform space, occupying the anterior half of the metathorax, which is rather irregularly obliquely striated, between the transverse and curved ridges irregularly reticulated, and the sides of the incisure of the posterior portion of the metathorax coarsely transversely striated; the peristethium punctured, shining, and having on each side, posteriorly, an abbreviated transverse carina; the collar with a transverse yellow interrupted line, and the top of the tubercles yellow; the tegulæ piceous; the wings hyaline, coloured at their edges; the nervures piceous; the legs yellow, with all the femora black, excepting at the knees in the intermediate pair; the anterior and intermediate tibiæ black beneath, the anterior and posterior ones with a fuscous line within, and all having their extreme apex fuscous or piceous; all the tarsi with the basal joint yellow, the following ones more or less so, or ferruginous, and the apical

ones piceous ; the anterior tarsi ciliated, and all the tibiæ spinose.

The abdomen black, ovate, with five yellow bands more or less interrupted, the second generally least so, frequently entire, the fifth always entire, and the third seldom or never, but formed generally of two ovate transverse spots ; the terminal segment black, produced into a groved obtuse spine, on each side of which it is covered with rigid golden setæ.

The ♂ differs in having the underside only of the scape yellow, the pedicel and two following joints fuscous beneath, and the 3—6th joints emarginate, and each produced into a tooth at the apex, the third joint shorter than the following, and most slender of all, the division between it and the following to be observed under a high power, the fourth much curved below, concave, and the largest, when viewed laterally much swollen in the centre, the following joints gradually decreasing in length, but the five last subequal and cylindrical ; the clypeus, interior orbits of the eyes, and lower portion of the cheeks, densely covered with a silvery pubescence ; mandibles entirely black ; the punctures of the base of the dorsolum interspersed with longitudinal striæ ; the metathoracic lines of demarcation less evident, from the interstices being more strongly sculptured, whence it appears irregularly reticulated, and it is sparingly covered with a black pubescence ; the transverse yellow line on the collar sometimes wanting, the tubercles entirely black ; the anterior femora with a fuscous line above, and a yellow one beneath, the intermediate ones with a yellow line above, the posterior pair with a yellow spot towards their apex above, and the posterior tibiæ black inside ; the four anterior tarsi yellow, with the base of the first joint, and the whole of the apical ones, and the entire posterior pair, piceous ; the exterior of the basal joint of the intermediate tarsi produced in an angle towards its apex, the margin of which is very spinose ; the yellow bands of the abdomen with the second frequently entire, and the three following generally reduced to an

ovate spot on each side, the fifth sometimes entire, and the sixth always so.

♂ ♀ in most Cabinets.

†† It will be necessary for me to state my reasons for considering this a new species, although exceedingly like two that have been described, viz. [1] the *C. fossorius*, Linn., which is that of all subsequent authors, excepting Van der Linden, who, although he cites their synonymes, describes a different insect, ([2] which St. Fargeau considers as his *Cr. chrysostomus*,) and St. Fargeau, who has carried it into his genus *Solenius*, but under the same specific name. That it cannot be the first is proved by its having a golden pubescence on the clypeus;\* nor can it be Van der Linden's *Cr. fossorius*, which, according to St. Fargeau, is his own *Cr. chrysostomus*; and the position of the stemmata in mine must prevent its being considered as this, for Van der Linden does not notice their curve, which

\* The male is in its antennæ either a Crabro or Ceratocolus of the second subdivision of the first division of St. Fargeau. Why I am uncertain is, because in his genus Crabro the stemmata are in a triangle, and the males have several of the basal joints of the clavolet emarginate, and thirteen joints to the organ; and in Ceratocolus the stemmata are placed in a curve; and in the division I refer to, the antennæ of the ♂ have twelve joints, with some of the basal ones emarginate. If therefore he overlooked one of the joints, it would strictly enter into that subdivision of his Ceratocolus: if he saw the thirteen joints, and overlooked the position of the stemmata, it would be a Crabro: but if he saw the situation of the stemmata, as well as the thirteen joints of the antennæ, it would have required the establishment of a distinct genus; whereas the female is a true Solenius. I have entered into this critical explanation to show an additional reason for my not adopting his genera, and which I shall further vindicate in several other species. The essential character of a genus should be perfectly exclusive and negative for those without it, but positive for those within it; nor should the sexes admit of separation; and such a character in this variable genus can be derived only from the neuration of the wing, which I also reiterate for the whole of the Fossorial Hymenoptera.



it is presumed he would have done had his presented that peculiar character which in other instances he has indicated. But I fear there is considerable confusion in the synonymy; although it is not impossible that the several species should exist, yet I strongly suspect mine to be Van der Linden's insect, which however would not dispense with my name, as the latter author has applied wrong synonymes; and as it is proved to be evidently distinct from St. Fargeau's *Cr. chrysostomus* by the essential character of the stemmata. I have named it in allusion to its habits; it is exceedingly common in the summer months, especially where willows abound, into the wood of which it bores its cylindrical cells.

SP. 10. LINDENIUS. N. Sp.

*niger, flavo-maculatus, stematibus in lineam curvam positus, metathoracis basi longitudinaliter striato.*

♂ *antennis simplicibus.*

length  $5\frac{1}{4}$ —8 lines.

♀ ? *Crabro cephalotes.* Panz. F. 9. 62. 16.

♂ ? *Ceratocolus striatus.* St. Farg. 3. 745. 4.

Head black, pubescent, subquadrate, the whole superior surface densely punctured; the stemmata placed in a curve in the centre of the vertex, the anterior portion of which is concave, a longitudinal central impressed line extending from the occiput to the anterior stemma, whence it proceeds forwards to the verge of the vertex, where it expands into a broad canalicula, occupying the whole face, and reaching the base of the antennæ, which are black, with their scape entirely yellow; the inner orbits of the eyes and clypeus densely clothed with a silvery down, the latter carinated in its centre; the mandibles yellow, with their apex piceous.

The thorax black, pubescent; the dorsolum having a central longitudinal carina extending to its middle, and an abbreviated scratch on each side, its anterior half delicately transversely

striate, and the posterior longitudinally and more coarsely wrinkled; the scutellum longitudinally striate, interspersed with punctures; the metathorax having a deep longitudinal incisure and a semicircular space at its base, very coarsely longitudinally striate, and its posterior portion extremely delicately transversely striate and opaque; the peristethium has on each side, behind, an abbreviated transverse carina; the collar with a transverse interrupted band, the tubercles, and a lunule upon the scutellum, all yellow (sometimes the tubercles black, and a mere slight transverse line only on the scutellum); the tegulæ testaceous; the wings slightly fuscous, their nervures testaceous; the legs yellow, with the femora black, excepting the apex of the trochanters, and their knees; a black litura beneath the anterior tibiæ, a spot beneath the intermediate ones, and the extreme apex of all ferruginous, and the apical joints of the tarsi rufopiceous, the anterior ones ciliated on the exterior, and the intermediate and posterior tibiæ spinose.

The abdomen black, with five yellow bands more or less interrupted, sometimes all entire, the third generally most interrupted, and the fifth always entire, the first generally waved in front; the anus yellow, the produced obtuse spine at its extremity canaliculated above, and black, and having on each side some rigid yellow setæ.

The ♂ has its antennæ simple, which appear to have but twelve joints, and differs from the ♀ in having the scape above black; the mandibles with only a yellow litura on their inner edge, sometimes entirely black; the collar less yellow; the tubercles, scutellum, and tegulæ sometimes black; the sculpture of the metathorax more strongly marked, its anterior portion rather irregularly longitudinally striate; the wings dark, their nervures piceous; the legs yellow, the anterior femora behind, the intermediate behind and below, and the posterior, entirely black; the outside of the anterior tibiæ and the inside of the intermediate ones entirely black, the exterior of the intermediate plantæ produced towards the apex, and its margin

armed with spines, the remainder like the ♀; the abdomen oblong, and marked like the ♀, but with an additional band, and sometimes more interrupted, the second and fifth and sixth bands generally the widest, frequently entire, the terminal segment having a central longitudinal groove.

♂ ♀ in my own and other Cabinets.

†††. As this insect, which I have named in honour of a distinguished Hymenopterologist, does not agree with any excepting Panzer's figure and description of his *Cr. cephalotes*, yet as the latter apparently mixes two species, his name becomes a doubtful synonyme. This doubt is increased by St. Fargeau making it the synonyme of his *Crabo striatus*, with which mine cannot agree, as from its structure it decidedly belongs to his genus *Solenius*; whereas its ♂ as evidently belongs to his genus *Ceratocolus*, and is very like his *Cer. striatus*; but certainly different, for he does not notice the remarkable peculiarity in the striation of the dorsolum, which is transverse anteriorly, and longitudinal posteriorly. These two insects further confirm my views in not adopting his genera; for here again two are linked together by the sexes of the same species. This species appears rare. I have not hitherto taken it myself. Mr. Walker has captured it in the vicinity of London, in July; and Mr. Stephens at Ripley in Surrey.

SP. 11. VAGUS. Lin.

*niger, flavo-maculatus, stematibus in lineam curvam positus, dorsolo punctato* ♂ ♀.

length  $4\frac{1}{2}$ — $5\frac{1}{2}$  lines.

Fab. S. E. 375. 8; Spec. 1. 471. 10; Mant. 1. 296. 16; Ent. Syst. 2. 298. 17; Piez. 313. 22; Panz. F. G. 46. 10; Rossi, F. Et. 2. 91. 881; Oliv. Ency. Méth. 6. 515. 18; Schrank, F. Boica, 2. 338. 2188; Latr. Hist. Nat. 13. 324. 4; V. d. Lind. pt. 2. 57. 16.

*Sphex vaga*. Lin. F. S. 1661; Syst. Nat. ed. 12. 946. 36; Villers, 3. 238. 44; Schæff. Icon. Ins. Rat. pl. 94. fig. 4 & 5; and pl. 127. fig. 6.

*Solenius vagus*. St. Farg. 3. 722. 9.

The head black, subpubescent, very thickly punctured; the stemmata placed in a curve; a deep canalicula occupying the whole face; the antennæ black, with the scape yellow, having a black patch behind; the clypeus, which is strongly carinated in its centre, covered, as well as the inner orbits of the eyes, with a dense silvery pubescence; the mandibles black, the inner margin yellow, and the apex piceous.

The thorax black, pubescent, thickly punctured; the base of the dorsolum with a central and two obsolete lateral carinæ; the metathorax in front longitudinally, and behind transversely striate, and having a longitudinal central incisure throughout its whole length; the peristethium having on each side, posteriorly, a transverse abbreviated carina; the collar with a transverse yellow band, frequently wanting, and the post-dorsolum sometimes a yellow line in front; the tegulæ piceous; the wings darkish, with their edge darker, the nervures piceous; the legs black; the anterior tibiæ yellow above, and ferruginous in front, the intermediate pair yellow in front and above, and the posterior ones entirely yellow, the extreme apex of all ferruginous; all the tarsi piceous, the anterior pair very slightly ciliated, and the intermediate and posterior tibiæ spinose.

The abdomen black, with three yellow bands, one at the base of the second segment, the second at the base of the fourth segment, and the last at that of the fifth, with every variety of interruption, sometimes all entire, the third generally so, and the third segment with sometimes a small transverse mark on each side ♀.

The ♂ agrees in having apparently the same number of joints to the antennæ, but the fifth and sixth emarginate beneath; the metathorax irregularly longitudinally striate in front, and transversely behind; the anterior femora ferruginous above and in

front, black behind, and yellow beneath; their tibæ also ferruginous in front, yellow above, and black behind; their anterior tarsi piceous, the first joint and base of the second pale, the former reddish at its base; the intermediate femora black, their tibæ yellow above, ferruginous in front, and black behind; and the posterior femora black, their tibæ yellow, with a black stain in front, and a ferruginous one behind; the four posterior tarsi rufo-ferruginous, their basal joint being a little paler in the posterior pair, sometimes yellow; the sixth segment of the abdomen has sometimes some yellow markings, or a band, at its base.

♂ ♀ in most Cabinets.

††† This species is common.

SP. 12. SUBPUNCTATUS. Rossi.

*niger, flavo-maculatus, margine infero capitis utrinque spinâ armato, metathoracis basi lævi* ♂ ♀.

length  $3\frac{1}{2}$ —5 lines.

Rossi, F. E. 2. 156. 891 ♀. V. d. Lind. pt. 2. 58. 19. ♂ ♀.

*Craero 4-maculatus*. Fab. E. S. 2. 294. 4.; Piez. 308. 3. ♂.

— *murorum*. Latr. Hist. Nat. 13. 324. 5. ♀.

*Crossocerus subpunctatus*. St. Farg. 3. 766. 3. ♂ ♀.

Head black, punctured, but not thickly; several irregular depressions on the vertex; the stemmata placed in a triangle in its centre; a deep longitudinal depression, extending from the anterior stemma to the face, where it becomes a canalicula, occupying all its space between the eyes; the antennæ black, with the base and apex of the scape generally fuscous; the clypeus strongly carinated in the centre, and very loosely covered with a brassy pubescence; the mandibles fuscous, with their apex rufo-piceous, sometimes entirely piceous; the carina which separates the jugulum from the genæ terminated anteriorly in an acute tooth.

The thorax black; the dorsolum loosely punctured, its base

has three obsolete parallel carinæ; the metathorax with a longitudinal central incisure expanding just beyond the middle into a fossulet, and above which a transverse one divides it, curving upwards, and enclosing the anterior portion in a semi-circle, which is smooth and shining, sometimes very slightly obliquely striated at its exterior edge, and joining that which separates the post-dorsolum from the metathorax, the whole consute; the posterior portion of the metathorax distinctly enclosed by lateral ridges, shining, anteriorly punctured, and behind transversely striate, or the whole entirely so; the collar and post-dorsolum with a transverse yellow line, the former generally interrupted, the latter sometimes wanting; the tegulæ testaceous; the wings slightly coloured, their nervures piceous; the legs black, with the apex of the coxæ and base of the trochanters fuscous; the anterior and intermediate tibiæ, in front, and the posterior ones with a ring at their base, yellow; the anterior and intermediate tarsi yellow at their base, rufo-piceous at their apex, the posterior pair entirely piceous; the anterior tarsi slightly ciliated outside; and the intermediate and posterior tibiæ spinose.

The abdomen black, elongato-ovate, with five yellow bands; the second, third, fourth, and fifth, very wide; the four first generally interrupted; the fourth sometimes merely emarginate in front; the fifth almost always entire; the first and third sometimes reduced to a mere spot on each side; the second and third generally the least interrupted; the anal segment with generally a yellow spot on each side, and a central one beneath ♀.

The ♂ has its antennæ simple, and the clavolet fringed below, and differs from the ♀ in the scape having sometimes a lateral yellow line; the interior orbits of the eyes and clypeus covered with a loose silvery pubescence, the latter tridentate in front, and frequently a yellow spot on each side of its base behind; the yellow markings on the collar and post-dorsolum generally wanting; their anterior and intermediate femora fuscous in front, the latter also behind; the abdomen elongate, the first segment

gradually narrowing at its base into a petiole, and generally much less coloured than in the ♀, it being most frequently limited to an ovate yellow spot on each side of the base of the second and third segments, sometimes a few spots at the base of the sixth segment, and very rarely the abdomen is entirely black.

♂ ♀ in most Cabinets.

††† This species, the descriptions will show, is extremely variable in the colour of its abdomen. I have a single specimen in which it is entirely black. It is not uncommon in the vicinity of London.

SP. 13. VAGABUNDUS. Panz.

*niger, flavo-maculatus, metathorace lævi* ♀.

♂ *femoribus anticis subtùs spiná obtusá armatis.*

length  $4\frac{1}{2}$ — $5\frac{1}{2}$  lines.

Panz. F. G. 53. 16 ♂. V. d. Lind. pt. 2. 57. 18.

? *Crabro mediatu*s. Fab. E. S. Sup. 270. 16—17; Piez. 312. 20.

? *Blepharipus mediatu*s. St. Farg. 3. 734. 6. ♂ ♀.

Head black, punctured, but not thickly, somewhat shining; the vertex having on each side, within the eyes, an oblique fossulet, extending in the direction of the posterior stemmata; the stemmata placed in a triangle about its centre, the anterior one having in front a longitudinal impression, which extends to the verge of the face, where it becomes a smooth and shining canalicula, occupying the whole face to the base of the clypeus; the antennæ black, with their scape yellow in front; the clypeus and interior of the orbits of the eyes, and lower portion of the cheeks, covered with a silvery down; the mandibles black, with their apex piceous.

The thorax black, subpubescent; the dorsolum punctured, but not thickly, and slightly shining, having at its base a central longitudinal carina, extending to the disk; the scutellum also slightly punctured; the metathorax with a longitudinal

incisure crossed near its middle by a transverse one, which curves upwards on each side, and encloses a semicircular space, quite smooth and shining, and joining that which separates the metathorax from the postdorsolum, the whole incisure consute; the posterior portion of the metathorax smooth and shining in front, and slightly transversely striate laterally and behind; the peristethium having on each side behind a minute tooth; the collar with an interrupted yellow band, and the scutellum slightly yellow in front; the tegulæ piceous; the wings slightly coloured, and nervures piceous; the legs with the femora black; the tibiæ yellow, with a black litura beneath the anterior and intermediate pairs, the posterior pair with a piceous spot at their apex within; all the tarsi fuscous, paler at their base, the anterior pair very slightly ciliated on the exterior, and the intermediate and posterior tibiæ slightly spinose.

The abdomen black, with five yellow bands variously interrupted, sometimes all merely subinterrupted; the anal segment yellow at its base on each side; the intermediate space between the anal carinæ punctured and black, its extreme tip ferruginous ♀.

The ♂ has the antennæ simple, and differs in having their clavolet fimbriated beneath; the yellow of the collar and scutellum generally wanting; the wings with a dark spot within their marginal cell; the anterior trochanters yellow, their femora testaceous beneath and in front, and having a small produced tooth on their exterior towards the base; the intermediate femora testaceous behind and in front; in all else the legs resemble the ♀; the abdomen is oblong, with seldom more than a minute spot on each side of the first segment, a band, more or less interrupted, at the base of the second and third, a transverse line on each side of the fourth, a central ovate spot on the fifth, and a central transverse line on the sixth, but the markings of the first, fourth, and fifth segments are sometimes wanting.

♂ ♀ in my own Collection.

††† This species is not uncommon near London.



## SP. 14. DIMIDIATUS. Fab.

*niger, flavo-maculatus, abdomine apertè petiolato.*length  $4\frac{1}{4}$ —6 lines.

Fab. Ent. Syst. 2. 298. 19; Piez. 313. 24; V. d. Lind. p. 2. 58. 20;

Oliv. Ency. Méth. 6. 516. 24.

*Crabro signatus.* Panz. F. G. 43. 15. ♀.*Blepharipus signatus.* St. Farg. 3. 731. 4.

Head black, subpubescent, smooth, or with a very few minute scattered punctures, and shining; the stemmata placed in a triangle towards the posterior margin of the vertex, with a small elevation between the posterior pair, and a slight longitudinal line extending from the front of the anterior one to the verge of the vertex, which is slightly concave; the anterior and posterior margins of the vertex and the sides next the eyes elevated, presenting a subquadrate superficies, the inner portion of which between the eyes and stemmata is concave; the antennæ black, the scape yellow, with a black stain above; the face very slightly canaliculated; the inner orbits, the lower portion of the cheeks, and clypeus, covered with a dense silvery down, the latter with sometimes a yellow spot on each side of its base, and its centre has a longitudinal carina; the mandibles generally black at their base, then yellow, and their apex rufo-piceous, or sometimes entirely black, with their apex piceous.

The thorax black, pubescent; the dorsolum minutely and densely punctured, having in the centre, at its base, two very close parallel impressed lines extending to the disk; the scutellum punctured; the metathorax with a subcordate, smooth and shining space, which is enclosed all round by a consute incisure, and a longitudinal one down its centre, which dilates beyond it into a fossulet; the posterior portion of the metathorax, on each side of this fossulet, pubescent, with a few scattered delicate punctures, and shining; the collar with a transverse band, the apex of the tubercles, a spot on each side of the scutellum, and the post-dorsolum, generally yellow; the tegulæ piceous; the wings coloured, their nervures piceous;

the legs with the base and apex of the intermediate and posterior coxæ rufo-piceous; the apex of the trochanters yellow; the femora all black; the tibiæ yellow, with a black stain beneath, extending sometimes irregularly within the posterior ones; the tarsi rufo-piceous, with their basal joint yellow; the anterior tarsi ciliated on the exterior, and all the tibiæ spinose.

The abdomen black, elongate, lanceolate (the first segment much narrowed towards its base, and forming a petiole), with five broad yellow bands variously interrupted, and the anus yellow, the first and last generally entire, that on the third segment sometimes wanting, and those on the fourth, fifth, and sixth segments sometimes reduced to a small ovate transverse spot on each side, and the sixth occasionally abbreviated on each side ♀.

The ♂ has the antennæ simple, slender, and the scape fimbriated beneath, and differs in the latter having only a yellow line at the side; the mandibles black; the dorsolum less closely punctured, and shining; and the thorax generally without any yellow markings; the wings less deeply coloured, but darker on the anterior margin; the legs black; the anterior femora rufo-piceous at their base and within, the intermediate with a testaceous streak inside and outside; the anterior tibiæ yellow above, the intermediate on the exterior, and the posterior at the knees, and sometimes at the apex on the exterior, and all the tarsi piceous or rufo-piceous; the anterior femora compressed and dilated a little behind, their tibiæ angularly dilated behind towards the middle, and irregularly concave beneath, the intermediate femora concave beneath, and their tibiæ irregularly excised on the exterior, with a pale dilatation extending along their margin; the posterior coxæ dilated into a flat and acute spine towards their base below, their femora slightly flattened within; their tibiæ clavate; the colour of the abdomen generally much less than in the ♀, and consisting frequently of merely a band on the first segment, a minute spot on each side of the second, a widely interrupted band on the third, another

minute spot on each side of the fourth, a spot or two in the centre of the sixth, yellow; and the anus flavo-ferruginous.

♂ ♀ in my own and other Cabinets.

††† This species is not common. It has been found in the Isle of Wight by F. Walker, Esq., at Ripley in Surrey by Mr. Stephens, in Lancashire by Mr. Davis, and it has occurred in Kent; but I have never found it in the immediate vicinity of London.

SP. 15. LEUCOSTOMA. Lin.

*niger, antennarum scapo tantùm a latere flavo signato, metathorace lævi.*

length 4—5 lines.

Fab. Sys. Ent. 376. 13; Spec. 1. 472. 17; Mant. 1. 297. 27; Ent. Syst. 2. 301. 27; Oliv. Ency. Méth. 6. 518. 35; V. d. Lind. pt. 2. 61. 24. *Sphex leucostoma*. Lin. F. S. 1663; Syst. Nat. 1. 946. 36; Villers, 3. 237. 43.

*Pemphredon leucostoma*. Fab. Piez. 314. 1.

*Crossocerus leucostoma*. St. Farg. 3. 777. 13.

*Crabro bidens*. Haliday, Ent. Mag. 1. 516. ♂.

Head black, shining, subpubescent; the vertex with several irregular depressions, and a few scattered minute punctures; the stemmata placed in a triangle in its centre, in front of the anterior one a deep longitudinal impression extending to the face, which is canaliculated, smooth, and shining; the antennæ black, the side of the scape with a yellow streak; the inner orbits of the eyes and clypeus densely covered with a silvery pubescence; the mandibles black, their apex piceous.

The thorax black, subpubescent, smooth, and shining; the dorsolum and scutellum with a very few minute scattered punctures, the former with two central parallel impressed lines running to the disk; the metathorax with a central deep longitudinal incisure, a subcordiform, smooth, and shining space at its base, not always distinctly enclosed, beyond which it is minutely

punctured; the peristethium has on each side, behind, a minute tooth; the tegulæ piceous; the wings with a dark cloud beyond their centre, their nervures piceous; the legs entirely black; the posterior tibiæ subclavate; the tarsi generally piceous, the anterior tarsi very slightly ciliated; the intermediate and posterior tibiæ spinose.

The abdomen black, smooth, and shining; the margins of the posterior segments sometimes piceous, and the apex ferruginous ♀.

The ♂ has the antennæ simple, the clavolet fimbriated beneath, and only differs from the ♀ in the clypeus having on each side a strongly produced tooth, concave beneath.

††† This species is common near London, and it has been found at New Lanark by F. Walker, Esq. The species described by Mr. Haliday is the ♂ of it.

SP. 16. *ELONGATULUS*. V. d. Lind.

*niger, elongatus, metathorace antice obliquè striato, pedibus duobus anticis tantùm subtùs flavis, mandibulis palpisque piceis.*

length  $2\frac{1}{4}$ — $3\frac{1}{4}$  lines.

V. d. Lind. p. 2. 62. 25.

*Crossocerus elongatulus*. St. Farg. 3. 790. 28.

Head black, subquadrate; the vertex minutely and thickly punctured; the stemmata placed in a triangle in its centre, on each side of the posterior ones a smooth and shining depression, and between them a longitudinal impressed line, which does not extend beyond them posteriorly, the anterior one has in front sometimes an obsolete impressed line; the antennæ simple, black, the scape yellow at the sides, slightly rufescent at its base and apex, the clavolet fimbriated beneath; the face canalculated, and smooth and shining; the inner orbits of the eyes and the clypeus covered with a dense silvery pubescence;

the mandibles black and piceous at their apex; the palpi piceous.

The thorax black, minutely and closely punctured; the dorsolum with two central parallel slightly elevated lines at its base, extending to the disk, and two lateral ones much shorter; the metathorax with a cruciform consute incisure, the transverse one somewhat curved, and enclosing the anterior portion of the metathorax, which is very convex, somewhat obliquely striate, and its posterior portion transversely; the tegulæ piceous; the wings slightly iridescent, hyaline, their nervures piceous; the legs black, the anterior and intermediate femora yellow in front, as well as the anterior tibiæ; the calcaria testaceous.

The abdomen subclavate, black, and shining; the dorsal margin of the two basal segments constricted ♂.

I do not know the ♀, but the following is Van der Linden's description of its difference from the ♂: "Legs black, excepting the inside of the anterior tibiæ, which are yellow."

♂ in my own and other Cabinets.

††† This is not uncommon in the vicinity of London.

SP. 17. LUTEIPALPIS. St. Farg.

*niger, elongatus, metathorace antice obliquè striato, mandibulis, palpis et tibiis quatuor anticis subtùs flavis* ♂.

length  $2\frac{1}{2}$ —3 lines.

*Crossocerus luteipalpis.* St. Farg. 3. 785. 23.

Black: head shining, punctured; the stemmata placed in an equilateral triangle on the vertex, a minute longitudinal impression between the two posterior ones, which scarcely passes them; the scape of the antennæ yellow laterally; the clypeus, internal orbits and cheeks, covered with a dense silvery pubescence; the mandibles and palpi yellow, the former rufescent at their apex.

The thorax shining and punctured; three longitudinal lines running from the collar to the disk of the dorsolum; the two lobes of the subcordiform base of the metathorax very convex and longitudinally striated, the space beyond forming the trun-

cation of the metathorax transversely striated; the wings hyaline, iridescent, their nervures piceous; the legs black, with the four anterior femora and tibiæ yellow in front, and the extreme base of the posterior tibiæ pale; the tarsi piceous, and the calcaria pale testaceous.

The abdomen has a slight silvery pubescence, and the dorsal margin of the two basal segments are somewhat constricted ♂.

The ♀ I am unacquainted with.

♂ in my own Cabinet.

†,† Taken in the vicinity of London, where it is not uncommon: it occurs in company with the *C. elongatulus*, V. d. Lind., of which it is perhaps only a variety.

SP. 18. PROXIMUS. N. Sp.

*niger, elongatus, metathorace antice obliquè striato, mandibulis testaceis, tibiis (quatuor anticis extùs nigris), tarsisque flavis* ♂.

length  $2\frac{1}{2}$  lines.

Head black, punctured; the stemmata placed in an equilateral triangle in the centre of the vertex, an oblique smooth depression on each side of the posterior ones, and a longitudinal impression between them extending just beyond, another in front reaching the face, which is canaliculated; the antennæ simple, black, the scape in front yellow, and the clavolet fimbriated beneath; the inner orbits of the eyes and clypeus covered with a dense silvery pubescence; the mandibles black at their base, then testaceous, and their apex rufescent.

The thorax black, shining, with scattered minute punctures; the dorsolum with two central parallel obsolete carinæ extending to the disk; the metathorax with a consute cruciform incisure, its anterior portion obliquely striate, and posterior transversely so, a minute dot on each side of the collar, and the tubercles yellow; the tegulæ testaceous; the wings hyaline, iridescent, their nervures testaceous; the legs yellow, with the anterior

femora behind and the intermediate and posterior ones, except their knees, black, the anterior tibiæ beneath and the intermediate ones with a litura at their apex beneath, and the posterior ones, excepting a ringe at their base, black; the tarsi yellow, with their apical joints rufo-piceous, the posterior ones with the basal joint, and the base of the second only, yellow, the rest piceous.

The abdomen subclavate, subpubescent, black, and shining; the apical segment flavo-testaceous ♂.

I am unacquainted with the ♀.

♂ in the collection of the Entomological  
Society of London.

††† This insect, which is unique in the above collection, exactly resembles the *Crab. elongatulus* in the sculpture of the metathorax; but the difference of the colour of the legs and tubercles, and other minute distinctions, permit me I think to consider it more than a variety and specifically distinct, it being of the same sex as those I know of that species. It is very like the ♂ of *Crossocerus varus* of St. Fargeau, but wants the yellow on the prothorax and scutellum, and minor differences, which prevent my treating it as that insect.

SP. 19. PODAGRICUS. V. d. Lind.

*niger, abdomine clavato, metathoracis spatio subcordiformi lævi, tibiis posticis valdè incrassatis, peristethio denticulo armato* ♂ ♀.

length  $2\frac{3}{4}$ — $3\frac{1}{4}$  lines.

V. d. Lind. pt. 2. 60. 23.

*Crossocerus podagricus.* St. Farg. 3. 786. 24.

Head black, smooth, and shining; the stemmata placed in a triangle in the centre of the vertex, a central longitudinal impression extending from the anterior one to the face, which is

slightly canaliculated; the antennæ black, their scape yellow with a black line behind; the inner orbits of the eyes and the clypeus covered with a dense silvery pubescence; the mandibles rufescent at their apex.

The thorax black, thickly covered with very minute punctures; the dorsolum at its base with two central and two lateral longitudinal impressed lines extending to the disk; the metathorax has at its base a subcordiform shining space very delicately punctured at its sides, enclosed around with a consute impression, a longitudinal one in its centre, broad at the base, and narrowing towards the apex of the subcordiform space, where it becomes obsolete, beyond this it again widens into a deep fossulet which extends the whole length of the metathorax, the posterior portion of which is punctured in front and slightly transversely striate behind; the peristethium has behind on each side a minute tooth; a minute dot sometimes on each side of the collar, the tubercles and the extreme base of the wings (not the tegulæ, which are piceous) yellow; the wings slightly coloured, iridescent, their nervures piceous; the legs black, the anterior femora at the knee, their tibiæ in front and above, the intermediate tibiæ above, and the posterior ones with a ring at their base, all yellow; the anterior and intermediate tarsi yellow at their base, and rufo-piceous at the apex; the posterior ones entirely piceous, the anterior pair very slightly ciliated, and the intermediate and posterior tibiæ slightly spinose, the latter very much thickened on the exterior towards the apex.

The abdomen smooth, shining, clavate, longer than the head and thorax; the last segment pinched on each side, presenting above a trilobate concavity, the apex rufescent ♀.

The ♂ has the antennæ simple, and with their clavolet fimbriated beneath, and differs in having the anterior femora yellow inside, and above testaceous, with the posterior margin below fimbriated; the intermediate femora yellow-testaceous within, and a testaceous, sometimes yellow, stain behind; the intermediate trochanters and femora fimbriated, the latter only at their



base, and the anterior tarsi also densely fimbriated on the edges, those as well as the intermediate more yellow, in other respects exactly like the ♀; the abdomen subcylindrical, narrower, and more elongate.

♂ ♀ in many Cabinets.

††† If the form of the anus and a difference of general habit constituted claims to generic separation, it is clear that St. Fargeau ought to have removed this species from his genus *Crossocerus*; for, in the former peculiarity, it is more evidently distinct from the rest of this genus of his than are his *Corynopus* and *Physoscelus* from each other. This and the following species, which latter appears hitherto unknown, form, by their distinctly clavate abdomen, with the *C. dimidiatus* a direct link to division B., containing the petiolated *C. rufiventris* and *C. tibialis*, which further proves the inutility of St. Fargeau's elaborate distribution, there being, throughout all the species, direct points of contact which connect them together, although they cannot be arranged in a consecutive series. If in the multitude of modes of natural arrangement that have been proposed I might be allowed to suggest the intercalation of one, I should consider this genus *Crabro* a central group, whence, from the diversity of its forms, all the rest of the fossorial Hymenoptera would radiate; yet, even then it will be found that this planet has its satellites, with occasionally a comet to cross their orbits! Nature is too Protean to be bodiced.

SP. 20. CAPITOSUS. N. Sp.

*niger, capite quadrato, abdomine clavato, metathorace lævi, tibiis posticis valdè incrassatis* ♀.

length  $3\frac{1}{2}$  lines.

Entirely black: head large, subquadrate, smooth and shining;

the stemmata placed in a triangle in the centre of the vertex, which has a few scattered minute punctures and a slightly impressed longitudinal line passing from the anterior stemma to a little beyond the posterior ones, and a deeper one in front extending to the face, which is canaliculated; the antennæ black, the base and apex of the scape sometimes rufo-piceous; the inner orbits of the eyes and the clypeus, which is produced in the centre, in front, into a tooth, covered with a dense silvery down; the mandibles towards their apex piceous.

The thorax narrower than the head, somewhat shining; the dorsolum and scutellum with some scattered punctures, and the former with two central parallel impressions at its base extending to the disk; the metathorax consute at its extreme base, smooth and shining, with a delicate central longitudinal line, which deepens beyond the middle, the anterior and posterior portions not distinctly separated, the former seen under a high power, having a few curved very delicate striæ; the tegulæ rufo-piceous; the wings subhyaline, very iridescent, their nervures piceous; the legs black, the anterior tibiæ yellow in front, the intermediate ones fuscous at their base and apex, the posterior coxæ pale testaceous at their apex, and their tibiæ, which are subclavate, with a pale yellow ring at the base; the anterior and intermediate tarsi pale yellow at their base and rufo-piceous at the apex; the posterior ones rufo-piceous; the legs simple and covered with a thick pubescence.

The abdomen clavate, the first segment much narrowed at its base, black, smooth, and shining; the anus rufescent at its apex, where it is narrowed into a channel ♀.

I am unacquainted with the ♂.

♀ in my own Collection.

††† This species will not, strictly speaking, enter into any of St. Fargeau's genera, for it has the anus '*acuminé, creusé en gouttière,*' which would place it in *Solenius* according to the female characters; but then it has the '*ocelles en*

*triangle équilatéral,*' but he would probably have placed it in the repository *Crossocerus*, where, notwithstanding the characters he has laid down, he inserts insects with both an acuminate and channelled anus, and with incrassated posterior tibiæ. See the observations under the preceding species, to which this is closely allied in general habit. I have taken it, but rarely, in Battersea Fields, and I have not observed it in any other collection.

SP. 21. HYALINUS. Steph.

*niger, elongatus, metathorace antice obliquè striato, mandibulis  
nigris, genibus quatuor posticis tantùm flavis ♀.*

length  $3\frac{1}{2}$  lines.

Stephens's MS. and Systematic Catalogue, pt. 1. 365. 4961. 33.

Head black, punctured; the stemmata placed in a triangle on the vertex, an impressed line between the posterior ones, but not extending beyond them, and another in front of the anterior one reaching to the face; the antennæ black, the side of the scape fulvescent; the clypeus covered with a silvery down; the mandibles black, with their apex piceous.

The thorax black, punctured; the metathorax with the enclosed space at its base obliquely striated, with a central longitudinal consute incisure; the posterior portion of the metathorax transversely striate; the tegulæ piceous; the wings hyaline, their nervures piceous; the legs black, the anterior tibiæ in front, and the knees of the others, yellow, the tarsi piceous, with their basal joint yellow, the anterior pair simple, but all the tibiæ spinose.

The abdomen black, subpubescent, shining ♀.

The ♂ I am unacquainted with.

♀ in Mr. Stephens's Cabinet.

†† This is not described by St. Fargeau, but would come into his genus *Crossocerus*.

SP. 22. TRANSVERSALIS. N. Sp.

*niger, elongatus, metathorace antice transversè striato.*

length  $2\frac{1}{2}$  lines.

Head black, thickly punctured; the stemmata placed in an equilateral triangle in the centre of the vertex, a longitudinal impressed line between the posterior ones passing not far beyond them, and another in front of the anterior one extending to the face, which is canaliculated, smooth, and shining; the antennæ black, with a fulvous stripe at the side of the scape, and the clavolett fimbriated beneath; the inner orbits of the eyes and the clypeus (which is carinated in the centre, and tridentate in front) covered with a dense silvery pubescence; the mandibles yellow testaceous, their apex rufescent.

The thorax black and thickly punctured; the metathorax with a cruciform consute incisure, the longitudinal one wide at the base of the metathorax, narrowing towards the centre, just beyond which it dilates into a broad fossulett, the transverse one bending upwards and enclosing its anterior portion, which, as well as the posterior, is transversely striate; the collar with two small pale spots; the tegulæ piceous; the wings hyaline, subiridescent, their nervures piceous; the legs black, the anterior and intermediate femora beneath, the anterior tibiæ in front, a small stain at the knee of the intermediate pair, and a small ring at the base of the posterior ones, yellow; the tarsi piceous.

The abdomen subclavate, black, smooth, and shining ♂.

I am unacquainted with the ♀.

♂ in the Cabinet of Mr. Westwood.

††† This *Crabro*, which is unique in the cabinet of Mr. Westwood, is the only one I am acquainted with that has the anterior portion of the metathorax transversely striated, from which circumstance I have named it. It would come into St. Fargeau's genus *Crossocerus*, and near his *Cros. pusillus*, but it does not appear to be described by him. I cannot learn where it was taken.

## SP. 23. SPINIPECTUS. N. Sp.

*niger, elongatus, thorace flavo-maculato, metathorace antice obliquè striato, peristethio denticulo armato* ♂ ♀.

length  $2\frac{1}{4}$ —3 lines.

Head black, smooth, and shining, with scattered minute punctures; the stemmata placed in an equilateral triangle in the centre of the vertex, on each side of the posterior ones a perfectly smooth space, and between them a deep longitudinal impression which extends a short distance beyond, another in front of the anterior one extending to the face, which is smooth, shining, and canaliculated; the antennæ black, with the scape yellow at the sides; the inner orbits of the eyes and the clypeus (which is slightly carinated in the centre) covered with a dense silvery pubescence; the mandibles black, with their apex rufescent.

The thorax black, loosely punctured, and somewhat shining; at the base of the dorsolum two central, parallel, longitudinal impressions, which extend to the disk, and an obsolete, abbreviated, longitudinal carina on each side of them; the metathorax with a cruciform incisure, consute, widest at the base of the metathorax, the transverse one curving upwards and enclosing the anterior portion, which is obliquely striated, the striæ sometimes obsolete; the posterior portion transversely striate, sometimes only at its apex, its base having a few punctures; the posterior portion of the peristethium having on each side a large acute tooth; the collar with an interrupted yellow band or small dot on each side; the tegulæ testaceous; the wings slightly iridescent, a dark cloud beyond their middle, and the nervures piceous; the legs black, with the anterior tibiæ, in front, and the intermediate and posterior ones with a ring at their base, yellow, sometimes that of the intermediate wanting, and it also varies in having occasionally a yellow spot at the apex of the intermediate ones beneath, the tarsi piceous, with their basal joint, or merely

its base, pale; the anterior pair ciliated on the exterior, and all the tibiæ spinose.

The abdomen subclavate, black, shining, subpubescent, with the margins of the segments sometimes piceous ♀.

The ♂ has the antennæ simple, fimbriated beneath, and differs in having a yellow spot on the scutellum; the anterior femora yellow above and behind, testaceous in front and black beneath, their tibiæ black merely beneath; the intermediate femora with a yellow stripe above and in front, their tibiæ with merely a black stain behind; the anterior and intermediate tarsi with their terminal joint piceous, and a piceous spot on the basal joint of the anterior ones; the posterior legs like the ♀; the abdomen longer and narrower than the ♀.

♂ ♀ in my own Cabinet.

††† This species is a good deal like the *Crossocerus striatulus* of St. Fargeau, but is very distinct. I do not find it yet described. I have captured it in the immediate vicinity of London.

SP. 24. WESMAELI. V. d. Lind.

*niger, thorace flavo-maculato, metathorace lævi* ♀.

length 2—3¼ lines.

V. d. Lind. pt. 2. 63. 26.

*Crossocerus Wesmaeli*. St. Farg. 3. 783. 20 ♂.

Head black, minutely and delicately punctured; the stemmata placed in a triangle about the centre of the vertex, between the posterior ones a slight longitudinal impression, which does not pass beyond them, and on each side of them an oblique smooth depression, in front of the anterior one another impressed line which extends to the face; the antennæ black, the scape beneath yellow, its extreme apex (as well as that of the pedicel) sometimes ferruginous; the face canaliculated, smooth, and shining; the inner orbits of the eyes, the lower portion of the cheeks, and

the clypeus (which is carinated in the centre), covered with a dense silvery pubescence; the mandibles black at their base, then testaceous or yellow, and their apex rufescent.

The thorax black, delicately punctured, somewhat shining; the metathorax smooth and shining, with a consute cruciform incisure, the transverse one curving upwards, and the posterior portion of the metathorax with a few minute scattered punctures; the collar with a transverse band, sometimes interrupted, the tubercles, the base of the wings (not the tegulæ, which are rufo-piceous), and a spot on the scutellum, all yellow; the wings hyaline, iridescent, their nervures piceous; the legs with the femora black, the tibiæ yellow, the anterior and intermediate black beneath, as well as the apical half of the posterior ones, the tarsi rufo-piceous or rufo-testaceous, their basal joint more or less yellow; the anterior pair ciliated on the exterior, and all the tibiæ spinose.

The abdomen elongato-ovate, black, pubescent, the first segment narrowed anteriorly into a petiole; the anal segment coarsely punctured and ferruginous at its apex ♀.

The ♂ I do not know, but V. d. Linden describes it as being like the ♀, only less yellow.

♀ in the Cabinets of Mr. Walker  
and the Author.

††† This species was captured by F. Walker, Esq., at New Lanark, in Scotland, to whom I am indebted for specimens.

SP. 25. PUBESCENS. N. Sp.

*niger, elongatus, capite et thorace pilis longis vestitis, metathorace lævi ♂.*

length 3 lines.

Head black, opaque, with punctures scattered over an irregular surface; the stemmata placed in an equilateral triangle rather

behind the centre of the vertex, an impressed longitudinal line extending from the anterior one to the face; the forehead, temples, and cheeks covered with a long pubescence; the face canaliculated, smooth, and shining; the antennæ black, fimbriated beneath, with a stripe at the sides of the scape yellow; the inner orbits of the eyes, and the clypeus (which is produced in front), covered with a dense silvery pubescence; the mandibles black.

The thorax black, shining, delicately punctured; the collar and dorsolum covered with a long black pubescence; the metathorax with a subcordiform smooth and shining space at its base, which is divided from the posterior portion of the metathorax by a short consute transverse incisure, and it has down its centre a longitudinal deep incisure which beyond the transverse one dilates into a fossulet, at the sides of which it is smooth and shining; the tegulæ piceous; the wings darkish, their nervures piceous; the legs black, the anterior tibiæ fulvous within, the intermediate femora with a fuscous stripe in front and behind, the tarsi piceous; the anterior tibiæ and tarsi densely fimbriated on the exterior.

The abdomen elongato-ovate, black, subpubescent, and shining ♂.

I am unacquainted with the ♀.

♂ in the Cabinets of the Entomological Society and Mr. Stephens.

††† This insect, which is only in the Cabinets of the Entomological Society of London and of Mr. Stephens, is distinguished from the rest of the small black ones by the great length of the hair on the head and thorax, and the densely fimbriated anterior tibiæ and tarsi; in the sculpture of the metathorax it in some degrees resembles the *C. leucostoma*, particularly in the central longitudinal incisure, but in that insect the subcordiform space is not so distinctly defined as in this. It would be a *Crossocerus* of St. Far-



geau, but he does not appear to have described it. I cannot learn where it was found.

SP. 26. OBLIQUUS. N. Sp.

*niger, elongatus, metathoracis spatii subcordiformi disco tantùm lævi, limbo obliquè striato.*

length  $2\frac{1}{2}$ — $3\frac{1}{2}$  lines.

Head black, subquadrate; the vertex minutely and closely punctured; the stemmata placed in a triangle in its centre, on each side of the posterior ones a smooth and shining depression, and between them a longitudinal impressed line which does not extend beyond them, the anterior one has in front a deep impressed line which extends to the face; the antennæ black, with the scape on each side yellow; the face canaliculated, smooth, and shining: the inner orbits of the eyes and clypeus (which is carinated in the centre) covered with a dense silvery pubescence; the mandibles black, testaceous, or yellow, their apex piceous or rufescent; the palpi pale testaceous, or rufo-testaceous.

The thorax black, closely and densely covered with minute punctures; the dorsolum with two central parallel slightly elevated lines at its base extending to the disk, and two lateral ones much shorter; the metathorax with a cruciform consute incisure, the transverse one somewhat curved and enclosing the anterior portion of the metathorax, the disk of which is smooth and shining, and the sides and limb behind obliquely striated, the posterior portion is transversely striated; the collar with sometimes a pale or yellow dot on each side; the tegulæ piceous; the wings with a cloud beyond the middle, iridescent, and their nervures piceous; the legs black, with the anterior tibiæ yellow in front, and the intermediate and posterior ones yellow at their knees, the tarsi piceous, the basal joint of the intermediate and posterior pairs sometimes pale at the base; the anterior tarsi simple, the intermediate and posterior tibiæ spinose.

The abdomen subclavate, black, minutely punctured, and shining ♀.

The ♂ differs in having the antennæ fimbriated beneath ; and the scape in front, the intermediate tibiæ in front, and the posterior ones at the base, all yellow.

♂ in the Cabinet of Mr. Stephens,  
♀ in Mr. Walker's and my own.

†† This species approaches somewhat to the *Crossocerus niger* of St. Fargeau, but it is distinct. I have taken the ♀ in company with the *C. elongatulus* in the neighbourhood of London, and Mr. Walker has taken it at Barmouth.

SP. 27. PROPINQUUS. N. Sp.

*niger, elongatus, metathorace lævi, clypeo nigro.*

length  $2\frac{1}{2}$ — $3\frac{1}{4}$  lines.

? *Crossocerus pallidipalpis*. St. Farg. 3. 779. 15.

Head black, minutely punctured ; the stemmata placed in a triangle in the middle of the vertex, a delicate longitudinal impression between the posterior ones which passes just beyond them, a smooth shining depression on each side of them, a deeper longitudinal depression in front of the anterior one extending to the face ; the antennæ black, with a yellow line on the outside of the scape ; the inner orbits of the eyes, the lower part of the cheeks, and the clypeus, covered with a silvery pubescence ; the mandibles black, with their apex rufo-piceous.

The thorax black, minutely punctured, somewhat shining ; two central parallel longitudinal lines at the base of the dorsolum, extending to the disk, and two shorter lateral ones ; the metathorax smooth and shining, having a consute cruciform incisure, the transverse one curving upwards, and the posterior portion of the metathorax with some scattered punctures ; the collar with sometimes a minute pale yellow dot on each side ; the tegulæ piceous ; the wings slightly coloured, and their nervures piceous ; the legs black, the anterior tibiæ in front yellow, and the intermediate and posterior ones yellow at the extreme base, the tarsi

rufo-piceous or piceous, the base of the basal joint of the posterior ones sometimes paler.

The abdomen subclavate, black, shining, subpubescent; the apex of the last segment sometimes piceous ♀.

The ♂ differs in having the antennæ fimbriated beneath, and the intermediate tibiæ yellow in front.

♂ ♀ in my own Collection.

†† This species resembles a good deal to the *C. levipes* of Van der Linden, but is distinguished from it in the shape of its head chiefly, and the colour of the legs; it approaches very closely to the *C. Wesmaeli*, but from which it differs both in colour and the shape of its abdomen. It is also very like the *Crossocerus pallidipalpis* of St. Fargeau, of which it may possibly be a variety. I captured it in the vicinity of London.

SP. 28. GENICULATUS. Steph.

*niger, clypeo flavo-maculato, mandibulis nigris, metathorace lævi.*

length 5 lines.

Stephens's Systematic Catalogue, pt. 1. p. 365. 496, n.

Head black, punctured, shining; stemmata placed in a triangle on the vertex, with an impressed line in front of the anterior one extending to the base of the antennæ, which are black, with the scape yellow, but having a black stain behind; the interior orbits of the eyes and clypeus covered with a dense silvery pubescence, the latter having a yellow spot in its centre covering the carina; the mandibles black, with their apex piceous.

The thorax black, punctured, shining; the dorsolum with two central parallel lines, extending from the base to the disc; the metathorax with the subcordiform space at its base smooth, and having down its centre a longitudinal consute incisure, the posterior portion also smooth or very slightly transversely striated; the tegulæ piceous; the wings slightly coloured, their

nervures piceous; the legs yellow, with the femora, the anterior and intermediate tibiæ beneath, and the posterior ones at their apex, black; the terminal joint of the tarsi piceous; the anterior pair slightly ciliated, and the posterior tibiæ spinose.

The abdomen black, shining, subpubescent, with the margins of the segments and the apex of the last one piceous ♀.

The ♂ I am unacquainted with.

♀ in the Cabinet of Mr. Stephens.

††† This conspicuous insect, of which I know but the unique specimen in Mr. Stephens's collection, and which he took at Ripley in Surrey, may, perhaps, be the ♀ of the *Crossocerus bimaculatus* of St. Fargeau.

SP. 29. WALKERI. N. Sp.

*niger, orbitis internis oculorum mandibulisque flavis, metathorace lævi, abdomine ovato-conico* ♂.

length 3 lines.

Head black, somewhat shining, loosely punctured; the stemmata placed in a triangle in the centre of the vertex, with a delicate, longitudinal, impressed line between the posterior ones extending considerably beyond them behind, and another deeper, in front of the anterior one, reaching the face; the antennæ black, their scape yellow, with a black stain behind; the face slightly canaliculated, smooth, and shining, with a yellow line on each side of the inner orbits of the eyes, which is loosely covered with a silvery pubescence, as well as the lower portion of the cheeks; the clypeus slightly convex, yellow, very much produced in the centre in front, and more densely covered with the silvery down; the mandibles yellow on the outside, piceous within, their apex rufescent; the palpi pale testaceous.

The thorax black, shining, loosely punctured; the metathorax with a cordate space at its base smooth and shining, the sides of which in front have some delicate curved striæ, and it has a

central longitudinal incisure which, as well as that which encloses it laterally and in front, is consute; the posterior portion of the metathorax somewhat transversely striated; the collar with a dot on each side, and the tubercles yellow; the tegulæ testaceous; the wings hyaline, iridescent, their nervures piceous; the legs yellow, with the anterior femora black behind, and ferruginous beneath, their tibiæ with a black stain below, the intermediate black behind, their tibiæ also with a black stain beneath, the posterior femora entirely black, their tibiæ with a black stain at the apex above, the anterior and intermediate tarsi of a pale yellow, with the terminal joint rufo-piceous, the posterior ones piceous, with their basal joint yellow.

The abdomen elongato-conical, black, subpubescent; the margins of the segments testaceous, and the apex of the anal segment ferruginous ♂.

The ♀ I am unacquainted with.

♂ in my own Collection.

†† This very distinct *Crabro* is unique in my Cabinet, to which it was kindly presented by F. Walker, Esq., to whom I have the pleasure of dedicating it; it and the *Crossocerus luteicollis* of St. Fargeau are the only ones of the genus that I am acquainted with, that have yellow markings on the face between the eyes. This insect will not enter into any of St. Fargeau's divisions; it approaches most to his *Crossocerus*, div. 2.; but its prothorax or collar is not "*anguleux*," nor are its antennæ "*garnis d'une frange de poils*," and the "*appendice de la radial*" runs parallel to the anterior margin of the wings.

SP. 30. ALBILABRIS. Fab.

*niger, stemmatibus in lineam curvam positis, capite thoracis latitudine, metathoracis basi longitudinaliter striato, abdomine ovato-conico, nigro-viridi; ♂ capite mutico.*

length  $2\frac{3}{4}$ — $3\frac{1}{2}$  lines.

Fab. E. Syst. 2. 302. 31 ; V. d. Lind. pt. 2. 55. 28.

*Crabro leucostoma*. Panz. F. G. 15. 24.

*Pemphredon albilabris*. Fab. Piez. 316. 8.

*Lindenius albilabris*. St. Farg. 3. 795. 4.

Head slightly æneous, punctured ; the stemmata placed in a curved line on the vertex, the posterior pair having an impressed line between them extending beyond but not quite to the occiput, another in front of the anterior one, reaching to the centre of the face ; the antennæ black, with the base and apex of the scape fuscous ; the inner orbits of the eyes and clypeus covered with a dense silvery pubescence, the latter slightly carinated ; the mandibles black, their apex piceous.

The thorax black, punctured ; the metathorax having the subcordiform space at its base longitudinally striated, the posterior portion has a deep fossulet in its centre, and is slightly punctate in front, and transversely striated behind ; the tegulæ piceous ; the extreme base of the wings yellow, the nervures testaceous, and the wings themselves coloured about the centre and pale towards their apex ; the legs black, with the anterior tibiæ in front and the base of the two posterior pairs yellow, all the tarsi piceous, the basal joint being the darkest ; the anterior pair ciliated in front, and the intermediate and posterior tibiæ spinose.

The abdomen æneous, pubescent, particularly conspicuous in angles on each side of the base of the segments, which thence have a silvery tinge ; the apex of the posterior segment fuscous ♀.

The ♂ differs in having the apex of the scape, an interrupted transverse line on the collar, the tubercles, the exterior of all the tibiæ, and the basal joint of the tarsi, all yellow, the remainder of the latter graduating from testaceous to piceous ; the exterior of the apex of the intermediate tibiæ and the plantæ densely fringed with long curled hair ; the æneous tinge of the body is stronger in this sex than in the ♀.

♂ in the Rev. G. T. Rudd's Collection ;

♀ in my own and other Collections.

†† The ♂ has been taken by the Rev. G. T. Rudd in

the New Forest. The ♀ is not uncommon in pathways, in Battersea Fields, especially where *Cerceris ornata* nidificates; but I have not yet captured the ♂.

SP. 31. PANZERI. V. d. Lind.

*niger, stematibus in lineam curvam positis, capite magno, metathoracis basi longitudinaliter striato, abdomine ovato-conico.*

♂ *marginè infero capitis utrinque spinâ armato.*

length  $1\frac{3}{4}$ — $3\frac{1}{2}$  lines.

V. d. Lind. pt. 2. 67. 29.

*Crabro scutatus* ♀. Panz. F. G. 9. 15. 23.

*Lindenius Panzeri*. St. Farg. 3. 798. 8.

Black, pubescent; the head wider than the thorax, quadrate; the stemmata placed in a curve, an obsolete impressed line extending from the anterior one to the sulcation of the face, and another behind it reaching to the occiput; the scape of the antennæ entirely and the mandibles yellow, the latter rufescent at their apex; the clypeus and internal orbits covered with a silvery pubescence.

The thorax punctured and pubescent; the metathorax having the subcordiform space at its base longitudinally striated; an interrupted line upon the collar, a spot upon the scutellum, and the tubercles yellow; the tegulæ testaceous; the wings hyaline, a little darker towards their apex, and nervures piceous; legs yellow, with their coxæ, trochanters, femora, and exterior of the four anterior tibiæ, and extremity of the posterior pair, black, the terminal joints of the tarsi rufescent; the tibiæ, especially the posterior ones, very spinose, and the anterior tarsi ciliated.

The abdomen smooth and shining, with an æneous tinge, and the base of the segments covered laterally with a dense grey pubescence; the terminal segment rufescent ♀.

The ♂ differs only in having the head larger, a spine on each side beneath the cheeks; the scape of the antennæ black, with merely a lateral yellow streak, and seldom any yellow on the

scutellum, and sometimes the whole thorax black, and the legs less varied with yellow.

♂ ♀ in my own and other Collections.

†-† I have occasionally taken this species in Battersea Fields; its habits seem similar to those of the *C. albilabris*. I have found them both frequenting pathways, in which they nidificated in company with *Cerceris ornata*; but I have more frequently taken the present upon a red-currant bush infested by an *Aphis*.

SP. 32. EXIGUUS. V. d. Lind.

*niger, metathoracis basi lævi, peristethio denticulato, abdomine ovato-conico.*

length  $1\frac{1}{2}$ — $2\frac{3}{4}$  lines.

V. d. Lind. pt. 2. 72. 33.

*Crossocerus exiguus.* St. Farg. 3. 791. 30.

Head black, smooth and shining, with scattered very minute punctures; the stemmata placed in an equilateral triangle in the centre of the vertex, an oblique perfectly smooth depression on each side of the posterior ones, a longitudinal deep impression between them, extending a little beyond, and another in front of the anterior one, reaching to the face, which is canalculated, smooth, and shining; the antennæ black, with the scape yellow in front; the inner orbits of the eyes and the clypeus (which is carinated in the centre) covered with a dense silvery pubescence; the mandibles black, with their apex piceous.

The thorax black, shining, with scattered punctures, covered beneath with a loose silvery pubescence; at the base of the dorsolum two central parallel longitudinal impressions, which extend to the disk, and an abbreviated distinct carina on each side of them; the metathorax with an enclosed subcordiform space at its base, smooth and shining, or merely very slightly obliquely striated at its extreme lateral edge, and having a



central longitudinal incisure, broadest at its base, and narrowing towards its apex, where it dilates into a fossulet, the impression enclosing it consute; the posterior portion of the metathorax also smooth and shining, its lateral edges having highly raised ridges; the posterior portion of the peristethium with a minute tooth on each side; the collar with a small yellow spot on each side, sometimes wanting; the tegulæ testaceous; the extreme base of the wings yellow; the wings subiridescent, slightly clouded beyond their middle, their nervures piceous; the legs black, with the anterior and intermediate tibiæ in front, and a ring at the base of the posterior ones, yellow; the tarsi rufo-piceous, their basal joint pale; the anterior tarsi slightly ciliated, and the tibiæ spinose.

The abdomen elongato-ovate, slightly narrower than the thorax, black, subpubescent, shining, sometimes the margin of the posterior segments piceous, and the apex of the last ferruginous ♀.

The ♂ differs in sometimes wanting the yellow spots on the collar; the intermediate femora having a yellow stain beneath, the yellow ring at the base of the posterior tibiæ smaller, the four anterior tarsi piceous, and the posterior pair black.

♂ ♀ in my own Collection.

††† I have taken both sexes of this insect in Battersea Fields. It approaches a good deal to my *C. spinipectus*.

SP. 33. BREVIS. V. d. Lind.

*niger, stemmatibus in lineam curvam positis, metathoracis basi lævi, abdomine thoracis longitudine, basi subtruncato* ♂ ♀.

length 2—2½ lines.

V. d. Lind. pt. 2. 70. 32.

*Lindenius brevis*. St. Farg. 3. 800. 10.

Head wider than the thorax, black, shining, loosely but deeply punctured; the stemmata placed in a curve about the centre of the vertex, an oblique smooth depression on each side towards the front of the posterior ones, which have a short lon-

gitudinal impression between them, extending a little beyond ; the antennæ black, the scape yellow at the sides, and fulvous at its base ; the inner orbits of the eye and the clypeus, which is convex, covered with a dense silvery pubescence, and the lower part of the cheeks less densely so ; the mandibles black, their apex piceous or ferruginous, and having an obtuse tooth at their base on the exterior.

The thorax black and shining, and having scattered punctures ; the metathorax with an enclosed subcordiform smooth space at its base, with a slight central longitudinal impression, the enclosing portion consute, the posterior portion smooth and shining, or only slightly punctured, its lateral edges not ridged ; the tubercles yellow ; the tegulæ testaceous, or their anterior half yellow ; and the wings with a dark cloud beyond their centre, extending to their edge, the nervures piceous ; the legs black, with the anterior femora testaceous above, and the intermediate ones beneath at their apex, the anterior tibiæ in front and above, the intermediate above and behind, and the posterior ones with a ring at their base, yellow, the anterior tarsi testaceous, the intermediate and posterior ones rufo-piceous, the tibiæ spinose.

The abdomen ovato-conical, scarcely longer than the thorax, and a little broader, black, with a griseous pubescence, and the margins of the posterior segments piceous, the apex of the last segment ferruginous ♀.

The ♂ has the antennæ simple, and differs in its mandibles being yellow at their base, rufo-testaceous in the middle, and rufo-piceous at the apex ; the legs yellow, the anterior and intermediate femora having a black stripe behind below, and the posterior ones entirely black, the intermediate and posterior tibiæ with a piceous stain at their apex behind, and the apical joints of the tarsi ferruginous.

♂ ♀ in my own and  
other Cabinets.

††† This insect presents a remarkable divarication from

the type, in the form of its mandibles, as also in that of its abdomen, which is short and thick. I have taken it in Battersea Fields, and at Coombe in Surrey.

SP. 34. TIBIALIS. Fab.

*niger, abdomine petiolato, primo segmento nodoso, tibiæ apicis rufæ.*

length 3—3½ lines.

Fab. Ent. Syst. Sup. 271 ; Panz. F. G. 83. 14 ; V. d. Lind. pt. 2. 73. 35.

*Pemphredon tibialis.* Fab. Piez. 315. 4.

*Corynopus tibialis.* St. Farg. 3. 803. 1.

Head black, shining, delicately punctured ; an impressed line running obliquely on each side of the anterior stemma, and passing the outside of the posterior ones ; the antennæ black, the scape beneath yellow ; the clypeus covered with a silvery pubescence, very much produced, and projecting in front, having a sinus on each side ; the mandibles black at the base, then yellow, and the apex piceous.

The thorax black, punctured ; the metathorax having the cordiform space occupying nearly its whole superficies extending posteriorly to its apex, enclosed at the sides, towards its apex, by a slightly elevated ridge, which becomes obsolete as it advances forwards, its base very smooth and shining, the sides covered with a grey pubescence ; it has a longitudinal impression extending its whole length in the centre, and which from a regular line becomes a deep fossulet that reaches nearly to its apex ; the tubercles and the tegulæ testaceous ; the wings hyaline, iridescent, with their nervures piceous ; the legs black, with the apex of the anterior femora, and their tibiæ and tarsi yellow, the base of the intermediate and posterior tibiæ and the tarsi of the former also yellow, and the apex of the intermediate and the posterior tibiæ red, those of the latter most distinctly so ; the tibiæ very spinose.

The abdomen black, punctured, shining ; the margin of the petiole and of the two or three posterior segments sometimes piceous, the anal segment red ♀.

The ♂ differs in having the second joint of the antennæ produced at its apex into a tooth, the third very minute, not so long as the second, the fourth considerably swollen, and as long as the fifth, which is deeply emarginate, the remainder equal, and a little longer than the third; the scape yellow beneath as well as the second joint or pedicel, the swollen portion of the fourth, and the margin of the fifth, fulvous, and the seventh, ninth and eleventh joints white; the clypeus more produced and projecting further, and above slightly concave, and the ridge, which separates the genæ from the jugulum, terminated in front, near the mouth, by a produced tooth; the coxæ and trochanters of the intermediate and the base of the coxæ and entire trochanters of the posterior legs yellow, the apex of the intermediate tibiæ also yellow; the first joint of the anterior tarsi dilated on the inside, of the intermediate on the outside towards its centre, and of the posterior compressed, slightly curved, flat beneath, and all fimbriated at their sides; the posterior femora very pubescent beneath.

♂ ♀ In my own Collection.

††† Mr. Walker takes this species upon lime-trees in the vicinity of London. I have taken the ♂ at Darent, and Mr. Westwood took several at Netley in Shropshire. Although St. Fargeau says the antennæ of the ♂ have but twelve joints, they will be found upon inspection to have thirteen.

SP. 35. RUFIVENTRIS. Panz.

*niger, abdomine nigro-rufoque petiolato, primo segmento nodoso, tiliarum posticorum apice nigro.*

length  $2\frac{1}{4}$ — $3\frac{1}{2}$  lines.

Panz. F. G. 72. 12; V. d. Lind. pt. 2. 72. 34.

*Physoscelus rufiventris.* St. Farg. 3. 805. 1.

Head black, delicately punctured, shining; a slight longitudinal impression extending from the face to the anterior

stemma, behind which it becomes a slightly elevated ridge, which passes a little beyond the posterior ones; the inner orbits of the eyes and clypeus covered with a silvery pubescence; the antennæ black, with the scape entirely yellow, the pedicel testaceous, sometimes piceous, and the underside of the basal joint of the clavolet piceous; the clypeus slightly produced, and projecting in front; the mandibles yellow, rufescent at their apex.

The thorax black, delicately punctured, slightly shining; the dorsolum with two central parallel impressed lines at its base terminating towards the disk; the metathorax quite smooth and shining at the base in front, in the centre of which there is a slight variole and a deep fossulet commencing about its centre, and extending to the apex; the sides covered with a sericeous down, and at the sides of the base sometimes very delicate longitudinal striæ; the tubercles yellow-testaceous; the tegulæ testaceous; the wings iridescent, the nervures piceous; the anterior and intermediate legs entirely yellow, excepting the base of the femora only, which are piceous, and a piceous patch inside of the intermediate tibiæ, the posterior pair black, with the apex of their coxæ and base of the tibiæ yellow, their tarsi piceous; the intermediate and posterior tibiæ spinose.

The abdomen red, with the petiole (except its margin) and the base of the first segment, black, and the fifth segment generally piceous, sometimes the third segment only red, and the margin of all piceous ♀.

The ♂ differs in having the sixth joint of the antennæ emarginate, and all the joints slightly coloured above; the anterior portion of the metathorax very delicately longitudinally striate, extending in the form of a semicircle from the base, beyond which it is delicately punctured, a central longitudinal impression extending its whole length, and connected with the fossulet observed in the ♀, and more pubescent about the same part; the margin of the second segment, and base of the third only, red.

♂ ♀ in my own and Rev. G. T. Rudd's Collections.

†† This species is found in the vicinity of London ; and the Rev. G. T. Rudd has taken it in the Isle of Wight, near Ryde.

GENUS XXII.—STIGMUS. Jur.

HEAD subquadrate, the angles rounded, flattish on its superior surface in the ♀, and convex in the ♂, wider than the thorax in the ♀, of about its width in the ♂ ; *eyes* oval, distant, lateral ; *stemma* placed in an equilateral triangle far back upon the vertex ; *antennæ* inserted at the base of the clypeus, filiform, geniculate, the scape subclavate, the clavolet arcuate, with the joints cylindrical, excepting the pedicel, which is obconic ; *clypeus* rhomboidal, with the anterior edge emarginate ; *labrum* concealed ; *mandibles* large, tridentate. THORAX oval ; the *mesothorax* somewhat gibbous, truncated ; the *collar* transverse, with the angles acute ; the *scutellum* transverse, and the *metathorax* elongate, obtuse. *Superior wings with a very large lanceolate stigma, and one marginal cell, which becomes acuminate after the second submarginal, and two submarginal cells complete, the first twice the size of the second, and receiving near the middle the recurrent nervure, the second cell transverse ;* the *legs* moderate, with a small pulvillus inserted in the furca of the bifid claw ; the posterior *tibiæ* with a few spines, and the anterior *tarsi* simple. ABDOMEN ellipsoidal, attached by a long linear petiole to the thorax, acuminate at the apex, the hypopygium in the ♂ produced beyond the podex, depressed, and obtuse at its extremity.

Type, *S. pendulus*. Panz.

†† This genus was created by Jurine in 1804, and named from the extraordinary size of the stigma of the wing. It was immediately adopted by entomologists ; but it is remarkable that both Latreille and Dr. Leach placed the *Pemphredon (Diodontus) minutus* with it, notwithstanding Jurine's figure.

## SP. 1. PENDULUS. Panz.

*niger, mandibulis testaceis, pedibus anterioribus et tarsi posticis ferrugineis.*

length  $1\frac{1}{2}$ —3 lines.

Panz. F. G. 14. 7; V. d. Lind. pt. 2. 74. 1.

*Stigma ater.* Jurine, 139, pl. 9, g. 7; St. Farg. Ency. Méth. x. 493.

Head smooth, with a longitudinal impression extending from the centre of the face to the anterior stemma; the face very delicately longitudinally striate; the antennæ with the basal joint piceous above and ferruginous beneath, the remainder of the joints also of the latter colour, slightly darker above; the mandibles testaceous, with their apex piceous, and the palpi testaceous.

The thorax smooth; the collar longitudinally striate; the dorsolum with two slight, longitudinal, elevated lines in the centre at its base, extending to the middle of the disc, on each side of which it has also at the base a deep longitudinal abbreviated impression; the epaulets of the tegulæ consute, as well as the incisure which separates the scutellum from the dorsolum; the scutellum itself sometimes with a central longitudinal impression; the metathorax rugose, with the superior surface having a central longitudinal carina, and another on each side of it slightly curved; the tubercles with a pale lunule; the tegulæ testaceous; the wings iridescent, the stigma and nervures piceous, the recurrent nervure joining the first submarginal cell at about two-thirds of its length; legs black, entirely simple, with the anterior and intermediate tibiæ and tarsi, and the posterior knees and tarsi, ferruginous.

Abdomen black, smooth, and shining, attached to the thorax by a long petiole, which has a longitudinal carina running on each side, with the interstices shagreened ♀.

The ♂ differs in having the face covered with a silvery pubescence, and the parts, which are testaceous and ferruginous in the ♀, yellow, with the exception of the tegulæ, which are piceous, and the exterior of the intermediate tibiæ also piceous,

and all the articulations of the legs ferruginous; the margins of the segments of the abdomen frequently piceous.

♂ ♀ in my own Cabinet.

††† This species has been taken at Coombe; Mr. Walker takes it upon lime-trees and in windows near London; and I have found it this year in Battersea Fields upon a red-currant bush infested by an *Aphis*.

GENUS XXIII.—CELIA. Shuck.

HEAD transverse, of about the width of the thorax; the *stigmata* placed in an equilateral triangle, far back upon the vertex; *eyes* lateral, oval; *antennæ* inserted on each side at the base of the clypeus, geniculated; *labrum* concealed; *mandibles* simple, arcuate, in ♀, bidentate at the apex in the ♂. THORAX oval, gibbulous; *collar* transverse, angles acute; *scutellum* transverse; *metathorax* elongate, truncated, its superficies having a cordate enclosed space; *superior wings* with a very large ovate stigma, the marginal cell of the usual form, the first submarginal cell nearly twice as large as the second, which is square, the recurrent nervure anastomoses, with the first transverso-cubital; *legs* slender, simple. ABDOMEN subsessile, ovato-conic.

Type, *C. troglodytes*. V. d. Lind.

††† The name of this genus is derived from *κηλῖς*, which is synonymous with *stigma*. I have separated it from the preceding, both on account of the different neuration of the wings and its general difference of habit.

SP. 1. TROGLODYTES. V. d. Lind.

*niger, pedibus piceis, tarsi postici ferrugineis.*

♂ *naso, clypeo et mandibulis flavis.*

length  $1\frac{1}{4}$ — $1\frac{3}{4}$  lines.

*Stigmus troglodytes*. V. d. Lind. pt. 2. 74. 2.

Head black, delicately punctured; antennæ black, with the



scape and pedicel ferruginous or piceous (sometimes entirely black); a carina running in the middle of the face from the base of the clypeus, half way to the vertex, where it becomes an impressed line extending to the anterior stemma.

Thorax punctured; the collar longitudinally striate; scutellum quadrate, the incisure at its base consute; the metathorax having a longitudinal carina on each side of the centre of its superior surface, which is enclosed by an elevated ridge, the interstices transversely striate; the tegulæ testaceous; the wings hyaline, iridescent, with the stigma and nervures black; the legs black, with the anterior tibiæ and tarsi, the apex of the intermediate tibiæ, and the whole of their tarsi, as well as the posterior ones, ferruginous, sometimes the intermediate and posterior tibiæ are of the same colour, and sometimes the tarsi only are piceous; the tarsi and tibiæ entirely simple.

The abdomen sessile, black, smooth, and shining; the margins of the segments sometimes piceous ♀.

The ♂ differs in having the nasus very much produced, and bright yellow, as well as a large lobe on each side of it, extending half way up the inner orbits of the eyes, sometimes merely the apex of the nasus, and the lobe within the eyes very small; the clypeus and mandibles also yellow, the latter with their apex piceous; the antennæ piceous, their scape and pedicel testaceous, the former yellow beneath, and those portions of the legs testaceous or yellow-testaceous which are ferruginous or piceous in the ♀.

♂ ♀ in my own and other Cabinets.

†† Mr. Walker has taken this species in the same locality with the preceding, and also in the Isle of Wight. Mr. Stephens took it frequently in his windows at the Hermitage, South Lambeth, Mr. Westwood has taken it at Coombe, and I found a single ♀ this year (1836) at Battersea.

b. Mandibles strong, dentate ; two recurrent nervures.

GENUS XXIV.—DIODONTUS. Curt.

HEAD large, subquadrate, of the width of the thorax ; *eyes* oval, very distant, placed at the sides of the head ; *antennæ* geniculated, a little longer than the head, and inserted at the base of the clypeus, not approximated ; the *scape* obconic, the second joint subglobose, the rest cylindrical, very slightly increasing, sometimes subserrate in the males within ; the *clypeus* transverse, tridentate ; *labrum* emarginate ; the *mandibles* bidentate. THORAX oval ; the *collar* transverse, linear ; the *scutellum* transverse, lunulate ; the *metathorax* short, obtuse ; the *superior wings* with one marginal cell narrowing beyond the second submarginal, and two submarginal cells, the first oblong, receiving towards its end the first recurrent nervure, the second forming an isosceles triangle, truncated at its apex, and receiving the second recurrent nervure ; the *legs* moderate, slight, frequently spinose. The ABDOMEN subsessile, ovato-conical ; the terminal segment in the ♂ constricted at its apex into an acute upcurved spine.

Type, *D. tristis*. V. d. Lind.

††† The etymology of this genus is Δι, *two*, and οδοντόω, *to furnish with teeth*, from the emargination of the labrum. Mr. Curtis has taken the details from the *Pemphredon tristis*, which he incorrectly makes synonymous with the *Psen pallipes* of Panzer ; this therefore is his type, although, in illustration of the genus, he figures a different and new species, which, according to my view, belongs to a distinct genus, and I consequently separate it as such, and form of it, with two others, one of which is the *Pemphredon insignis* of Van der Linden, the genus *Passalæcus*. Latreille, in his '*Précis*,' evidently makes a species of the present genus the type of his genus *Pemphredon*, but in his '*Genera*' he places it in the genus *Stigmus*, and by his generic de-

scription treats the *P. lugubris* as the type of the genus *Pemphredon*, which subsequently always remained as such in his works. He no where mentions the emargination of the labrum, or the processes which arm the clypeus, in the first species of the present genus.

SP. 1. MINUTUS. Fab.

*ater, mandibulis luteis, basi et apice nigris.*

length  $1\frac{1}{4}$ — $1\frac{3}{8}$  lines.

Curtis, Brit. Entomology, folio 496.

*Crabro minutus.* Fab. Ent. Sys. 2. 302. 32.

*Pemphredon minutus.* Fab. Piez. 316. 9; St. Farg. Ency. Méth. 10.  
48. 2. ♀; V. d. Lind. pt. 2. 78. 2.

*Cemonus minutus.* Jurine, 214.

*Stigmus minutus.* Latr. Gen. 4. 84.

Head black, with scattered punctures; clypeus with three dentations; mandibles yellow, with their apex rufo-piceous.

Thorax black, with some scattered punctures on the dorsolum, which has also two or three obsolete longitudinal impressions; metathorax rugose, with a few longitudinal striæ at its base; tubercles of a yellowish white; tegulæ piceo-testaceous; wings very slightly coloured, iridescent, the nervures black; the legs black, with the anterior tibiæ yellow, having a brown spot on the outside, their tarsi testaceous, the knees, apex of the tibiæ and tarsi of the intermediate and posterior pairs, rufo-piceous; the intermediate and posterior legs spinose, and the anterior tibiæ slightly ciliated.

The abdomen black, slightly pubescent, and delicately punctured ♀.

The ♂ differs in having the face in front covered with a silvery pubescence, and the underside of the antennæ from the pedicel yellow, with only the margins of the joints black, and having that yellow which in the legs of the female is testaceous and rufo-piceous, the extreme joints of the intermediate and posterior tarsi being testaceous, and the first joint of the an-

terior tarsi much bent, and of the intermediate pair dilated externally towards the extremity, where it is pectinated.

♂ ♀ in my own and other Cabinets.

††† Mr. Westwood possesses a remarkable specimen of the ♂ of this insect, in which the head is nearly as wide again as the thorax. This species is common.

SP. 2. LUPERUS. N. Sp.

*ater, incisurâ inter dorsolum et scutellum simplicè.*

length  $1\frac{3}{4}$ — $2\frac{1}{2}$  lines.

Head black, punctured, chiefly on the face, less so on the vertex; a short longitudinal impressed line between the anterior stemma and the centre of the face; the mandibles entirely black.

The thorax black, with a few scattered punctures; three longitudinal elevated obsolete lines extending down the centre from the base of the dorsolum; the incisure which separates the scutellum from the dorsolum with only a central division, or quite plain; the metathorax very short, longitudinally striated at its base, and rugose beyond; the pectus smooth or merely slightly punctured; the wings slightly coloured, iridescent at their extremity; the legs black, the anterior tibiæ with more or less yellow running down the front, their apex rufo-fuscous, as well as all the tarsi; the intermediate and posterior tibiæ very spinose, and the anterior tarsi slightly ciliated.

The abdomen minutely punctured, subpubescent, with the margin of the last two segments piceous ♀.

The ♂ differs in having the anterior tibiæ and tarsi yellow, the former with a longitudinal piceous stain behind; the knees, apex of the tibiæ and tarsi, except their apical articulations, flavo-rufescent.

♂ ♀ in my own Cabinet.

††† This species is very distinct both from the preceding

and the succeeding; in size it is intermediate between the two. It appears to have been hitherto overlooked or mixed with the following species, from which it differs in the sculpture of the incisure between the dorsolum and scutellum, and also in size; it appears to be not uncommon.

SP. 5. TRISTIS. V. d. Lind.

*ater, incisurá inter dorsolum et scutellum consutá.*

length  $2\frac{1}{4}$ — $3\frac{1}{4}$  lines.

V. d. Lind. pt. 2. 76. 1.

? *Pemphredon minutus*. ♂ St. Farg. 10. 48. 2.

Head black, shining, punctured, more thickly so on the face; mandibles rufescent at their apex.

Thorax black, shining, subpubescent; the dorsolum with a few scattered punctures, and having an impressed longitudinal line on each side forming a kind of epaulet to the tegulæ, and somewhat slightly longitudinally striated down its centre, occupying about the third of its superficies, in some the striæ are seen only at the base and apex; the deep incisure that separates the dorsolum from the scutellum consute; the pectus transversely wrinkled; the scutellum very shining, with a very few scattered punctures, and sometimes having a longitudinal line in its centre; the metathorax very rugose; the wings iridescent, with their nervures piceous, and a dark cloud about their middle; the legs black, with the tarsi sometimes nigro-piceous, or a shade lighter, but generally black; the calcaria testaceous; the anterior tarsi very slightly ciliated, and the intermediate and posterior tibiæ spinose.

The abdomen black, ovato-conic, subpubescent, and very minutely punctured ♀.

The ♂ differs in having the head and thorax more deeply punctured; the striæ of the dorsolum obsolete; the legs, with the anterior tibiæ in front, and their tarsi, entirely yellow; the intermediate and posterior tibiæ yellow-testaceous, with the exception of an irregular spot in front, which sometimes encircles it

in a ring; their tarsi of the same colour, with their terminal joints piceous; the legs less spinose than in the ♀.

♂ ♀ in my own Collection.

††† This species, which was first described by V. d. Linden, is tolerably common at Highgate. Panzer's synonyme certainly belongs to the ♂ of *Psen atratus*.

GENUS XXV.—PASSALÆCUS. Shuck.

HEAD subglobose, wider than the thorax; *eyes* lateral, ovate; *stemmata* placed in a triangle on the vertex near the forehead; *antennæ* inserted at the base of the clypeus, not approximate, the scape obconical, the pedicel subglobose, the joints of the clavolet cylindrical; *clypeus* transverse, convex, marginate in front, where it is slightly produced and tridentate, or merely obsoletely so; *labrum* entire, triangular or semicircular; *mandibles* gradually widening towards the apex, where they are bi- or tridentate, in the former case the inner tooth is molar. THORAX sublinear; *collar* transverse, slightly constricted into a short neck; *scutellum* transverse, lunate; *metathorax* elongate, obtusely truncated at its extremity; the *superior wings* with one marginal cell acuminate beyond the second submarginal and two submarginal cells, the first oblong receiving the first recurrent nervure near its extremity, the second transverse, slightly narrowed towards the marginal cell, and receiving the second recurrent nervure about its centre; the *legs* moderate, slender, simple. The ABDOMEN elongate, subsessile, the second segment constricted slightly at its base, as also the third, but less so; the terminal segment in the ♂ produced into an upcurved spine.

Type, *P. insignis*. V. d. Lind.

††† I called this genus *Xylæcus* in my table, in reference to its dwelling in wood, and it was printed before I discovered that Serville had used the same for a genus of

longicorn beetles ; he consequently has the priority, and my original name must necessarily be changed ; it may therefore stand as *Passalæcus*, which has nearly the same signification, viz. *πάσσαλος*, a *stake* or *paling*, and *ὄικος*, a *house*, from their burrowing in palings, &c. Mr. Curtis included two of these insects in his genus *Diodontus*, and the observations under that genus and under *Pemphredon* may be referred to, in explanation of my reasons for having still further subdivided them.

SP. 1. INSIGNIS. V. d. Lind.

*ater, mandibulis palpisque flavis, corniculo inter antennis obsoleto ♀ ; porrecto ♂.*

length  $2\frac{1}{2}$ —3 lines.

*Pemphredon insignis.* V. d. Lind. pt. 2. 79. 3. ♀ only.

*Diodontus insignis.* Curtis's Brit. Ent. folio 497.

Head black, thickly punctured ; an impressed longitudinal line extending from the anterior stemma to the middle of the face ; the clypeus transverse, convex, marginate in front, and obsoletely tridentate ; the labrum triangular ; antennæ black, with the scape beneath cream-coloured ; the mandibles cream-coloured, with their apex ferruginous and tridentate ; the palpi yellow, except the outside of their basal joints.

Thorax black, delicately punctured, shining ; the epaulets of the tegulæ consute, a longitudinal scratch on each side parallel with the middle of the epaulet, and a longitudinal deep impression on each side within the scratches, extending from the base of the dorsolum to its disk, where it gradually becomes obsolete ; the scutellum delicately punctured ; the metathorax very rugose and obtusely truncate at its extremity ; the tubercles white ; the tegulæ testaceous, with their margins black ; the wings iridescent, the stigma large, the nervures piceous ; the legs black, with the articulations of the femora, their apex, and entire tibiæ and tarsi, ferruginous.

The abdomen black, as long as the head and thorax, finely punctured, subpubescent; the margins of the three first segments constricted ♀.

The ♂ differs in having a short acute horn between the basal joints of the antennæ; the clypeus covered with a silvery pubescence, and those portions of the legs luteous which are ferruginous in the ♀, and the hypopygium produced into an acute upcurved spine.

♂ ♀ in my own Cabinet.

†† This species is not uncommon about palings, posts, and outhouses. I have not been able to detect its prey. The ♂ which V. d. Linden ascribes to it belongs to another species.

SP. 2. GRACILIS. Curt.

*ater, mandibulis maculâ lacteâ, corniculo in utrisque sexibus deficiente.*

length  $2\frac{1}{2}$ — $2\frac{3}{4}$  lines.

*Diodontus gracilis.* Curtis's Brit. Ent. Vol. 7. fol. 496. pl. 496.

Head black, thickly punctured; a longitudinal impression extending from the anterior stemma to the middle of the face; the scape of the antennæ pale yellow in front; the clypeus anteriorly marginate, the margin obsoletely tridentate; labrum large, triangular, convex, with a central depression at its base; mandibles with a broad pale yellow stripe, their apex ferruginous and bidentate, the inner tooth a molar; the palpi piceous.

The thorax black, thickly punctured, except the scutellum, which is very shiny; the dorsolum with the epaulets of the tegulæ consute, and a slight scratch parallel with the middle of the epaulet, a consute longitudinal line on each side towards the middle extending from the base to the apex, within which at the base there are two slight abbreviated elevated lines; the meta-thorax rugose and shiny; the tegulæ piceous; the wings irides-



cent; the legs black, with the anterior pair within, their tarsi, and the knees and tarsi of the intermediate, rufescent, and a pale luteous ring at the base of the posterior tibiæ.

The abdomen very black and shiny; and the margins of the first three segments constricted ♀.

The ♂ differs only in having a silvery pubescence on the face and clypeus; the metathorax more rugose, and those portions, which are rufescent in the legs of the ♀, in this sex luteous; and the ring at the base of the posterior tibiæ pale yellow, as are also sometimes the tubercles.

♂ ♀ in my own Collection.

††† I have met with this species not uncommonly in Battersea Fields, and likewise at Highgate. Mr. F. Walker possesses a remarkable specimen of the ♂, in which the first transverse cubital nervure is wanting on both sides.

SP. 3. CORNIGER. N. Sp.

*ater, corniculo inter antennis porrecto ♀; obsoleto ♂.*

length 2—3 lines.

Head black, punctured, slightly shining; an impressed line extending from the anterior stemma to the acute spine which stands in the centre of the face just above the insertion of the antennæ, the scape of which is fulvous or rufescent, either entirely in front or at its base and apex merely; the clypeus distinctly tridentate; the central tooth the largest; the labrum semicircular, convex; mandibles tridentate, rufescent at the apex; the palpi fulvous.

The thorax black, punctured, slightly shining; the epaulets of the tegulæ consute, and a slight scratch parallel with their middle, a consute longitudinal line on each side towards the middle extending from the base to the apex, within which at the base there are two slight abbreviated elevated lines; the metathorax very rugose; the tegulæ piceous; the tubercles generally

whitish; the wings iridescent, hyaline, but darkish towards their apical margin; the legs black, with the knees of the anterior femora, their tibiæ and tarsi, the base and apex of the intermediate tibiæ and their tarsi entirely, and the base and apex of the posterior tibiæ, fulvous.

The abdomen black, with the margins of the first three segments constricted, especially the back of the two first ♀.

The ♂ differs by the obsolete or deficient tubercle of the face, the latter, as well as the clypeus, has a silvery pubescence; the scape of the antennæ entirely black; the anterior tibiæ in front merely, and the other portions of the legs, which in the ♀ are fulvous, here are luteous, excepting the apex of the posterior tibiæ, which is black.

♂ ♀ in my own Collection.

†‡† The marked differences of these three insects warrant my considering them as distinct species, especially as my opinion is formed from a great number, which all agree. It is remarkable, that the horn in the centre of the face is found only, and that very conspicuously, in the ♂ of the *in-signis*; in the ♀ it is not present, nor in either of the sexes of the *gracilis*; but in the ♀ of *corniger* it is again very prominent, and only obsoletely present in the ♂. What can be its use? It is evidently not a sexual character, as the first and the last of these species have it in the opposite sexes; and we find a somewhat similar appendage in both sexes of the *Pemphredon* (*Ceratophorus*) *morio*. I have hitherto detected nothing in its economy which at all leads even to a supposition. The species is not uncommon in Battersea Fields, where I have captured it upon a currant-bush infested by an *Aphis*.

#### GENUS XXVI.—PEMPHREDON. Latr.

HEAD large, subquadrate; eyes small, ovate, placed at the lateral angles of the head; the *stemmata* in a triangle on the

vertex; the *antennæ* geniculated, inserted at the base of the clypeus, but not approximate, subserrate in the ♂; *clypeus* transverse, the centre of its anterior margin produced, truncated, entire, and slightly reflexed; the *labrum* minute, triangular, entire (in *P. morio* very large); *mandibles* very strong, spoon-shaped and quadridentate at their apex (in *P. morio* ♀ bidentate). THORAX short, ovate, somewhat gibbous; *collar* linear, almost concealed by the gibbosity of the dorsolum; *scutellum* transverse, lunulate; the *metathorax* very gibbous; the *superior wings with one marginal and two submarginal cells, the first submarginal oblong, receiving the first recurrent nervure about its centre, the second submarginal square (in P. morio widest towards the marginal) receiving the second recurrent nervure near its commencement*; the *legs* moderately long, slender, slightly spinose. The ABDOMEN lanceolate, with a very long petiole, which viewed laterally is slightly curved and longer than the first segment of the abdomen (in *P. morio* only one half as long as the first segment), the last segment terminated by an acute spine in the ♂, and canaliculated in the ♀.

Type, *P. lugubris*. Fab.

††† The derivation of the name is *πεμφορηδών*, a *flying insect*, and was established by Latreille in his '*Précis*,' without naming any type; but it may be presumed to have been a ♂ of a species of the present genus *Diodontus*, from his description of the mandibles. In his next work, the '*Histoire*,' vol. xiii. p. 325, in naming the genus *Pemphredon*, he does not describe the mandibles, but refers to the *Crabro lugubris*, Fab.—*Sphex unicolor*, Panz., as the 'best determined species of this genus.' In his '*Genera*' (which ought to be considered his final view, for in his last work, the '*Règne Animal*' of Cuvier, vols. iv. and v. he constantly refers to it), he describes the genus

*Pemphredon* as having spoon-shaped and quadridentate mandibles, and adduces the *P. lugubris* of his 'Histoire' as the type, and refers the *P. minutus* (which he there for the first time states to have been the original type of his genus *Pemphredon* in the 'Précis'), to the genus *Stigmus* of Jurine, and makes it the first section of this genus. In the 'Nouveau Diction. d'Hist. Naturelle,' tom. xv. p. 151, 1817, he further confirms this, by stating that the mandibles of *Pemphredon* 'are stronger (in comparison with *Stigmus*), and dentate all along their inner edge: thus, therefore, although the original type of this genus was the *Pemphredon* (*Diodontus*) *minutus*, F.; yet as Latreille subsequently changed his views, I necessarily follow the course he adopted, and consider the *Crabro lugubris*, F., as the true type of the genus *Pemphredon*. I have given this history of the genus in consequence of Mr. Westwood having, by a string of inaccuracies in a recent periodical,\* introduced confusion where the course was exceedingly clear, and this is the more unfortunate, as they are produced as an example in a paper on nomenclature, where the strictest correctness was requisite, and even additionally requisite, if such a condition be possible where accuracy is always indispensable, because he there corrects what he considers the inaccuracy of Mr. Curtis, but who is certainly right. I hope this will be read and understood in its proper sense, and not be misconstrued into invidious carping, as it is my wish to do uniform justice, without which, truth, which should be the great and paramount object of us all, is unmercifully sacrificed. It is remarkable that St. Fargeau should not have subdivided

\* Loudon's Magazine of Natural History, No. 67, vol. 9, p. 565.

this genus as it stands in Latreille, especially as he has more recently done so in *Gorytes* and *Crabro* upon much less justifiable considerations, which may be seen in the observations I have made under those genera. In following out the alary system, which I consider the chief and best mode whereby the fossorial Hymenoptera may be naturally subdivided, I have been obliged to re-establish Jurine's genus *Cemonus*, which St. Fargeau and V. d. Linden had suppressed, as also to form two new ones; thus the insects which in Latreille, St. Fargeau, and V. d. Linden constitute the sections and subsections of one genus, I consider as forming five, viz. *Diodontus*, *Passalæcus*, *Pemphredon*, *Ceratophorus*, and *Cemonus*; and my views appear to be confirmed by each genus containing species which agree precisely in habit, with the exception of the *P. morio* of V. d. Linden, which stands solitary, but differs so considerably from the typical *Pemphredon*, that V. d. Linden must have separated it, at least from its contiguity to the *P. lugubris*, could he have examined it. The different form of its second submarginal cell, the shape of its head, the bidentate mandibles in the ♀, tubercle of the face, large labrum, short petiole of the abdomen, all combine to produce a very different habit, which agrees better with the genus *Diodontus*, from which however it sufficiently differs, especially in the entire labrum and distinctly petiolated abdomen; in the tubercle of the face it resembles *Passalæcus*, in which however it is acute and not emarginate, and in the sculpture of the metathorax a *Cemonus*. Had I been acquainted with the insect before my table was printed, I should certainly have treated it as a genus, and which I now propose by the name of *Ceratophorus*, κέρασ, a horn, φόρος, bearing, from the tubercle of its face.

Sectio 1. The petiole of the abdomen long; the second sub-marginal cell square.

SP. 1. LUGUBRIS. Fab.

*ater, pubescens, metathorace rugoso, margine obliquè striato, abdominis petiolo longo.*

length  $3\frac{1}{2}$ — $5\frac{1}{4}$  lines.

Latr. Hist. Nat. 13. 325; Nouv. Dict. 2nd ed. 25. 151; Fab. Piez.

315. 2; St. Farg. Ency. Méth. 10. 48. 1; V. d. Lind. pt. 2. 80. 4.

*Crabro lugubris.* Fab. E. S. 2. 302. 30.

*Sphex unicolor.* Panz. F. G. 52. 24.

*Cemonus unicolor.* Jurine, pl. 11. G. 28.

—— *lugubris.* Jur. p. 214.

Head black, pilose; the face longitudinally and somewhat irregularly striate in front from the vertex to the clypeus, which have scattered punctures, those on the vertex decreasing towards the occiput; the whole head loosely covered with long griseous hairs, which are longest on the clypeus, mandibles, cheeks, and occiput.

The thorax black, opaque, pilose; the dorsolum having three abbreviated, longitudinal, impressed lines in front, and two deeper ones on each side parallel with the centre of the epaulet of the tegulæ; the whole thorax very coarsely rugose, somewhat less in front of the dorsolum; the metathorax having a semicircular space at its base enclosed by an elevated ridge at the verge of the truncation, and the truncation with a deep fossulet in its centre; the pubescence is longest at the sides and apex of the metathorax, and towards the collar; the wings are coloured, slightly iridescent, with their nervures piceous, and a cloud frequently occupying the centre of their disk; the legs somewhat hairy; the anterior tarsi slightly ciliated; and the intermediate and posterior tibiæ subspinose.

The abdomen black, pubescent, shining; the petiole much longer than the remainder of the first segment, much curved, and its upper surface very coarsely punctured; the pubescence is longest on the petiole and apical segments ♀.

The ♂ differs only in having the face covered with a silvery pubescence, and the dorsolum appears coarsely punctured instead of rugose.

♂ ♀ in my own and other Collections.

††† Very common, inhabiting posts and rails. It supplies its young with *Aphides*. I have never seen it construct its own cell, but consider it very probable, from the structure of its mandibles.

SP. 2. LUCTUOSUS. N. Sp.

*ater, pubescens, marginis metathoracis summo tantùm lævi, abdominis petiolo longo.*

length  $3\frac{3}{4}$  lines.

Entirely black: head very pubescent, deeply punctured and shining; clypeus covered with a silvery down.

Thorax very pubescent and punctured; peristethium transversely wrinkled; metathorax rugose, the subcordiform space at its base enclosed by an elevated smooth and very shining ridge; wings hyaline, their nervures piceous.

Abdomen having the petiole rugose, with a central longitudinal channel and longer than the remainder of the first segment, the terminal segments hirsute ♂.

♂ in my own Collection.

††† The solitary specimen from which I have drawn the above description I took in Battersea Fields. Although unique, the remarkable difference in the sculpture of the metathorax admits of my considering it a distinct species; for the value of this character is exemplified throughout the *Fossores*, in species where there is no lack of specimens to corroborate it, and in which it is never found to vary.

Sectio 2. The petiole of the abdomen short, the second submarginal cell widest towards the marginal.

SP. 3. MORIO. V. d. Lind.

*ater, marginis metathoracis summo lævi, abdominis petiolo brevi.*

length 2½—3 lines.

V. d. Linden, pt. 2. 82. 5.

Entirely black, head punctured, pubescent, shining; an obtuse tubercle, slightly emarginate at the apex, in the centre of the face, just above the insertion of the antennæ, and the face on each side between it and the eyes very prominent; the clypeus tridentate, the central tooth obsolete; labrum large, prominent, triangular, convex, but canaliculated down the centre; mandibles bidentate at the apex, where they are rufescent.

The thorax pubescent, shining; the sides of the pectus rugose; the peristethium obsoletely transversely wrinkled, and a deep longitudinal depression down the centre, in the middle of which there is an elevated line; metathorax rugose, excepting a broad, smooth, and shining margin to the subcordiform space; wings hyaline, or but slightly tinged, the nervures piceous; the second submarginal cell not so square as in the *P. lugubris*, and widest towards the marginal cell; legs entirely simple.

The abdomen hirsute, especially the terminal segments; the petiole very short, being about one half the length of the remainder of the first segment, rugose, canaliculated down the centre; the extreme margin of the two or three last segments frequently piceous ♀.

The ♂ differs in the tubercle of the face being less obtuse and not emarginate, and in the mandibles being tridentate.

♂ ♀ in my own Collection.

††† Of this insect, which may be henceforth considered the type of the genus *Ceratophorus*, I have taken both sexes in Battersea Fields; but I have not been able to ascertain its habits, nor did I detect its being a British



species until recently, upon examining my this year's [1836] captures, I found it intermixed with the species of the genus *Diodontus*. It is further distinguished from all Van der Linden's and St. Fargeau's *Pemphredones*, by not having a silvery pubescence on the face in either sex, and which is a remarkable distinction in this family.

GENUS XXVII.—CEMONUS. Jurine.

HEAD large, subquadrate; *eyes* small, oval, placed at the lateral angles of the head and very distant; *antennæ* geniculated, inserted at the base of the clypeus but not approximate; the anterior margin of the *clypeus* acutely produced in the centre; the *labrum* small, entire, triangular, deflexed laterally; the *mandibles* spoon-shaped, quinquedentate, the third inner tooth very obtuse and the largest, the rest acute. The THORAX ovate; the *collar* transverse, linear; the *dorsolum* somewhat gibbous; the *scutellum* transverse, quadrate, the posterior angles rounded; the *metathorax* obtusely truncate; the *superior wings* with one marginal and two submarginal cells, the first submarginal oblong receiving both the recurrent nervures, the first towards its centre, and the second towards its extremity—the second submarginal almost square, slightly wider towards the marginal cell; the *legs* moderately long. The ABDOMEN oval, petioled; the *petiole* slightly curved and not longer than the first segment of the abdomen.

Type, *C. unicolor*. F.

†-† This genus was formed by Jurine for the insects which Latreille had previously named *Pemphredon*, and which he divided into two families; it consequently fell into a synonyme of that genus as they stood prior to my separation of them as his division was not admitted by subsequent writers; I therefore think it but just to Jurine to re-establish his genus by the type he intended for it, although by some accident he figured the *Pemphredon lugubris*, F., by that name. This genus consequently con-

sists of his second family, as I consider that the strictest rules of nomenclature admit of my using his name for that division, which does not furnish a type for a previously established genus.

SP. 1. UNICOLOR. Latr.

*ater, metathoracis basis limbo lævi et summo circumscripto.*

length  $2\frac{3}{4}$ — $4\frac{1}{4}$  lines.

Jurine, p. 214. (2nd family, note, without the synonymes).

*Pemphredon unicolor.* Latr. G. 4. 84; St. Farg. Ency. Méth. 10. 48. 3; V. d. Lind. pt. 2. 83. 6. (without the synonymes).

Entirely black: head pubescent, deeply punctured, the punctures irregular and somewhat reticulated, becoming striæ on the face, and but sparingly punctured towards the occiput; a deep longitudinal impression extending from the anterior stemma to the base of the antennæ, and the face with a silvery pubescence.

The thorax black, pubescent; the dorsolum punctured thickly at its base towards the collar and at the sides, sparingly towards the disk, where it is shining; one or two deep longitudinal central impressions at its base, and another short one on each side parallel with the epaulet of the tegulæ; the scutellum slightly punctured; the metathorax with a subcordate space at its base either longitudinally striated or rugose, and enclosed behind by a smooth shining limbus distinctly defined on its posterior margin; the sides and posterior portion of the metathorax rugose and covered with scattered long griseous hairs, and a deep fossulet in the centre; the wings slightly coloured (sometimes fuscous), the nervures piceous; the legs pubescent, with the anterior tarsi slightly ciliated, and the intermediate and posterior tibiæ subspinose.

The abdomen black, pubescent, punctured; the petiole curved, coarsely and deeply punctured above, scarcely longer than the remainder of the first segment, and covered with long griseous hairs as well as the apical and ventral segments, but where they are not so long ♀.

The ♂ does not differ, except in having more of the silvery pubescence on the face.

♂ ♀ in my own Collection.

†† I have shown under *Psen ater* that the usual Fabrician synonymes cannot come here. Common in hedgerows and upon shrubs.

SP. 2. LETHIFER. N. Sp.

*ater, metathoracis basis limbo lævi sed summo non distinctè circumscripto.*

length  $2\frac{1}{2}$ — $3\frac{1}{2}$  lines.

Entirely black: head pubescent, deeply punctured, more thickly upon the face, where they generally form longitudinal striæ; the face very shiny, a deep impression rising from the base of the antennæ upwards towards the anterior stemma, but terminating before it reaches it; the mandibles quadridentate, the clypeus, cheeks, and occiput with long scattered griseous hairs.

The thorax punctured; the dorsolum having two central longitudinal abbreviated impressed lines at the base, and another on each side, parallel with and over the middle of the epaulet; the metathorax with a subcordiform space at its base, longitudinally striated, and enclosed by a smooth and shiny limbus, not defined on its posterior margin, the sides and posterior portion of the metathorax punctured, the punctures decreasing gradually upwards towards the limbus, at the centre of the posterior margin whereof there is a deep fossulet extending towards the apex of the metathorax, on the sides of which and on the collar are long griseous hairs; the wings slightly coloured, the nervures piceous, and sometimes a coloured cloud on the disk; the anterior tarsi very slightly ciliated, and a very few slight spines on the outside of the intermediate and posterior tibiæ.

The abdomen pubescent, punctured; the petiole curved, deeply punctured, not longer than the remainder of the segment, and very hairy, as well as the apical segments ♀.

The ♂ does not differ except in having the silvery pubescence much thicker on the lower part of the face.

♂ ♀ in my own Collection.

††† Although the differences are slight which separate this from the preceding species, yet they are uniform in the sexes, and unvarying in the great number of both which I have examined. It is equally common, and found in similar situations.

B. Either three or four submarginal cells complete.

a. Antennæ filiform, mandibles strong, tridentate in ♀.

#### GENUS XXVIII.—MELLINUS. Fab.

HEAD large, transverse, vertical; *eyes* large, oval, distant; *stemmata* seated on the vertex towards the front; *antennæ* inserted in the lower portion of the face, towards the clypeus, distant at their base, filiform, somewhat thicker in the ♂, the *scape* subobconic; the *clypeus* transverse, rounded in front, armed in the centre of its anterior margin with three dentate processes; *labrum* transverse, linear, concealed; the *mandibles* tridentate in the ♀, bidentate in the ♂, the apical tooth acuminate, and much advanced beyond the others. The THORAX ovate; the *collar* transverse; the *scutellum* subquadrate; the *metathorax* obtuse, with an ovate plane space at its base, enclosed by a smooth frame; *the superior wings with one marginal cell, elongate and narrow, and four submarginal cells, the first oblong, and as large as the two following, receiving the first recurrent nervure near its junction with the second, which is much narrowed towards the marginal, the third also slightly so, and receiving near its commencement the second recurrent nervure, the fourth reaching the apex of the wing*; the *legs* slender, moderate, subspinose. The ABDOMEN lanceolate, the first segment prolonged into a very long petiole, nodose

at its extremity; the apical segment flat, with a longitudinal carina on each side, and obtuse at its extremity.

Type, *M. arvensis*. Lin.

†† This genus, of which the etymology is uncertain, was first established by Fabricius in his 'Entomologia Systematica,' in 1793; but with him it always comprised, in conjunction, the insects which Latreille subsequently separated by the name of *Gorytes*, but who also confounded species of that genus and *Alyson* with it, until Jurine's system cleared up the confusion. The genus *Gorytes* was formed upon the true type of the present genus, viz. the *Sphex mystacea*, Lin., but as nothing could be gained by subverting what has taken place, and in which all writers have hitherto tacitly concurred, I leave it as it is.

SP. 1. ARVENSIS. Lin.

*niger, abdomine fasciis quatuor (tertia interrupta), pedibusque flavis.*

length  $3\frac{1}{2}$ — $7\frac{1}{4}$  lines.

Fab. Ent. Syst. 2. 287. 7; Piez. 299. 10; Latr. Hist. 13. 319. 3; Nouv. Dict. 2 ed. 20. 100; Dumeril, Dict. des Sc. Nat. 30. 2. 2; V. d. Lind.

pt. 2. 84. 1. ♀.

*Vespa arvensis*. Lin. Syst. Nat. 1. 950. 12; F. S. 1678; Fab. Syst. Ent. 368. 30; Sp. 1. 465. 50; Mant. 1. 291. 49; Villers, 3. 269. 9; Christ. 234. ♀.

*Vespa superbus*. Harris, Expos. p. 227. 3. pl. 37. fig. 3. ♀.

*Vespa tricineta*. Vill. 3. 279. 33. ♂.

*Crabro U. flavum*. Panz. F. G. 17. 20. ♀.

*Crabro bipunctatus*. Fab. Mantissa, 1. 296. 18; Olivier, Ency. Méth. 6 516. 20. ♀.

*Mellinus bipunctatus*. Fab. Ent. Syst. 2. 286. 4; Piez. 298. 6; Latr. H. N. 13. 320. 5; Nouv. Dict. 2 ed. 20. 100. ♀.

Head black, punctured, pubescent; the face with the internal orbits of the eyes having a marginal yellow line, and a transverse

one frequently at the base of the clypeus, sometimes interrupted; the antennæ black, with the scape yellow, excepting a small black mark above, and the remaining joints more or less fulvous beneath; the mandibles with a yellow spot at their base.

The thorax black, punctured; the metathorax with an ovate space at its base, rugose, and enclosed in a frame of the shape of a horse-shoe, which is very delicately punctured, beyond which it is entirely rugose; the collar, tubercles, and scutellum yellow; the tegulæ testaceous, with a yellow spot in front; the wings hyaline, their nervures testaceous; the legs yellow, with the base of the femora black, and a piceous marking towards the apex of the anterior tibiæ, within which, in the posterior pair, it is ferruginous; the tarsi flavo-ferruginous, and sometimes they all have a ferruginous stain, chiefly at the knees; the anterior tarsi slightly ciliated, and the intermediate and posterior tibiæ very slightly spinose.

The abdomen black, punctured, shining, subpubescent, the first segment sometimes with a small yellow spot on each side at its apex, and occasionally a central longitudinal line, but more frequently entirely black, a broad band occupying the second, third, fourth, and fifth segments, except their margin, very seldom interrupted in the second segment, but generally having two minute black spots in the centre of its base, very frequently broadly interrupted in the fourth, more frequently reduced to a mere small ovate transverse spot upon that segment, with its margin testaceous or piceous ♀.

The ♂ differs in having the yellow more strongly marked on the face, and connected with the transverse markings of the clypeus; the mandibles yellow, with their apex piceous; the legs generally more ferruginous than in the female; the abdomen with a yellow band upon the second segment, rarely entire, occasionally reduced to a mere lateral spot, sometimes entirely wanting, another band upon the third segment, generally interrupted or subinterrupted, an ovate spot on each side

of the fourth segment, frequently very small, and rarely entirely wanting, a narrow central transverse abbreviated line on the fifth segment, generally wanting, and an abbreviated transverse irregular spot at the centre of the base of the sixth segment, always present, the margins of the fifth and sixth segments and the apex of the terminal one piceous ♂.

♂ ♀ in most Collections.

††† I have been induced to give a minute description of all the variations of markings in both sexes of this insect, in consequence of their having been separated into distinct species in many cabinets; but as I possess a long series which are so closely linked together as not even to admit of a subdivision into varieties, I have considered them as but a varying species without constant varieties. It is very common in sandy districts, where I have found it to prey upon the *Diptera*, especially the *Muscidæ*; but Panzer took it preying upon an *Aphis*.

SP. 2. SABULOSUS. Fab.

*niger, abdomine maculis quatuor fasciâque posticâ flavis, pedibus ferrugineis.*

length  $3\frac{3}{4}$ —6 lines.

Fab. E. S. 2. 286. 2; Piez. 297. 2; V. d. Lind. pt. 2. 87. 3.

*Crabro sabulosus.* Fab. M. 1. 296. 17; Oliv. Ency. Méth. 6. 515. 19. ♂.

—— *petiolatus.* Panz. F. G. 46. 12. ♀.

—— *frontalis.* Panz. F. G. 46. 11. ♂.

*Mellinus ruficornis.* Fab. E. S. 2. 286. 3; Piez. 298. 3; Panz. 77. 17; Latr. H. N. 13. 519. 4; Dumeril, Consid. sur les Ins. pt. 31. fig. 4. ♀.

The head black, punctured; the antennæ ferruginous; the inner orbits of the eyes, and a spot on each side of the clypeus, yellow; mandibles rufescent.

The thorax black, punctured; the metathorax with a horse-shoe shaped smooth space at its base, punctured posteriorly;

the collar with an interrupted transverse band, the tubercles, and a spot on the scutellum, yellow; the tegulæ testaceous; the wings slightly coloured; the legs ferruginous, with their coxæ black.

The abdomen black, shining, with an ovate transverse yellow spot on each side of the second and third segments, and a yellow band occupying the fifth ♀.

The ♂ differs in having the antennæ ferruginous, with the basal joint above, the second entirely, and the five following above, black, the basal joint yellow beneath; the base of the clypeus entirely yellow; the tegulæ yellowish; the legs fulvous, with the thighs black, and the anterior tibiæ in front and the knees of the rest yellowish; the abdomen with a transverse band at the base of the third segment, and another entire at the base of the sixth segment, of a yellowish white.

♂ ♀ in Mr. Curtis's and the Entomological Society's Collections; ♂ in my own, and ♀ in that of the British Museum and Mr. Stephens.

††† All the specimens I have seen have come from Norfolk or Suffolk; mine I obtained at Mr. Haworth's sale, and it probably came from the same quarter, where it appears to be local: those in the Entomological Society's Collection came in the Rev. Mr. Kirby's Cabinet, and Mr. Curtis has taken it at Wrentham in Suffolk, at the end of June.

#### GENUS XXIX.—ALYSON. Jur.

HEAD subrotund; antennæ filiform, inserted at the base of the clypeus, the scape slightly bent; the clypeus transverse, convex, the anterior edge with a slight margin, and tridentate (edentate in the ♂); the mandibles tridentate, the teeth obtuse; the labrum concealed. The THORAX sublinear; the collar transverse, quadrate, considerably narrower than the thorax;



the *metathorax* elongate, truncated posteriorly, with a spine on each side near the vertex of the truncation; the *superior wings* with one marginal and three submarginal cells, the first submarginal cell longitudinal, and receiving the first recurrent nervure near its apex, the second semicircular, petiolated above, and receiving the second recurrent also near its apex, the third narrow, transverse; the *legs* slender, moderately long, the anterior *tarsi* having the first joint long, the three following very minute, and the terminal one larger, armed at the apex with a bifid claw, which has a large pulvillus placed within the furca, the other tarsi with their joints gradating in length, the first being the longest, the posterior *femora* with a small dentiform process beneath at their apex. The *abdomen* ovate, acuminate at the apex in the ♀, truncated in the ♂, with a small spine at the angles of the truncation.

Type, *A. spinosus*. Fab.

†† The derivation of this name is probably from ἄλυσσον, the name of a plant in Plutarch; Jurine drops one of the σσ, but Panzer, in his 'Kritische Revision,' spells it correctly, although it is necessary to adopt Jurine's orthography.

SP. 1. LUNICORNIS. Fab.

*niger, abdominis segmentis duobus primis rufis, tibiis tarsisque quatuor posticis fuscè rufis, alarum superiorum fasciâ transversali fuscâ.*

♂ *antennarum articulo ultimo lunato.*

length 3—3½ lines.

Latr. Gen. 4. 86; St. Farg. Ency. Méth. 10. 50. 1; V. d. Lind. pt. 2. 88. 1.

*Pompilus lunicornis*. Fab. E. S. Sup. 249. 21; Piez. 194. 32. ♂.

*Alyson Kennedii*. Curtis, Brit. Ent. fol. 584. ♀.

Head black, delicately punctured; the antennæ piceous above, the scape rufescent in front, and the remainder fulvous beneath;

the clypeus rufescent in front; the mandibles yellow, with their apex piceous.

Thorax black, delicately punctured; the metathorax having at its base an elongate triangular space, rounded at the sides, and enclosed by an elevated ridge, within which it is rugose, and externally covered with oblique striæ, diverging from the centre, and inclining backwards, and a sericeous spot below the spines of the metathorax; the tegulæ testaceous or piceous; the wings slightly coloured, and having a transverse fascia running from the marginal cell, which it covers, backwards, extending half-way across the third discoidal cell, the nervures piceous; the legs simple, black, with the knees of the anterior femora, and the inside of the anterior tibiæ (the exterior either piceous or fulvous), as well as their tarsi, yellowish testaceous, the intermediate and posterior tibiæ and tarsi rufo-piceous, the posterior tibiæ rufescent towards their base, their tarsi piceous, and the articulations of all the coxæ and trochanters fulvous.

The abdomen black, pubescent, with the two first segments, and sometimes the base of the third, red, covered on each side, towards their margin, with a triangular sericeous spot, most conspicuous on the second segment, but frequently rubbed off; the apical segment covered with a fuscous pubescence ♀.

The ♂ differs in having the terminal joint of the antennæ lunulate, all less coloured beneath; the clypeus black, but covered slightly with a silvery pubescence, and generally with only the basal half of the second segment of the abdomen red; the terminal spines pale testaceous.

♂ ♀ in the Cabinet of the Rev. G. T. Rudd  
and my own, ♀ in Mr. Curtis's.

†-† Mr. Curtis first introduced this species to the British Fauna by a ♀, which he took near Hastings some years ago; and the Rev. G. T. Rudd has completed the species by capturing both sexes this year [1836] in a wood near Ryde, in the Isle of Wight, and it is to his liberality,

which I have so often the pleasure to record, that I am indebted for the sexes. He tells me, that the ♀ (of which he took only two specimens) is much more rare than the ♂. This I should consider merely accidental, from his not having fallen upon the spot where the ♀ nidificates, the insects having been caught by brushing amongst the leaves of shrubs. I am led to this supposition by having experienced the same thing in the genera *Gorytes*, *Arpactus*, and *Nysson*; but when I have discovered the nestling-place of the ♀, she has generally occurred in equal abundance with the ♂.

b. The mandibles moderate, arcuate, bidentate at their extremity; antennæ sometimes slightly increasing towards their apex.

#### GENUS XXX.—GORYTES. Latr.

HEAD transverse, in some much depressed in front; *eyes* oval, lateral; *stemmata* placed upon the vertex, very forward, and generally in a curve; *antennæ* subfiliform, inserted at the base of the clypeus, longer in the males than in the females and very slightly thickened towards the apex, in the former generally as long or longer than the thorax; the *clypeus* transverse, rounded in front; the *labrum* exserted, transverse, anteriorly rounded and fringed with long setæ; *mandibles* bidentate, the teeth rather obtuse. THE THORAX ovate; *collar* transverse, linear; *scutellum* transverse, quadrangular; the *metathorax* with a triangle at its base, and obtuse or gibbous, and truncated at its extremity; *the superior wings with one long narrow marginal cell and four submarginal cells, the first nearly as long as the two following—the second much narrowed towards the marginal and receiving both the recurrent nervures—the third quadrangular, the exterior somewhat rounded—the fourth extending to the apex of the wing, although sometimes only obsoletely*

*indicated*; the *legs* moderately long, and having generally a very large pulvillus between their terminal bifid claw. The ABDOMEN ovato-conic, much curved at its extremity, and the second ventral segment, in some species, produced in front and at right angles with its plane.

Type, *G. mystaceus*. Lin.

††† The etymology of the name is probably *γωρυδός*, in obscure allusion perhaps to the arcuation of the antennæ; it was established by Latreille in his '*Histoire*,' tom. xiii. I am here again, as in the genus *Crabro*, obliged to reduce the genera established by St. Fargeau, from Latreille's genus *Gorytes*, to specific synonymes, as I conceive, with one exception only, (see the observations under the genus *Arpactus*), that he has subdivided them upon false premises and too nice a distinction of recondite and trifling differences. With respect to the former, in accordance with his theory of parasitism founded upon the presence or absence of cilia to the anterior tarsi, and lateral spines to the posterior tibiæ, he was induced to consider it incongruous that the same genus should contain both the parasite and the insect upon which it is parasitic. This, it is true, appears plausible, and were it substantiated might justify an anxious search for characters to support a subdivision. But when experience teaches us that the supposed parasites are predatory, as I have found to be the case in both of our species which from structure were considered parasites, I think it more rational to proceed upon the uniform principle adopted, than to introduce hypercritical distinctions in one or two genera, when every genus which consists of three or four, or more, species would equally and as rationally admit of subdivision. Such a procedure has the effect of making obscure what sound generic separation tends to facilitate.

And, besides, exclusive of the character of the wing, these insects are held together by general habit, and even by their colour and its distribution; for instance, they are all more or less banded with yellow on a black ground. Nor do these observations militate against what I have done in the genera *Stigmaus* and *Pemphredon*, where the divisions are introduced upon 'the uniform principle adopted,' viz. the neuuration of the wings; and borne out by those, and other marked, discrepancies. The synonymy of some of the following species is very confused.

SP. 1. MYSTACEUS. Lin.

*niger*, *scutello flavo* (*♂ concolore*), *abdomine fasciis tribus vel quatuor flavis, primâ interruptâ, tibiis ferrugineis*, (*♂ flavis nigrisque*).

*♂ antennis thorace longioribus.*

length  $4\frac{1}{2}$ — $6\frac{1}{4}$  lines.

Latr. Gen. 4. 89; Illig. F. Etr. 2. 144. 873; V. d. Lind. 2. 94. 9; St. Farg. Ann. de la S. E. de F. 1. 57. 1.

*Sphex mystacea*. Lin. S. N. 1. 944. 21; F. S. 1653; Villers, 3. 231. 32; Christ. 270.

*Crabro mystaceus*. Fab. S. E. 375. 9; Spec. 1. 471. 11; Mant. 1. 297. 19; Oliv. Ency. Méth. 6. 516. 21.

*Mellinus mystaceus*. Fab. E. S. 2. 285. 1; Piez. 297. 1; Panz. F. G. 53. 11.

? ——— *Arpactus*. Fab. Piez. 300. 12.

*Arpactus mystaceus*. Jurine, 194.

*Vespa campestris*. Lin. F. S. 1677; S. N. 950. 13; Fab. S. E. 369. 31; Spec. 1. 465. 41; Mant. 1. 291. 50; Rossi, 2. 88. 873; Christ. 234; Oliv. Ency. Méth. 6. 689. 96.

*Mellinus campestris*. Fab. E. S. 2. 287. 6; S. Piez. 299. 9.

*Arpactus campestris*. Panz. Rev. 2. 165.

Head black, punctured, pubescent; antennæ entirely black, nearly the length of head and thorax; an ovate oblique yellow spot on each side at the base of the clypeus, frequently united; mandibles black.

Thorax black, punctured, pubescent; the metathorax obtusely truncated at its extremity, having the triangle at its base longitudinally striated, beyond which it is very coarsely rugose, and with a deep central incisure; the collar, tubercles, a spot beneath the base of the wings, and the post-dorsolum, yellow; the tegulæ piceous; the wings fuscous, with a darker stain occupying their marginal cell and extending a little beyond it, and the extreme edge of the wings also somewhat darker, the stigma testaceous, and their nervures piceous; the legs ferruginous, with the femora black; the tibiæ and tarsi entirely simple.

The abdomen black, pubescent; at the base very minutely punctured and shining; an ovate transverse yellow spot on each side of the margin of the first segment, and a band of the same colour occupying the margin of the second and third segments, waved in front of the former and dilated at the sides, and sometimes another, abbreviated at the sides, on the fourth segment ♀.

The ♂ differs in having a silvery pubescence on the clypeus, the ovate yellow spots upon it frequently united; the antennæ considerably longer than the head and thorax united, and the joints subarcuate; the yellow markings on the thorax often obsolete or entirely wanting, which is rarely however the case with the line on the prothorax, but is occasionally interrupted or abbreviated; the legs black, with the anterior and intermediate tibiæ yellow, having a black patch behind, the first joint of their tarsi also yellow, and the posterior tibiæ with merely a yellow line in front descending half-way down the limb; their tarsi, as well as the remaining joints of the others, piceous, increasing in colour from the base.

♂ ♀ in most Cabinets.

†† The Linnean Cabinet, as well as the '*tibiæ ferrugineæ*' of the description, prove that Van der Linden was right in considering the *Vespa campestris* of Linné a variety of this insect, and which is by no means uncommon; St. Fargeau consequently is incorrect in treating the next as

it. It is remarkable, that Linné's accurate eye should not have observed the identity of his *Sp. mystacea* and *Vespa campestris*, and especially as he notices that the *Sp. mystacea* has sometimes a fourth yellow band. Why I place a sign of doubt in citing Fabricius's *Mellinus Arpactus* is, because he describes the tibiæ as yellow, and the posterior ones in the ♂ (he evidently describes a ♂) of the above species are black, with the exception of a ring at the extreme base and a line at the base, on the exterior, yellow. St. Fargeau wrongly cites it as the synonyme of his variety *c.* of the ♂ *G. mystaceus*, for his variety is founded on the absence of yellow on the prothorax; whereas Fabricius describes his as having a narrow yellow line on the anterior margin of the thorax: there is evidently an omission in Fabricius's description, for the '*strigisque tribus flavis*' must certainly refer to the three following segments and not to the first, as it would appear; for no hymenopterous insect, that I am acquainted with, has three bands of the same colour on one segment of the abdomen. Panzer in his 'Revision,' p. 165, has clearly mixed two species, for he has mistaken the Linnean *Vespa campestris* to be his *Mellinus arenarius*, which however is very different and not identical with any yet discovered British species; and I am also inclined to suspect that he had specimens of my next species in his eye at the same time. This species is common in June and July about woods, and on *Umbelliferae*. I have captured it with its prey, consisting of the larva of a species of *Aphrophora*, with which it was entering a sand bank, although its structure, according to St. Fargeau's theory, would make it a parasite, which this fact however contradicts.

## SP. 2. FARGEII. N. Sp.

*niger, prothorace, lined sub scutello, segmentis quatuor abdominis fasciâ, tibiis tarsisque flavis.*

♂ *antennis thorace longioribus.*

length  $4\frac{1}{4}$ — $5\frac{1}{2}$  lines.

*Gorytes campestris.* St. Farg. Ann. de la S. E. de Fr. 1.

? — *quadrifasciatus.* V. d. Lind. (description of ♂ at the bottom of the page and not the ♀ or synonymes.)

*Mellinus quadrifasciatus.* Panz. F. G. 98. 17. ♂.

*Arpactus quadrifasciatus,* (his ♀, which is a ♂, and only the reference to the above figure). Panz. Revis. 2. 165.

Head black, punctured, pubescent; antennæ entirely black; the clypeus with a broad transverse yellow band at its base; the labrum fringed with long red setæ; the mandibles black, with their apex piceous.

The thorax black, punctured, pubescent; a scratch on each side of the dorsolum, parallel with the epaulet of the tegulæ; the incisure at the base of the scutellum consute; the triangle at the base of the metathorax not strongly defined, and longitudinally striate, rugose beyond, having a central longitudinal very deep impression, and truncated posteriorly; the collar, tubercles, a lunule beneath the base of the wings and the post-dorsolum, yellow; the tegulæ testaceous; the wings slightly fuscous, with a slightly darker stain occupying the marginal cell, the stigma and nervures testaceous; the legs with the femora black, except the knees, which, with the outsides of the tibiæ, are yellow, the inside of the tibiæ testaceous, with a piceous stain, and the tarsi also testaceous; the legs entirely simple.

The abdomen black, with a yellow band occupying the margins of the first, second, third, and fourth segments, waved in front and much broader at the sides, but the extreme margin of the first segment testaceous, and the fifth segment having sometimes a small transverse abbreviated line ♀.

The ♂ differs in having a silvery pubescence on the clypeus; the antennæ a little longer than the head and thorax together;



the anterior femora with a little yellow beneath at their apex, as well as the knees of all; the entire tibiæ (excepting the stain within) and the first joint of the tarsi also yellow, the remaining joints of the tarsi piceous.

♂ ♀ in most Cabinets.

†† St. Fargeau justly doubted having the Linnean *Vespa campestris* when he described this insect; the name of *campestris*, consequently, which he applied to it, must be changed, that insect being merely a variety of the *Gorytes mystaceus*. I have, therefore, called it after him, as a testimony of respect for his exertions in the order, and because I could not give it one characteristic without adding to the confusion of the *fasciati* and *cincti*. This and the preceding are the only species in the genus I am acquainted with that have the antennæ in both sexes entirely black. It is not uncommon on *Umbelliferae*, at Highgate and Battersea, in July. I have captured the ♀ conveying the larva of *Aphrophora spumaria*, which thus further contradicts St. Fargeau's theory, as from habit it would be a true parasite.

SP. 3. QUADRIFASCIATUS. Fab.

*niger, antennarum scapo subtùs flavo, flagello subtùs fulvo, prothorace, scutelli margine posteriore (♂ nigro), et abdomine fasciis quatuor flavis, tibiis tarsisque ferrugineis.*

length  $3\frac{1}{2}$ — $5\frac{1}{2}$  lines.

Latr. Gen. 4. 90. ♂ ♀ ? V. d. Lind. 2. 96. 10 (the description of the ♀, and second line of synonymes only).

*Mellinus quadrifasciatus.* Fab. Piez. 298. 5. ♂.

? *Gorytes arenarius.* V. d. Lind. pt. 2. 97. 11 (the description of the first ♂ only, also without the synonymes).

? *Hoplisis 5-cinctus.* St. Farg. Ann. de la S. E. de F. 1. 62. Var. a. ♀ and 63 ♂ only.

*Gorytes libitiniarius.* Curt. Brit. Ent. folio 524.

Head black, minutely punctured, pubescent; antennæ black, with the scape yellow in front, the pedicel entirely black, and the basal joints of the flagellum fulvous beneath; a small yellow spot or line on each side of the lower part of the face at the margin of the eyes; the clypeus with a broad transverse yellow stripe at the base; and the labrum yellow at its anterior margin; the mandibles piceous.

The thorax black, minutely punctured; the incisure at the base of the scutellum consute; the metathorax obtuse, with the triangle at its base distinctly defined and longitudinally striated, beyond which it is coarsely rugose; the collar, a spot beneath the base of the wings, and a transverse line at the posterior margin of the scutellum, yellow, the latter sometimes obsolete; the tegulæ piceous; the wings hyaline, with a cloud occupying the marginal, and a portion of the first and the entire second submarginal cells, the stigma and nervures testaceous; the legs ferruginous, with the femora black, except towards the knees in front, the anterior pair yellow in front, the tibiæ with a piceous stain towards their apex behind, the pulvilli large and piceous; the anterior tarsi very strongly ciliated, and the intermediate and posterior tibiæ spinose.

The abdomen black, delicately punctured, shining; with a yellow band on the margin of the four or five first segments, that of the first and second broadest, much dilated on the sides, but all narrow, and the second, third, and fourth generally continued beneath; the fifth frequently obsolete or entirely wanting ♀.

The ♂ differs in having the antennæ entirely black, except the scape, which is yellow in front, and the pedicel, which has a minute yellow dot in front; the legs with the femora black, their apex ferruginous; the tibiæ yellow in front, ferruginous behind, with a long black stain towards their apex behind; the anterior and intermediate tarsi yellow testaceous, with their extreme joints piceous at the extremity, the posterior pair piceous, with their basal joint ferruginous ♂.

♂ ♀ in my own and other Cabinets.

††† Much confusion has also been introduced into the synonymy of this insect, the ♂ of which is evidently Fabricius's *Mellinus quadrifasciatus*. Van der Linden has introduced three distinct species into the synonymes of this single one, for the figure of the ♀ which he cites certainly belongs to another, although allied, species; but the ♀ he describes is the correct one, and the synonyme of Spinola belongs to St. Fargeau's *Euspongius laticinctus*, and both sexes of which Van der Linden describes under his *Gorytes arenarius*; but the first ♂ there described is our ♂ also; and St. Fargeau has added to the confusion by evidently mixing three species in his *Hoplisis quinquecinctus* and its varieties; those above cited, however, refer alone to one species. Mr. Curtis not having had leisure to disentangle this knot, has treated this as a new species. I find it abundantly in Battersea Fields in July, and at Birchwood in August, on *Umbelliferæ*.

SP. 4. LATICINCTUS. St. Farg.

*niger, antennarum scapo et flagello subtus (♂ nigro) flavo; prothorace, scutelli (♂ nigro) margine posteriore, abdomineque fasciis quatuor (secundo latissimo) flavis.*

length  $4\frac{3}{4}$ — $5\frac{1}{2}$  lines.

*Euspongius laticinctus.* St. Farg. Ann. de la S. E. de F. 1. 66. 1.

*Gorytes quadrifasciatus.* Spinola, 1. 93. 2.

—— *arenarius.* V. de Lind. pt. 2. 97. 11 (the description of the second ♂, and the ♀, without the synonymes).

Head black, shining, delicately punctured; antennæ black, the scape yellow in front, and the remainder beneath, excepting the two last joints, of a fulvous yellow, with a slight black line above; the lower portion of the inner orbits of the eyes, the clypeus, and the labrum, yellow; the mandibles black, their apex piceous.

The thorax black, shining, delicately punctured, with four

parallel longitudinal impressed lines extending from the base of the dorsolum to the disk ; the metathorax very rugose, and obtusely truncated ; the epaulet over the tegulæ and the incisure at the base and posterior margin of the scutellum, consute ; the collar, a spot beneath the base of the wings, a minute dot in the middle of the epaulet, and a transverse line on the scutellum, yellow ; the wings slightly coloured, the stigma and nervures testaceous, the marginal cell and proximate parts of the submarginal cells occupied by a dark cloud ; the legs yellow, the anterior and intermediate femora above, and the posterior entirely, black, excepting towards their apex above ; all the tibiæ black on the exterior ; the apex of the anterior and intermediate tarsi piceous, the posterior ones entirely so ; the anterior pair strongly ciliated, and the tibiæ slightly spinose.

The abdomen black, shining, with a broad yellow band occupying the margin of the four first segments, the second being much the broadest, slightly emarginate in front ; the second, third, and fourth continued narrowly on the margin of the ventral segment, the first of these the widest ♀.

The ♂ differs in having the antennæ entirely black, with the exception of a slight yellow spot beneath the scape ; the clypeus covered with a silvery pubescence ; the palpi yellow ; the tubercles black ; a yellow spot beneath the base of the wings ; the scutellum entirely black ; the nervures of the wings piceous ; the legs black, with the anterior and intermediate femora at their apex in front, the front and knees of their tibiæ, and their tarsi, yellow, the apical joint piceous, the knees of the posterior pair ferruginous, their tibiæ yellow beneath, and their tarsi entirely black ; the fifth segment of the abdomen has on its margin a yellow band abbreviated at the sides, and the sixth and seventh are covered with a fuscous pubescence.

♂ ♀ in my own and Mr. Stephens's  
Cabinets ; and ♀ in that of Mr.  
Curtis.

††† My specimens of this beautiful species were captured in the New Forest. Mr. Stephens does not remember where his were taken. Van der Linden has again here caused confusion by associating this very distinct insect with Panzer's *Mellinus arenarius*.

SP. 5. BICINCTUS. Rossi.

*ater, antennis subtus ferrugineis, articulo primo flavo; prothorace, abdomine fasciis duabus, primo segmento (coarctato) puncto utrinque flavis.*

length  $3\frac{3}{4}$ — $4\frac{1}{2}$  lines.

V. d. Lind. pt. 2. 93. 7; Curtis, Brit. Ent. V. 11. pl. 524.

*Crabro bicinctus.* Rossi, F. Etr. App. 123. 110.

*Lestiphorus bicinctus.* St. Farg. Ann. de la S. E. de F. 1. 70. 1.

Head black, opaque, very delicately punctured; the antennæ very slender, black, the scape beneath yellow, the clavolet pale-fuscous beneath, excepting the two or three last joints; the lower portion of the face beneath the antennæ, the clypeus and labrum, yellow; the mandibles with a small fuscous spot about their middle.

The thorax black, very delicately punctured; the dorsolum having two slightly impressed longitudinal lines at its base, extending to the disk; the triangular space at the base of the metathorax longitudinally striate, with a carina in the centre; the collar, tubercles, and two spots at the scutellum, yellow; the wings with the stigma fulvous, the nervures piceous, a dark cloud occupying the marginal, second submarginal, and a portion of the third discoidal cells; the legs black, with the apex of the anterior coxæ and trochanters and the femora and tibiæ entirely, beneath, yellow, the intermediate femora with their apex beneath, and their tibiæ entirely beneath, also yellow; the posterior tibiæ with their extreme base beneath fulvous; the anterior and intermediate tarsi fulvous, the last joint of the latter piceous, and the posterior ones entirely so, the pulvilli of

the anterior pair very large; the legs spinose, and the anterior tarsi strongly ciliated.

The abdomen black, delicately punctured, slightly shining; the first segment subpyriform, and having a large triangular yellow spot on each side, forming a broad band, attenuated in the centre, and very slightly interrupted; the second segment with a broad yellow band just before the margin, and the third with a narrower one placed at the margin, the band of the second segment continued across the venter ♀.

The ♂ differs in having the inner orbits of the eyes yellow, which extends to near the vertex; the mandibles also yellow, their apex piceous; the tarsi yellow testaceous; the posterior tibiæ yellow on the outside at their base, and the terminal segment of the abdomen having two strong setæ.

♂ in Mr. Curtis's Cabinet;

♀ in my own.

††† Mr. Curtis does not remember where his specimen was taken. Mine was captured in the vicinity of London.

#### GENUS XXXI.—ARPACTUS. Jurine.

HEAD subrotund, as wide as the thorax; *eyes* oval, lateral; *stemmata* placed forward on the vertex; *antennæ* very slightly increasing towards the apex, in the ♀ much curved, in the ♂ porrect, and not longer than those of the ♀, inserted at the base of the clypeus; *clypeus* transverse, convex, slightly marginate in front; *labrum* triangular; *mandibles* bidentate. The THORAX ovate; the *collar* slightly narrowed in front into a neck; the *scutellum* transverse; the metathorax truncated, and having a triangular enclosure at its base; *the superior wings with one narrow marginal cell and three submarginal cells, the second receiving both the recurrent nervures*; the legs with the anterior *tarsi* strongly ciliated, and the intermediate and posterior *tibiæ* spinose. The ABDOMEN ovato-conical, much acuminate, and bent downwards at its extremity.

Type, *A. formosus*. Jurine.

††† The name is derived from ἀρπακτός—ἀρπάζω, to plunder, in allusion to its predatory habits; it should therefore be written HARPACTUS. The genus is sufficiently distinguished from *Gorytes*, in having but three submarginal cells, and the antennæ of the ♂ not longer than those of the ♀. Nature seems also to have separated them by colour; for more or less red invariably prevails, and that colour has not yet been found upon a true *Gorytes*.

SP. I. LÆVIS. Latr.

*niger, thoracis dorso, pedibusque rufis, abdomine fasciis duabus albis.*

length  $3\frac{1}{2}$  lines.

St. Farg. Ann. de la S. E. de Fr. 1. 74. 1.

*Mutilla lævis.* Latr. Act. de la Soc. d'Hist. Nat. de Paris, 1. 11, 12.

*Sphex cruenta.* Fab. E. S. Sup. 244. 54—55.

*Mellinus cruentatus.* Latr. H. N. 13. 318. 1.

*Pompilus cruentus.* Panz. 84. 20; Fab. Piez. 192. 20; Coquebert, 1. 23. pl. 5. fig. 10.

*Gorytes lævis.* V. d. Lind. pt. 2. 91. 1.

Head black, punctured, with a white line at the interior of the orbits of the eyes; antennæ black, piceous beneath; mandibles rufescent.

Thorax punctured, red above, black beneath, with the triangle beyond the scutellum piceous; the tubercles black; and a spot beneath the origin of the wings red; the wings slightly coloured, their nervures piceous; legs black, with the interior of the anterior pair fulvous, as well as the intermediate tibiæ, the two anterior and intermediate tarsi piceous; the tibiæ sub-spinose.

Abdomen black, slightly punctured, shining, the margin of the second segment with a white fascia, waved in the middle, dilated at the sides, the margin of the fifth segment also with a white fascia; all the margins slightly depressed ♂.

The ♀ has not yet been captured to my knowledge in England; I therefore give St. Fargeau's description of it: "Antennæ black, the first joint beneath of a yellowish white. Head black, base of the mandibles and lower portion of the clypeus white, mixed with red; the anterior orbits of the eyes white. The thorax beneath black, as well as the prothorax, the latter having on each side a red humeral spot; the tubercles, upper portion of the thorax, as well as metathorax, red, as well as their sides above. Abdomen black, the second segment having on its posterior margin a white band, widened at the sides; the fifth with one at its base, enlarged in the centre and at the sides. Legs black, the four anterior femora red beneath, as also their tibiæ and tarsi. Wings hyaline, the marginal cell and second submarginal slightly clouded; stigma brown."

♂ in the Collection of the  
British Museum.

††† I cannot learn where this beautiful insect was taken; it is unique in the Cabinet of the British Museum.

SP. 2. TUMIDUS. Panz.

*niger, abdomine rufo, apice nigro, lunulis duabus ponè medium, maculaque anali albis.*

length  $2\frac{1}{2}$ — $3\frac{3}{4}$  lines.

Jur. 194; St. Farg. An. de la S. E. de F. 1. 77. 3.

*Pompilus tumidus.* Panz. 81. 15. ♂.

*Gorytes tumidus.* V. d. Lind. pt. 2. 92. 4.

Head black, delicately punctured, pubescent; the face and clypeus covered with a silvery down; a longitudinal impression extending from the base of the antennæ to the anterior stemma; the stemmata placed in a curve; the posterior margin of the eyes occupied by a sanguineous mark, which extends half-way down to the cheek; the antennæ black, with a white mark in front of the scape, which is testaceous at its base and apex; the



inner orbits of the eyes having a white line joining that which occupies the anterior margin of the clypeus, the latter sometimes testaceous in the middle; the labrum white, fringed with a few silvery setæ; the mandibles yellow testaceous, and piceous at their apex.

The thorax black, delicately punctured, pubescent; the dorsolum with two or three central longitudinal lines, which terminate at the disk; the incisure at the base of the scutellum consute; the triangle at the base of the metathorax has two longitudinal parallel carina in its centre, the interstices filled with oblique striæ, sometimes obsolete or smooth, and the whole enclosed by an elevated ridge, which is encircled by abbreviated radiating striæ, beyond which it is smooth, and covered at the sides with a silvery pubescence; the posterior edge of the tubercles and the centre of the scutellum with a white spot; the tegulæ testaceous; the wings slightly coloured, their nervures piceous; the legs black, the anterior and intermediate femora beneath and in front, and the tibiæ in front, yellow-testaceous; the posterior tibiæ ferruginous at their base; all the tarsi piceous, the anterior pair strongly ciliated, and the intermediate and posterior tibiæ spinose.

The abdomen black, delicately punctured, the two first segments red, with a white ovate spot on the lateral margins of the second, and another at the centre of the base of the fifth ♀.

The ♂ differs in having more of the silvery pubescence on the face; the antennæ, except the basal joint, piceous beneath, the white spot on the fifth segment forming a band, a little dilated in the middle, and the sixth with a longitudinal white line in its centre; and it varies in the white markings of the clypeus being sometimes wanting, as are also the white mark on the scutellum, and those on the second segment, the band or mark on the fifth and sixth segments with or without each other, and in some all the white marks are deficient.

♂ ♀ in my own and other Cabinets.

††† I once found the ♂ of this insect in abundance on

Hampstead Heath, on a spot frequented also by *Nysson dimidiatus* and *Hedychrum roseum*, and the ♀ I have taken at Highgate in sandy situations, in which it burrows; it is excessively active in its flight, and the ♂ runs along the ground like a *Pompilus*, and is very difficult to secure.

II. Antennæ inserted in the middle of the face, always larger towards their extremity.

1. Clypeus almost square, not trilobate. The first segment of the abdomen forming a long, slender, sudden petiole.

GENUS XXXII.—PSEN. Latr.

HEAD transverse, convex, as wide as the thorax; *eyes* oval, placed at the lateral angles of the head, very distant; the *stemmata* placed in a triangle on the vertex, slightly raised; the *face* below the antennæ and clypeus generally, sometimes the clypeus only, covered with a dense silvery pubescence; the *antennæ* inserted in the middle of the face, and subclavate; the *clypeus* transverse, rounded in front; *labrum* concealed; *mandibles* bidentate. The THORAX rotundate; the *collar* transverse, linear; the *scutellum* transverse; the *meta-thorax* truncated; the *superior wings* with one marginal cell very long, and extending to nearly the apex of the wing, and three submarginal cells, the first very long, and the second and third much narrowed towards the marginal cell, and each receiving a recurrent nervure near their commencement, the third cell distant from the apex of the wing; the *legs* simple, short, and having a large pulvillus placed between their bifid claw. The ABDOMEN ellipsoid, attached to the thorax by an elongate abrupt petiole, forming the anterior half of the first segment, which is either plane above or carinated, the hypopygium of the ♂ prolonged into an acute upcurved spine.

Type, *P. ater* ♀. Panz.

††† The name of this genus is derived from  $\pi\sigma\eta\nu$ , the Greek name of the *Cynips* employed in the caprification of the fig-trees. It was established by Latreille in 1796, in his '*Precis.*' Much confusion, however, long existed, until Jurine united them by a permanent character; but even he here contradicted his own system by receiving into the same genus insects so distinct in the neuration of the wings as this, and the next genus which I have been obliged to establish for those that are most essentially fossorial, viz. which nidificate in sand, the original type being one of the present.

SP. 1. ATER. Fab.

*ater*, clypeo argenteo villosa, facie lævi ♀.

♂ *antennis ferrugineis, compressis, subserratis.*

length  $5\frac{1}{2}$  lines.

V. d. Lind. pt. 2. 102. 1; ? Latr. Hist. 13. 310; Gen. 4. 92; Nouv. Dict. 28. 192.

*Sphex atra*. Fab. Sup. 244. 18—19. ♀; Panz. F. G. 72. 7. ♂.

*Pelopæus unicolor*. Fab. Piez. 204. 10. (without the reference to Panzer).

*Pelopæus compressicornis*. Fab. Piez. 204. 11. ♂.

*Trypoxylon atratum*. Fab. Piez. 182. 5. ♀?

*Psen atra*. Panz. Revis. 2. 108.

— *pallipes*. Spin. 194. 2. ♂.

— *serraticornis*. Jurine, pl. 8. g. 6. ♂.

Entirely black; head shining, delicately punctured; the face covered with a dense silvery pubescence; antennæ piceous beneath.

Thorax delicately punctured, pubescent; the metathorax obtuse, rugose; wings hyaline, with the nervures black; legs black, very pubescent, and the posterior pairs densely spinose; the tarsi piceous, with the anterior pair slightly ciliated on the exterior, and the pulvillus very large between the bifid claw at their extremity.

The abdomen shining, slightly pubescent, and delicately punc-

tured, the petiole very long, slightly curved, smooth above, and shining, the extreme margin of the four last segments rufopiceous ♀.

The ♂ differs in having the antennæ compressed, the first joint very large and fulvous, as well as the underside of the remainder, and the fifth, sixth, and seventh also above, the eighth, ninth, and tenth serrated below; the mandibles yellow, with their apex rufescent; the anterior and intermediate legs yellow, with a black line beneath the femora, the anterior tarsi yellow, the intermediate ferruginous, with the first joint produced on the exterior into two curved spiny processes, the apical one bifid, and the three following joints also slightly produced at their apex on the exterior, the posterior pair piceous.

♂ in the Cabinet of the Entomological  
Society, and of Mr. Stephens.

♀ in my own and other Cabinets.

††† The Fabrician synonymes certainly refer to this insect, although Van der Linden rejects the two first, because Fabricius says his *Pelopæus unicolor* is less than Panzer's *Crabro unicolor*. Van der Linden must therefore have forgotten that the latter is the *Pemphredon lugubris*, than which the *Psen ater*, although the largest of the genus, is certainly smaller. Panzer says positively that his and Fabricius' *Sphex atra* are the same insect (I presume he means the opposite sexes), and quotes the latter under the new name of *Pelopæus unicolor*, which Fabricius gives it in his '*Systema Piezatorum*,' with the exclusion of the reference to his *Sphex unicolor*. Some doubt attaches to the reference to Fabricius' *Trypoxylon atratum*, for Panzer cites it as the other sex of his *Sphex pallipes*, which is always smaller than even the smallest red *Psen* (*Mimesa*); but as Fabricius says it is larger than his *Trypoxylon equestris* (my *Mimesa eq.*), I admit it as a probable

synonyme of the present species. I am induced to give much weight to the authority of Panzer, for he supplied Fabricius with very many of his German species, and besides had, I think, a more correct eye. The present appears to be rare, or at least very local; those in the Cabinet of the Entomological Society came from the Rev. Mr. Kirby.

SP. 2. ATRATUS. Panz.

*ater, clypeo argenteo, facie carinatâ, tibiis anticis subtus tarsisque omnibus ferrugineis aut piceis.*

length 2—3 lines.

V. d. Lind. pt. 2. 103. 2.

*Sphex pallipes.* Panz. F. G. 52. 22. ♂.

*Trypoxylon atratum.* Panz. F. G. 98. 15.

*Psen atra.* Panz. Revis. 2. 109. (without the reference to Fabricius).

Black: head punctured, pubescent, shining; the lower part of the face covered with a silvery down; antennæ short, clavate, but little longer than the head; a longitudinal carina, rather elevated, rising at the centre of the face, and passing between the base of the antennæ, where it joins the centre of a transverse one, parallel with the base of the clypeus, an excised notch at the base of the longitudinal one.

Thorax pubescent, shining, punctured, with two or three longitudinal scratches at the base of the dorsolum, and a few striæ at its apex; a triangular depression at the base of the metathorax, longitudinally striate in front, and transversely behind, the sides of the metathorax beyond it very delicately obliquely striated; the tegulæ piceous; the wings iridescent, their nervures piceous; the legs black, very pubescent; the anterior tibiæ in front and their tarsi ferruginous, the intermediate and posterior tarsi piceous, or sometimes ferruginous, the calcaræ very pale, and the tibiæ subspinose.

The abdomen very pubescent, shining; the petiole very short, not so long as the remainder of the segment, and canaliculated

above, sometimes the margin of the last two or three segments piceous, the last segment slightly produced at its apex ♀.

The ♂ differs in having the antennæ beneath fulvous, as long as the head and thorax, and proportionably thinner; the metathorax very rugose, and the petiole of the abdomen as long as the remainder of the first segment.

††† The *Sphex pallipes* of Panzer, both figure and description, are certainly this insect; and Van der Linden is wrong in referring it to his *Pemphredon tristis*, for the petiole will not admit of its being that or any other species of the genus *Diodontus* of Curtis; nor can it be a petiolated *Pemphredon*, which would place it with my *Cemoni* or *Pemphredones*, for the form of the head is so totally different; and Sturm was more likely to err in the neuration of the wings prior to its introduction as a character, than he was in the general habit, and his figure exactly resembles the ♀ of the present species.

#### GENUS XXXIII.—MIMESA. Shuck.

HEAD transverse, a little wider than the thorax; *face* covered with a silvery down; *eyes* oval, lateral; *stemmata* placed in a triangle on the vertex; *antennæ* inserted about the middle of the face, clavate, rather longer in the ♂, and less clavate; the *clypeus* transverse, rounded in front, convex, with a small transverse elevation just within its anterior margin, which is very slightly emarginate; *labrum* concealed; *mandibles* bidentate, the inner tooth considerably the smallest, the exterior one obtuse. THE THORAX subrotund; the *collar* transverse, linear; *scutellum* transverse, subquadrate; the *metathorax* short, gibbous; *the superior wings with one lanceolate submarginal cell and three submarginal cells, the second the smallest, narrowed towards the marginal, and receiving both recurrent nervures, the third distant from the apex of the wing,*

and quadrate; the legs short. The ABDOMEN ellipsoïd, petiolated, the apex in the ♂ armed with an upcurved spine.

Type, *P. equestris*. F.

††† Although these insects exactly agree with the preceding in habit, yet from the neuration of the wings being different, I necessarily separate them as a new genus. The name is derived from *μίμησις*, *imitation*, in allusion to their resemblance to their recent congeners.

SP. 1. *EQUESTRIS*. Fab.

*ater, abdominis segmento primo secundoque rufo, petiolo tere-  
tiusculo supra rugoso.*

length  $3\frac{1}{4}$ — $4\frac{1}{2}$  lines.

*Psen equestris*. V. d. Lind. pt. 2. 107. 4; Latr. Nouv. Dict. ed. 2. 28.  
193; Curt. Brit. Ent. vol. i. pl. 25.

*Tryporylon equestre*. Fab. Piez. 182. 6.

*Psen rufa*. Panz. 96. 17.

Head black, pubescent, punctured; the face covered with silvery down; the antennæ black,—yellow, piceous, or fulvous beneath, and at their apex; the mandibles piceous at their apex; the anterior margin of the clypeus slightly reflexed.

Thorax black, punctured, having two longitudinal impressions at the base of the dorsolum, which extend to the disc; the metathorax rugose, with a triangular enclosure at its base, the base of which is longitudinally striate; the tegulæ testaceous; the wings hyaline, iridescent, the nervures black; the legs black, with the apex of the tarsi ferruginous, the anterior tarsi ciliated on the outside, and the intermediate and posterior tibiæ spinose.

The abdomen having its petiole wider at its extremity than at its base, plane above, or irregularly concave and rugose, somewhat shorter than the remainder of the segment, black, the remainder of the first segment and the entire second red, the rest black, the hypopygium slightly produced, and the podex covered with fuscous pubescence ♀.

The ♂ differs in having the antennæ longer, the pubescence of the face denser; less colour beneath the antennæ; and the tarsi a little more ferruginous; the first segment of the abdomen black, excepting the sides; and the hypopygium produced into an acute upcurved spine.

♂ ♀ in my own Collection.

††† Apparently solitary in its habits, taken occasionally at Hampstead. Under this species it is evident that the majority of former writers have mixed two.

SP. 2. BICOLOR. Jurine.

*ater, abdominis segmentis tribus anticis rufis, petiolo lineari, supra longitudinaliter carinato.*

length  $2\frac{3}{4}$ — $4\frac{1}{4}$  lines.

*Psen bicolor.* Jurine, pl. 13.

Head black, punctured, pubescent; the face covered with a silvery down; the antennæ black, fulvous beneath, commencing about the third joint, and increasing in intensity to the apex; the anterior margin of the clypeus slightly reflexed.

Thorax black, punctured; the metathorax rugose, with an enclosed triangle at its base, the base of which is longitudinally striated; the tegulæ testaceous; the wings iridescent, their nervures black; the legs black; the anterior tibiæ ferruginous in front, as well as the knees and apex of the tibiæ of the intermediate and posterior pairs, which on the exterior are spinose; the anterior and intermediate tarsi ferruginous, and the posterior piceous, the anterior pair slightly ciliated.

The abdomen with the petiole linear, longitudinally carinated above, and of the length of the remainder of the segment, black, as well as a very small space at the base of the first segment, the remainder of which, as well as the second and major part of the third, red, the rest black, the hypopygium slightly produced ♀.

The ♂ does not differ except in having more silvery pubes-



cence on the face, the legs more ferruginous, the antennæ slighter, and ferruginous at their apex above as well as beneath, the posterior tarsi being of that colour; more black at the base of the abdomen, which is longer, narrower; and sometimes merely the second segment red, and the hypopygium produced into an upcurved acute spine.

♂ ♀ in my own Collection.

††† This species, which is the most common of the two red ones, has evidently been mixed with the preceding, from which it differs somewhat in general habit, but especially in the form of the petiole of the abdomen. Jurine's figure is excellent, and perfectly represents it, as does Mr. Curtis's the preceding species. It is gregarious, being found in multitudes upon Hampstead Heath, Black Heath, and in most sandy situations.

SP. 3. UNICOLOR. V. d. Lind.

*ater, leviter griseo pubescens, clypeo gibboso et fronte plana argenteo pubescentibus; metathorace reticulato-rugoso, tarsis rufescentibus.*

length  $2\frac{1}{4}$ — $3\frac{1}{2}$  lines.

*Psen unicolor.* V. d. Lind. pt. 2. 105. 3.

Entirely black: head punctured, pubescent; the face covered with a silvery down; a very slight carina between the base of the antennæ extending upwards to the vertex, and terminating abruptly at a slight transverse one, which extends on each side to their points of insertion; the clypeus very convex, reflexed in front, where, in the centre, it is slightly emarginate; the apex of the mandibles rufescent.

Thorax punctured, pubescent; the dorsolum with two central parallel impressions at its base, which extend to the disk, and a scratch on each side parallel with the middle of the epaulet of the tegulæ; the incisure at the base of the scutellum consute; the metathorax reticulated; the tegulæ piceous or black;

the wings very slightly coloured, iridescent, the nervures black; the legs black; the apical joints of the tarsi piceous, the anterior tarsi slightly ciliated, and the intermediate and posterior tibiæ spinose.

The abdomen shining, delicately punctured, covered with a sericeous pubescence; the petiole about the length or a little longer than the remainder of the first segment, and carinated above, the carina acuminate at its apex, and sometimes bifid at its base, or obliquely striated, the hypopygium slightly produced ♀.

The ♂ differs in having more of the silvery pubescence on the face; the antennæ longer and slighter, and the anterior and intermediate tarsi testaceous, and the posterior ferruginous, or all ferruginous, and the hypopygium produced into an up-curved pale spine.

†† I think it is very probable that this is the *Psenater* of Latreille; but he having given no satisfactory description of it, it is very uncertain. I have found it at Darenth Wood in Kent, and Mr. Walker has taken it in North Wales, inhabiting posts and rails.

2. The clypeus trilobate. The abdomen not constricted at its base into a long and slender petiole.

#### GENUS XXXIV.—CERCERIS. Latr.

HEAD subquadrate, transverse, wider than the thorax; the *face* vertical; the *eyes* ovate, placed at the lateral angles of the head; the *stigmata* slightly elevated on the vertex; the *antennæ* subclavate, inserted near the middle of the face on each side of a carina, which runs from the centre of the face to the base of the clypeus, the middle lobe of which it embraces; the *clypeus* trilobate, the central lobe the largest, and having anteriorly a narrow margin; *labrum* concealed; the *mandibles* very stout, tridentate, the apical tooth acuminate,

the second obtuse, and placed half-way within, and the third more acute, and nearer the base. THORAX ovate; the collar transverse, as also the *scutellum*; the *metathorax* obtusely truncated, having a triangular enclosure at its base; the superior wings with one marginal cell oblong, rounded at its apex, and three submarginal cells, the first very long, the second triangular and petiolated, receiving the first recurrent nervure in its centre, the third distant from the apex of the wing, receiving near its commencement the second recurrent nervure; the legs moderately long, very stout, and spinose; the anterior tarsi ciliated on the exterior. The ABDOMEN oblong, the first segment narrowed into half the width of the rest, the base and margins of all crenate; the apical segment with a pair of carinæ, concave between on each side, the surface between the inner ones plane, and either truncated or furcate at its extremity.

Type, C. Arenaria. Lin.

††† The derivation of the name is uncertain. The genus was established by Latreille in his '*Histoire*,' where he separated them from the *Philanthus* of Fabricius. Jurine, from mistaking the type of the latter author, applied the name of *Philanthus* to these insects. Their synonymy appears very much confused.

SP. 1. ARENARIA. Lin.

*niger, abdominis fasciis quatuor (♂ quinque) flavis, primo segmento duobus punctis flavis, tibiis ferrugineis.*

length  $4\frac{1}{2}$ — $7\frac{1}{4}$  lines.

V. d. Lind. Pt. 2. 109. 3.

*Sphex arenaria.* Lin. F. S. 1660; S. N. 1. 946. 31. ♀; Villers, 3. 235. 38.

*Crabro arenarius.* Fab. Mant. 1. 297. 20; Schr. F. B. 2. 335. 2184; Oliv. Eney. Méth. 6. 516. 22. ♀.

*Philanthus latus.* Panz. F. G. 63. 11.

*Cerceris aurita?* Fab. E. S. Supp. 268. 1; Piez. 301. 2. ♀; Latr. Hist. Nat. 13. 315. 1; Spin. 1. 96. 1. ♀; Latr. Nouv. Dict. ed. 2. 512.

- ? *Crabro 5-cinctus*. Fab. M. 1. 295. 11; Oliv. Ency. Méth. 6. 514. 13;  
 Schrank, F. B. 2. 335. 2182. ♂.  
*Philanthus quinquecinctus*. Fab. E. S. 291. 9; Piez. 304. 15. ♂.  
 ——— *latus*. Fab. E. S. 2. 291. 10; Piez. 305. 18. ♂.  
*Vespa exultus et petulans*. Harris, Expos. pl. 37. fig. 1, 2.  
 ? *Philanthus 4-fasciatus*. Panz. F. G. 63. 14; Fab. Piez. 305. 16.  
*Cerceris lata*. Curt. Brit. Ent. vol. 6. fol. 269.

Head black, very coarsely punctured, pubescent; antennæ black, the second joint beneath, the third entirely, and the fourth and fifth beneath, ferruginous; a spot on each side behind the posterior margin of the eyes, another large one within their orbits in front, a semicircular one in the centre of the clypeus, and a smaller one on each side of it, all yellow; the mandibles black.

The thorax black, coarsely punctured; a triangle at the base of the metathorax longitudinally striated, with a deep central incisure, beyond the triangle it is rugose; the collar with a transverse line on each side, the tegulæ in front, the post-dorsolum, and an ovate vertical spot on each side of the metathorax, all yellow, the latter sometimes wanting; the base of the tegulæ piceous; the wings slightly fuscous, with their exterior margin and edge darker, the nervures testaceous, with the post-costal black; the legs yellow testaceous, the anterior femora below and behind, the base of the intermediate, and the base and superior surface of the posterior pairs, black; the apical joints of the posterior tarsi piceous; the anterior tarsi strongly ciliated, and all the tibiæ very spinose.

The abdomen black, deeply punctured; a small yellow spot on each side of the first segment, and a broad yellow band on the margins of the four following—that on the second deeply emarginate in front, the two following slightly attenuated in the middle, and the fourth waved in front—the lateral carinæ on the sixth segment parallel, the intermediate surface rugose and opaque, and slightly produced at the apex ♀.

The ♂ differs in having the entire face yellow, as well as the

carina between the base of the antennæ, that colour extending in a curve to the upper part of the interior orbits of the eyes; the first joint of the antennæ yellow beneath, the rest fulvous and above piceous; the legs yellow, with the anterior coxæ, trochanters, and base of the thighs above, the intermediate coxæ, the trochanters above and the base of the thighs above, the upper part of the posterior coxæ and trochanters, and a ring at the apex of their thighs, all black; the posterior tibiæ with a piceous stain at their apex, and their tarsi, excepting the first joint, also piceous; the abdomen with an additional yellow band on the sixth segment, those of the third and fourth, continuing on the margin of the ventral segment, sometimes interrupted; the intermediate space between the carinæ of the anal segment deeply punctured and shining.

♂ ♀ in my own and other Cabinets.

††† The *Philanthus quinquecinctus* of Panzer is certainly the ♂ of his *Ph. interruptus*, although Van der Linden considers it a ♂ of this species, which cannot be the case, from its posterior tibiæ and all the tarsi being yellow; and the black mark of the upper portion of the intermediate femora also extends further towards the knee in the present species, besides his figure exactly resembles all the ♂ of the *C. interrupta* I have ever captured. The present species is very abundant at Hampstead, and at Charlton, near Woolwich; the ♀ preys on a small *Curculio* of the genus *Strophosomus*: at Hampstead it makes its burrows on the sandy flat above the Vale of Health, on the spot where a short time before its appearance the *Panurgus ursinus* abounds. It is a powerful insect; notwithstanding which, and even the hardness of the integument of its prey, I have never found it to sting, although I have captured many hundreds with my fingers; in fact, I have never observed the genus *Cerceris* to make use of that organ. It appears to be widely distributed over the country.

## SP. 2. LABIATA. Fab.

*niger, flavo-maculatus, clypei divisione mediâ allevatâ, porrectâque, abdomine fasciis quinque flavis, pedibus ferrugineis* ♀.  
♂ *clypeo plano, pedibus flavis.*

length 5—7 lines.

V. d. Lind. pt. 2. 111. 5. ♂. ♀.

*Crabro labiatus.* Fab. E. S. 2. 296. 11. ♀.

—— *cunicularis.* Schr. F. B. 2. 334. 2181. ♀.

—— *bidens.* Schr. F. B. 2. 335. 2183.

*Philanthus labiatus.* Panz. F. G. 63. 16; Fab. Piez. 303. 10. ♀.

—— *arenarius.* Panz. F. G. 46. 2. ♂.

*Cerceris nasuta.* Latr. Gen. Crust. et Insect. 4. 94. ♂. ♀.

Head black, deeply punctured; the central lobe of the clypeus fornicate, projecting from its base, emarginate in front, and at its base a longitudinal carina extending backwards between the basal joints of the antennæ; the antennæ black, with the scape beneath yellow, and the six following joints ferruginous beneath, the second, third, and fourth joints more or less so above; a large ovate spot on each side of the head behind, another, semi-circular, within the margin of the eyes in front, and the whole of the porrect plate above, yellow, with the exception of the anterior edge; the mandibles yellow, with their apex piceous.

The thorax black, punctured, with (sometimes) a short triangular smooth space running backwards from the centre of the base of the dorsolum towards its disc, where it terminates; the metathorax rugose, with the triangle at its base longitudinally striated; a large yellow spot on each side of the collar, a transverse line on the post-dorsolum, and a large ovate spot placed vertically (sometimes wanting) of the same colour on each side of the metathorax; the tegulæ testaceous; the wings fuscous; the legs fulvous or ferruginous, with the coxæ and extreme base of the femora black.

The abdomen black, punctured, with a broad yellow band on each of the segments but the last, the first slightly interrupted, the rest attenuated in the centre, most so in the second, and the last nearly entire; the venter with a subtriangular yellow spot

on each side of the second, third, and fourth segments (sometimes wanting); the intermediate carinæ of the anal segment parallel, and the surface between them punctured and opaque ♀.

The ♂ differs in having the lateral lobes of the clypeus with a rigid fringe of golden setæ, and the central one obsolete trifid; all the joints of the antennæ ferruginous beneath, excepting the scape, which is yellow, and the apical joints entirely ferruginous; the face below the antennæ yellow, as well as on each side at the inner orbits of the eyes extending half-way to the vertex; the clypeus entirely yellow; the yellow spot behind the eyes, and the spot on each side of the metathorax, wanting; the tegulæ yellow; the coxæ with yellow markings, and the base of the posterior femora not black, but with black spots towards the apex within; the abdomen with a narrow band on each of the segments, excepting the first, which has a small yellow spot on each side, the bands of the rest much attenuated in the middle, and the penultimate ventral segment with a strong denticiform process on each side.

♂ ♀ in the Cabinet of the British  
Museum; ♀ in Mr. Curtis's and  
Mr. Stephens's.

††† Never having been fortunate enough to fall in with this species, I do not possess a specimen, much less a series, by which alone it is possible to determine any insect's range of variation. It is extremely like the following, the ♂ especially; and this sex appears to want a sufficient character to separate it from the same sex of the following, which I have no doubt would present itself. The ♀ seems to be distinguishable from the following, solely by the superior elevation of the central lobe of the clypeus, which is entirely raised up and holds only by its base. It is also generally larger than the largest I have ever met with of the following species. I cannot ascertain its distinct locality.

## SP. 3. INTERRUPTA. Panz.

*niger, flavo-maculatus, clypei divisione mediâ convexâ anticè tantùm excavatâ, abdomine fasciis quinque flavis, pedibus ferrugineis.*

♂ *clypeo plano, pedibus flavis.*

length  $3\frac{1}{2}$ —5 lines.

V. d. Lind. pt. 2. 113. 7.

? *Philanthus interruptus*. Panz. F. G. 63. 17. ♀.

———— *quinquecinctus*. Panz. F. G. 63. 12. (the figure without the references) ♂.

The head black, punctured; the antennæ with the scape entirely black or piceous in front only, the second black above, and the remainder fuscous above, and all ferruginous beneath, with the terminal one also above; the central lobe of the clypeus very convex and excavated in front, above yellow, as also a semicircular mark on each side within the eyes and another behind them above; the mandibles with their base yellow and apex piceous.

The thorax black, punctured, shining; the triangular space at the base of the metathorax longitudinally striated; a large dot on each side of the collar, the tegulæ, and post-dorsolum, all yellow; the wings subfuscous, darker towards the apex; the stigma and nervures testaceous; the legs flavo-ferruginous, with the coxæ, trochanters, and extreme base of the two anterior pairs of femora, and sometimes of the posterior ones, black.

The abdomen black, punctured, and shining; with a yellow band on the margin of each of the five first segments, either all entire or all interrupted; the anal segment entirely black and the central carinæ widest apart at their base, and the plane between them punctured and opaque ♀.

The ♂ differs in having the face beneath the antennæ, the inner orbits of the eyes, the carina between the antennæ, with the first joint of the latter in front, all yellow; the flagellum of the antennæ black above, the penultimate joint produced above at its apex, and the last slightly lunulate; the legs yellow; the



anterior coxæ and trochanters beneath, and the intermediate and posterior ones, entirely yellow; a black spot above towards the knees of the posterior femora; and the abdomen with an additional yellow band.

♂ ♀ in my own and Mr. F. Smith's  
Collections.

†† The only doubt which attaches to this being Panzer's insect is, that he says the clypeus is entirely black, and that he figures the posterior coxæ and trochanters of the same colour as the rest of the legs. I have not the least doubt that his *Phil. quinquecinctus* is the ♂ of it. Van der Linden therefore is incorrect in referring it to the *Cerceris arenarius*, which it cannot be, from the colour of the posterior tibiæ. The ♀ of the present insect differs very slightly from the preceding, somewhat in size, but especially in the degree of the elevation of the central lobe of the clypeus. It occurs in abundance at Birchwood, in Kent, where I took it this summer.

SP. 4. ORNATA. Fab.

*niger, flavo-maculatus, thorace interdum toto nigro, abdomine fasciis tribus flavis.*

length  $3\frac{3}{4}$ — $6\frac{1}{2}$  lines.

Latr. Hist. 13. 317. 3; Nouv. Dict. ed. 2. 5. 512; Walck. sur le genre Halicte, 80; V. d. Lind. pt. 2. 117. 13.

*Philanthus ornatus.* Fab. S. E. 2. 290. 6; Piez. 304. 11; Panz. F. G. 63. 10; Revis. 2. 174. (excluding the reference to *Ph. emarginatus*).

*Crabro variabilis.* Schr. F. Boi. 2. 339. 2190.

*Philanthus semicinctus.* Panz. 47. 24. ♂.

Head black, deeply punctured, pubescent; the whole of the face below the antennæ, extending on each side above them within the inner orbits of the eyes, yellow; the antennæ black; the scape in front yellow, and the clavolet beneath fuscous (some-

times, at the base only); the clypeus yellow; the mandibles yellow, with their apex piceous.

The thorax black, coarsely punctured, pubescent; two abbreviated parallel longitudinal lines at the base of the dorsolum in the centre; the triangle at the base of the metathorax nearly smooth, the centre having a longitudinal impressed line and the edges of the sides longitudinally striate, beyond which it is very coarsely punctured; a spot on each side of the collar (generally wanting), the tegulæ, and a transverse line on the post-dorsolum (frequently wanting), all yellow; the wings slightly coloured, their anterior margin and apical edge more deeply so; the legs yellow, with the femora black, the anterior pair of which are yellow in front, their knees ferruginous, the intermediate pair yellow in front towards the knees, and the apical joints of the tarsi also ferruginous; the anterior tarsi strongly ciliated, and all the tibiæ very spinose.

The abdomen black, coarsely punctured; a yellow band at the base of the second segment, abbreviated at the sides, frequently emarginate behind, and frequently a minute dot on each side at the margin of this segment, a second generally occupying the whole of the third segment, frequently deeply emarginate in front, and a third entire on the fifth segment, very rarely emarginate in front, frequently an irregular mark on each side of the fourth segment, which extremely rarely forms an entire band; generally a triangular spot or interrupted band on the third ventral segment, and when the fourth is entirely yellow above, the ventral segment has also a yellow band; the space between the central longitudinal carinæ of the anal segment, which are widest apart at their base, punctured and opaque ♀.

The ♂ differs in having the mandibles generally black or with merely a yellow spot at their base, a yellow band on both the fifth and sixth segments, the former emarginate in front and sometimes reduced to merely a small mark on each side, that on the sixth always entire; the intermediate carinæ of the anal segment more nearly parallel with the intermediate space, deeply

punctured and shining, and having frequently a yellow spot at its base.

♂ ♀ in my own and other Collections.

††† The variation of colour in this species very naturally leads me to the consideration of the colouring of these insects generally, which involves a question of considerable importance and deep interest in Natural History, namely, that of species and varieties. Are we, for instance, still to consider those individuals as types which accident first threw in the way of being described? or should we take Nature's types—her most perfect specimens, those most thoroughly organised or intensely coloured—as the true types, and sink the rest into varieties? I have chosen a middle path in the present work, and introduced the range of variety into the description of the species, for frequently a half a dozen alphabets would not enumerate the shades of difference, which vary in almost every individual; yet which, where it is possible to fall upon the objects and collect at pleasure, are found upon a proper selection of specimens to gradate so much into each other that no separation can be made. This I have experienced to be the case always in the present tribe, and would it not probably happen in every other branch of Natural History, where similar opportunities for collecting numbers occurred? But to return to my original object—the colouring of these insects—I may observe that the degree of colour of the abdomen is found to affect the colouring of the thorax and of the legs; for instance, in the present species when there are large yellow markings on the fourth segment, there is a yellow spot on each side of the collar and a transverse line of yellow on the post-dorsolum. And in *Gorytes mystaceus*, in the variety *campestris* of Linné, which comprises those specimens that

have a transverse band on the fourth segment of the abdomen, generally also accompanied by the other bands being more strongly coloured, the legs likewise participate and incline more to yellow or are marked with yellow, whereas they are usually red; and I could adduce very many other instances. It is singular, that the intensity affects only the thorax, and rarely the head; for as the legs originate from the thorax, I may here consider them as forming a part of it. Those parts of the thorax usually affected are the collar, tubercles, scutellum, and post-dorsolum, with occasionally the metathorax. What determines the colour to these parts? I have no theory to propound, for theorising in this science has been converted into the *alias* of dogmatising which, without a solecism, may fairly be considered the 'Romance of Natural History.' Does it arise from a superabundant secretion of the colouring matter in the pupa state dependant upon the food of the larva, yet not in its quantity but quality, for the most highly coloured are not always the largest; and this superabundance, after supplying the abdomen as far as the specific limitations allow, finds vent at those parts of the thorax? Or, on a defective secretion, does specific identity better bear its deficiency on the thorax than it would on the abdomen? By specific identity I allude to the facility of our discriminating them, and not to sexual discrimination; for evidently an instinct and not sight determines that impulse to its object. And this view, I think, I may indulge, for we are allowed to consider the creation as subjected to man's intellect, and for the exercise of his faculties, which without some clue would frequently be at fault: therefore may we not thus, even in the trivial circumstance of colour, trace a proof of design? I do not hereby assert that structure would not present more permanent characters, but in such small

objects it is not so obvious, and from the former sufficing it is overlooked.

To return from this digression, I cannot with Van der Linden consider the *Philanthus emarginatus* of Panzer as a variety of the present species, for he figures it with the legs entirely yellow, and also describes it so, with the exception of the apex of the posterior tibiæ; nor does Panzer's *Phil. sabulosus* belong here, as will be seen in my sixth species. I have found this very beautiful insect in great abundance in Battersea Fields, where it forms its burrows in the beaten pathways of a market garden, and supplies its young with the *Halictus rubicundus*, *H. fulvoincinctus*, and *H. leucozonius*. I have also found it equally abundant in a sandy lane near Green Street Green, in Kent, where occasionally very highly coloured specimens occur.

SP. 5. QUADRICINCTA. Panz.

*niger, thorace maculato, abdomine fasciis quatuor flavis continuis, intermediis angustioribus.*

length  $3\frac{3}{4}$ — $5\frac{1}{2}$  lines.

Latr. Hist. 13. 316. 2. ♀; V. d. Lind. pt. 2. 114. 8. ♂ ♀.

*Philanthus quadricinctus.* Panz. F. G. 63. 15. ♀.

*Cerceris fasciata.* Spin. 1. 97. 2. ♀.

Head black, deeply punctured, pubescent; the antennæ black; the scape yellow, with a black spot above, and the remainder fulvous beneath; the carina between the basal joints of the antennæ, a large ovate spot on the margin of the anterior orbits of the eyes, the clypeus, which has its central lobe slightly fornicate, the mandibles at their base, all yellow.

Thorax black, deeply punctured, pubescent; a triangle at the base of the metathorax rather irregularly longitudinally striate, beyond which it is rugose; a transverse ovate spot on each side of the collar, the tegulæ, the post-dorsolum, and a large ovate

vertical spot on each side of the metathorax (sometimes wanting), all yellow; the wings slightly coloured, the nervures black, the stigma testaceous, the anterior margin of the wing, and towards the apex, very dark; the legs yellow, with the coxæ, trochanters, and base of the thighs of the anterior and intermediate, and the coxæ and trochanters of the posterior, and a ring at the apex of their femora, all black, the four last joints of the intermediate tarsi, and the whole posterior, ferruginous or piceous, the latter paler at their base.

The abdomen black, punctured, pubescent; a yellow band on the second to the fifth segments, that on the second and the fifth occupying the whole segment, the two intermediate ones attenuated in the middle, the second, third, and fourth continued on the margin of the ventral segment, the two last sometimes interrupted; the longitudinal carinæ upon the apical segment more distant apart at their base than at their apex, and the intermediate space rugose and opaque ♀.

I am unacquainted with the ♂.

♀ in my own Collection.

†.†.† Several specimens of this species were taken by Mr. Harding near Faversham, in Kent, in the year 1834. I know no other locality for it. The next is probably its ♂, but of which I am not sure.

SP. 6. *SABULOSA*. Panz.

*niger, thorace maculato, abdomine fasciis quinque, pedibusque flavis, tarsis ferrugineis.*

length  $4\frac{1}{2}$  lines.

*Philanthus sabulosus*. Panz. F. G. 63. 13.

Head black, pubescent, punctured; the face entirely yellow; the surface of the carina being also of that colour, which gives a trifid marking towards the antennæ, the lateral divisions occupying the inner orbits of the eyes; the antennæ with the scape

entirely yellow, the pedicel black, and the following joints ferruginous.

The thorax black, punctured; the triangle at the base of the metathorax with a profound longitudinal impression in its centre, whence oblique striæ diverge laterally; the collar with a spot on each side, the scutellum with sometimes an interrupted line, the post-dorsolum with a transverse line, and a spot on each side of the metathorax (sometimes wanting), as also the tegulæ, all yellow; the wings slightly coloured, with their margins darker; the legs yellow, their coxæ black, and the posterior knees and tarsi ferruginous.

The abdomen black, with a yellow band on the second to the sixth segment, that on the second occupying its anterior portion, and being emarginate on its posterior edge (sometimes entire), and having a small black spot on each side, those on the second and sixth generally occupying the entire segment, and the fourth and fifth much attenuated in the middle, and that on the third occasionally emarginate in front ♂.

The ♀ I am unacquainted with.

♂ in the Collection of the  
British Museum.

††† Panzer's insect is evidently a slight variety of this, and it is so very different from the ♂ of *C. ornata*, that I am surprised Van der Linden should refer it to that species. I am unacquainted with the ♀, but I think it very probably may be the *C. quadricincta*, the species preceding this.

#### GENUS XXXV.—PHILANTHUS. Fab.

HEAD large, wider than the thorax, suborbiculate; *eyes* lateral, emarginate; *antennæ* clavate, and very thick in the middle (not so stout in the ♂), not approximate, inserted in the middle of the face within a depression, thus forming an ele-

vation between them; the *clypeus* trilobate, the central lobe being subrotund, and slightly emarginate in front; the *sternata* placed close together at the vertex; the *labrum* concealed; the *mandibles* unidentate, acuminate. The **THORAX** ovate; the *collar* transverse, linear, the lateral edges angular; the *scutellum* transverse; the *metathorax* obtuse; *the superior wings with one marginal cell and three submarginal cells, the marginal being very long and narrow, the second and third submarginal cells narrowed towards the marginal, and each receiving a recurrent nervure, and the third distant from the apex of the wing*; the *legs* moderately long, and somewhat stout; the anterior *tarsi* strongly ciliated, and the posterior *tibiæ* spinose. The **ABDOMEN** ovate; the margins of the segments depressed, and the apical segment obtuse.

Type, *Phil. coronatus*. F.

††† The name is derived from φιλέω, *to love*, and ανθος, *flower*. Fabricius first established this genus in his '*Entomologia Systematica*,' in 1793, and included in it, even in his last work on the order, the insects which Latreille had separated by the name of *Cerceris*. Jurine, by mistaking Latreille's type, considered the present *Cerceres* as the *Philanthi*, and proposed for the latter the name of *Simblephilus*, which necessarily becomes merely a synonyme.

SP. 1. TRIANGULUM. Fab.

*niger, abdomine flavo, segmentis triangulo dorsali nigro.*

length 6—7 lines.

Fab. E. S. 2. 289. 2; Piez. 302. 4; Dumeril, Consid. pt. 59. fig. 6 & 7.

*Vespa triangulum*. Fab. S. E. 373. 49; Sp. 1. 469. 68; Mant. 294. 82;

Villers, 3. 276. 25; Christ. 136; Oliv. Ency. Méth. 6. 692. 116.

*Vespa limbata*. Olivier, 6. 693. 118.

*Crabro androgynus*. Rossi, F. E. Mant. 1. 138. 305.



*Philanthus pictus*. Panz. F. S. 43. 23 ♂ ; Fab. Piez. 302. 5.

----- *apivorus*. Latr. Fourmis, 317. pl. 12. f. 2 ; Hist. 13. 314. 2 ;

Nouv. Dict. ed. 2. 25. 523.

*Simplephilus diadema*. Jurine, pl. 10. genus 18.

*Philanthus androgynus*. Curt. Brit. Ent. vol. 6. pt. 273. ♀.

Head black, punctured ; the face and clypeus yellow ; the mandibles rufescent, their apex piceous ; the head having behind a large fulvous mark, which rises upwards towards the occiput.

The thorax black, punctured, pubescent ; the collar, the tubercles, the tegulæ, and a transverse line upon the post-dorsolum, yellow ; the metathorax very finely punctured, with a longitudinal central impressed line at its base ; the wings slightly coloured ; the legs yellow, the anterior pair inclining to fuscous ; the base of all the femora black ; the anterior tarsi strongly ciliated, and all the tibiæ spinose.

The abdomen yellow, with a large triangular black spot in the centre of each of the segments, largest in the second and third ♀.

The ♂ differs in having the antennæ more slender, a tricuspidate or trident-shaped yellow mark in the centre of the face, the base attached to the base of the clypeus ; the spot behind the eyes at the back of the head yellow ; a couple of small yellow spots on the scutellum ; all the legs of a bright yellow, excepting the base of the femora, which are as in the ♀ ; the abdomen has the bands on the third, fourth, and fifth segments very much attenuated in front.

♂ in my own Collection ;

♀ in that of Mr. Curtis.

††† Mr. Curtis first introduced this beautiful insect to our Fauna ; he found it at the back of the Isle of Wight, and also near Heron Court in Hampshire. This was some years ago, but neither himself nor any body else have been able to find it since, although very diligent search has been made. I suspect it is extremely local ; but when

its *metröpolis* shall be discovered it will be taken in abundance, which is the case wherever it occurs on the continent. A new locality was found this year for it at Snaresbrook in Epping Forest, Essex, where Mr. Harding captured the only ♂ that has yet occurred, and very kindly presented it to my Collection, all those taken by Mr. Curtis having been ♀. It is recorded to prey upon species of the genus *Halictus*; my ♂ was caught on a thistle-head, in company with a *Conops*, and upon visiting the spot, which I lost no time in doing, it appeared to abound with very many *Halicti*, but the weather being gusty and coldish (early in September), I was unsuccessful, but hope next year to discover its habitation. I had the additional pleasure of receiving this beautiful insect alive in a pill-box; and on calling upon my friend Mr. Waterhouse, we observed it for some time under a large glass: upon offering to touch it, it opened its mandibles, and lifted up its head and one of its fore-legs in a threatening attitude; I expect therefore that it is a very bold insect. Few English Entomologists have had the pleasure of seeing this pretty creature alive; but I hope when this much neglected tribe shall be more studied and collected, which it is my object to promote by publishing this 'Essay,' that very many new and beautiful insects will be discovered.

## APPENDIX.



THE first seven sheets of this work having been printed as long back as August, 1835, it will necessarily happen that new observations have been made, and new localities found, for many of the species previously described, and which I will here record, referring to the pages where they would most appropriately come.

P. 17. In the 'Transactions of the Entomological Society,' pt. iii. will be found my paper upon the theory of the neuration of the superior wing of the Hymenoptera, with a table containing a comparative view of the nomenclature of the several authors who have written upon the subject.

P. 32. *MUTILLA EPHIPIUM*. In a field near the Thames at Chiswick, the ♀ in abundance, by my friend Mr. W. Pickering, who pointed out the spot to me.

P. 34. *MYRMOSA MELANOCEPHALA* ♂. In abundance at Birchwood; varying from  $2\frac{1}{2}$ —4 lines.

P. 35. *METHOCA ICHNEUMONIDES* ♂ (*Tengyra Sanvitali*. Lat.). A single specimen of the ♂, which I had the pleasure of presenting to my kind friend the Rev. G. T.

Rudd; a couple of specimens have also been taken by Mr. Dale in Dorsetshire.

P. 40. *TIPHIA FEMORATA*. I captured both sexes, frequently *in copulá*, of this species, and thus confirm what I there say on the authority of Messrs. Davis and Newman. It varies very much in size, for I captured females at Birchwood of  $2\frac{3}{4}$ — $5\frac{1}{2}$  lines in length, and a specimen of this sex 3 lines long, in which the truncation of the metathorax and first segment of the abdomen are red.

P. 46. *SAPYGA CLAVICORNIS* ♂ ♀. Have occurred in abundance near Nottingham and near Birmingham.

P. 54. *POMPILUS PETIOLATUS*. At Darenth; the ♂ abundant.

P. 56. *POMPILUS PUNCTUM*. A single specimen in the Cabinet of the British Museum, which I overlooked when I described the insects there.

P. 57. *POMPILUS HYALINATUS*. Several specimens on a currant-bush in Battersea Fields infested by an *Aphis*, as well as on the umbels of the *Pastinacca*; the insect is excessively rapid in its flight. Amongst them one extraordinary specimen, in which the first transverse cubital nervure is wanting on both sides, and another specimen in which the second transverse cubital extends only half way from the cubital nervure to the radial; the posterior femora occasionally black.

P. 66. *POMPILUS AFFINIS*. By my friend Mr. F. Smith, at Blackwater, Hants.

P. 67. *POMPILUS EXALTATUS*. The red-legged variety at Turnham Green, Middlesex; Green Street Green and Birchwood, Kent—both sexes. I am strongly inclined to consider this variety a good species; for now that I possess a series, I can observe some difference of structure. I therefore propose the name of *AGILIS* for it—it varies in size from  $2\frac{1}{2}$ — $3\frac{3}{4}$  lines—a small specimen of the ♂ has the third submarginal cell petiolated on both sides.

P. 68. *POMPILUS FASCIATELLUS*. In Battersea Fields and Hackney Marshes; but nothing has yet occurred which with any probability may be considered its ♂.

P. 70. *CEROPALES VARIEGATA*. On Parley Heath, in the autumn of last year (1835), the Rev. G. T. Rudd confirmed Dr. Leach's previous capture, by taking a single specimen of each of the sexes. The ♂ agrees with the ♀ in colouring, and is smaller in size.

P. 81. *MISCUS CAMPESTRIS*. Mr. Curtis has figured this species as an *Ammophila*, and divides it only sectionally from that genus; but I see no reason for altering my opinion as to the value of its generic separation. I have not yet discovered a true *Ammophila* with the cell petiolated, and I have captured many hundreds for the purpose of ascertaining, and I possess also an extensive series of foreign specimens, both European and exotic, in which this formation never occurs; and, besides, the *M. campestris* has never yet been found with the wing not petiolated. Mr. Curtis's figure is at folio 604 of his beautiful work. Early in the year abundant at Blackwater in Hampshire.

P. 83. Mr. Stephens informs me that the *Sphex flavi-*

*pennis* was purchased by him of Dr. Lindley with his Collection.

P. 98. *ASTATA BOOPS*. This insect has been found at Blackwater in Hampshire; it thus appears to be widely distributed.

P. 103. *NYSSON TRIMACULATUS*. Several specimens in Battersea Fields, on a currant-bush. The ♀ stings severely. A specimen of this sex, which I took, has the base of the first segment red. I have a ♂ in which the third cell is also petiolated, and on the right side it has three recurrent nervures, the additional one intervening between the other two, and connected with the second true recurrent by a transverse nervure, about half-way between the submarginal cells and the subdiscoïdal nervure. These occasional divarications must be considered as monstrosities; they are of too rare occurrence in this tribe to militate against the alary system.

P. 117. *TRYPOXYLON FIGULUS*. I have again taken this insect with a spider, this year (1836).

P. 118. Under all the insects from *TRYPOXYLON CLAVICERUM*, my observations are recorded up to the present period; it was only thus far that was in type when I recently resumed printing the work.

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Synonymy, restriction of ....	viii	<i>tricincta</i> . Vill. ....	203
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Tachytes. Panz. ....	88	Wings, observations on the ....	16
<i>pompiliformis</i> . Panz. ..	89	theory of the neuraction of	
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Tegulæ .....	15	<i>Xylecus</i> . Shuck. ....	188
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Thorax, observations on the ....	14		

LONDON :  
C. ROWORTH AND SONS, BELL YARD,  
TEMPLE BAR.

## DESCRIPTION OF THE PLATES.



PL. 1. FIG. 1. The colour of the nervures is always to be understood as limited to that upon which it is found, showing the extent of its course, and consequently has no reference to any other coloured in the same manner: at p. 17 will be found a fuller explanation.

- a. The costal nervure (*black*).
  - b. The apical margin (*yellow*).
  - c. The posterior margin (*black*).
  - d. The post-costal nervure (*yellow*).
  - e. The externo-medial nervure (*red*).
  - f. The anal nervure (*blue*).
  - g. The transverso-medial nervure (*yellow*).
  - h. The radial nervure (*red*).
  - i. The cubital nervure (*green*).
  - k. The discoïdal nervure (*green*).
  - l. The subdiscoïdal nervure (*blue*).
  - m. The transverso-cubital nervures (*blue*).
  - n. The recurrent nervures (*red*).
  - s. The stigma—the whole space here enclosed is the stigma (*green*).
1. The costal cell.
  2. The externo-medial cell.
  3. The interno-medial cell.
  4. The anal cell.
  5. The marginal cell.

DESCRIPTION OF THE PLATES.

6. The first cubital or submarginal cell.
7. The second ..
8. The third ..
9. The fourth ..
10. The first discoïdal cell.
11. The second ..
12. The third ..
13. The first apical cell.
14. The second ..

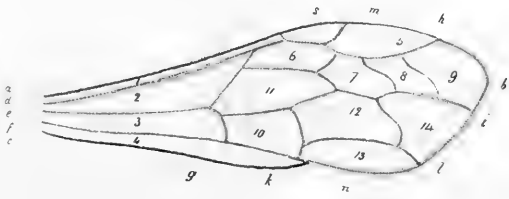
FIG. 2. The dotted parts, upon this figure, show the portion of the wing, which has hitherto furnished characters.

In PLATES 2, 3, and 4, I may observe, that the wings drawn are those of the types, excepting in PL. 3, No. 19, where the *Oxybelus uniglumis* has been used, the type not being British; as also in PL. 4, No. 29, where the *Alyson lunicornis* has been figured, and at Fig. 35 of the same plate, our species, the *Philanthus triangulum*, has been used, their types likewise being foreign.

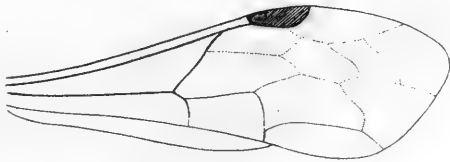
PL. 2. FIG. 6. *Pompilus*. It must be remembered, that several of the species of this genus considerably differ in the neuration of their wings from the type, for in some the third submarginal cell is much wider towards the marginal, even sometimes nearly square, and in the *P. niger* it is also occasionally petiolated. I repeat this here, in case, on referring to the plates, the observations under the genera should not be also looked to, but which, however, is always desirable.



1



2







1 *Mutilla*



2 *Myrmomasa*



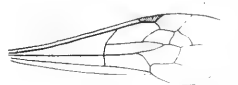
3 *Methoca*



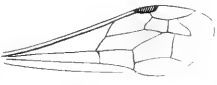
4 *Tiphia*



5 *Sapyga*



6 *Tom, rufus*



7 *Ceropales*



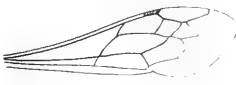
8 *Aporus*



9 *Ammophila*



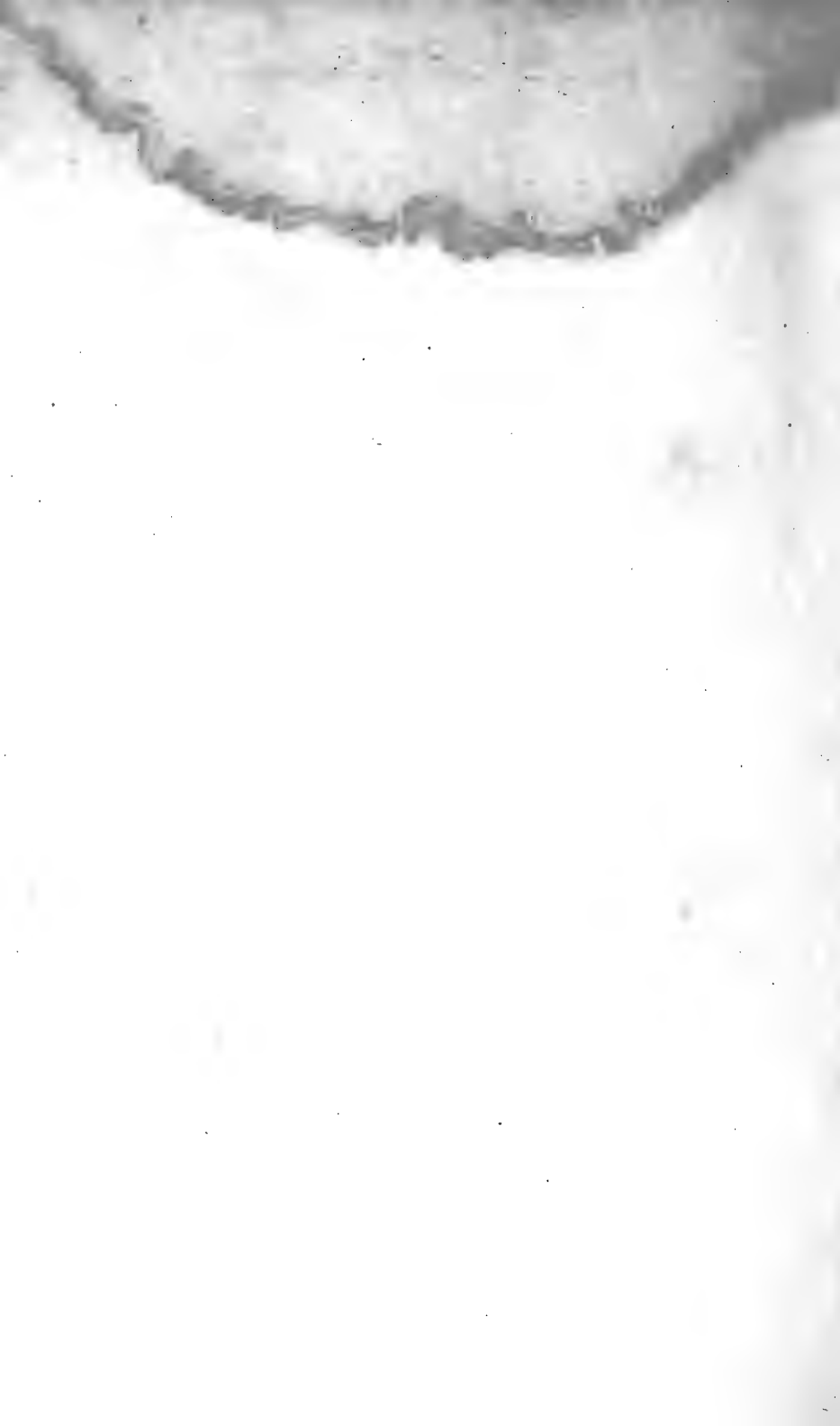
10 *Mescus*



11 *Sphex*



12 *Dolichurus*







13 Larva



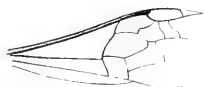
14 Trexyles



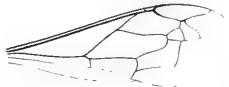
15 Alusophus



16 Dinetus



17 Astata



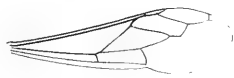
18 Azygom



19 Oxybelus



20 Stryphon



21 Crabro



22 Sigmus



23 Celia



24 Diodontus



25 *Prpsalacus*



26 *Pempitredon*



26\* *Ceratophorus*



27 *Cemonus*



28 *Mellinus*



29 *Ulyson*



30 *Gorytes*



31 *Arpacius*



32 *Psen*



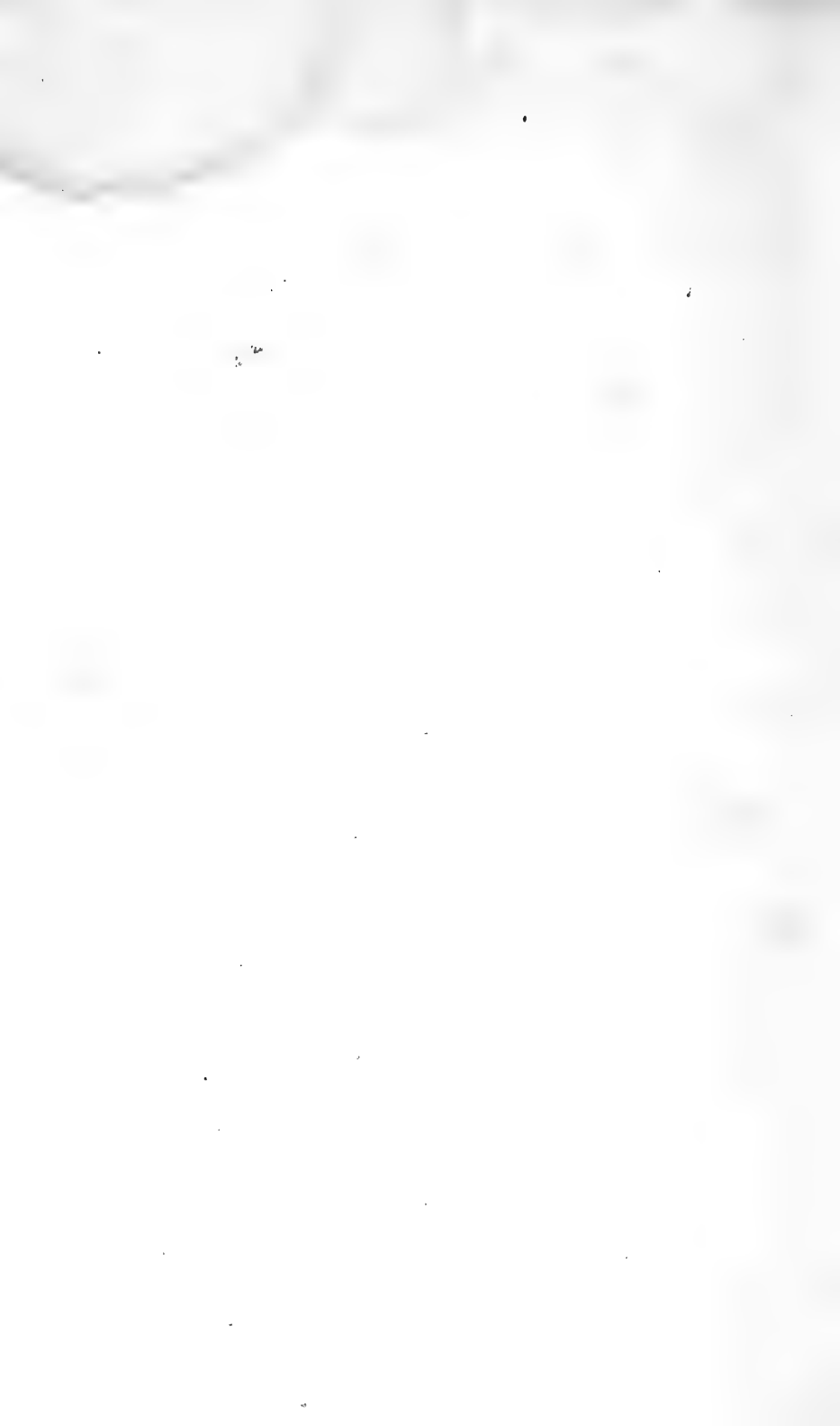
33 *Mimesa*



34 *Cercerus*



35 *Philanthus*





Order—HYMENOPTERA.

DIVISION II.  
ACULEATA. *Latr.*

TRIBE I.  
HETEROGYNA. *Latr.*

FAM. 1.  
FORMICIDÆ. *Lea.*

FAM. 2.  
MUTILLIDÆ. *Lea.*

GENUS 1.  
MUTILLA. *Lin.*  
1. Europæa. *Lin.*

♂.  
♀.  
2. calva. *Vill.*

♂.  
♀.

GENUS 2.  
MYRMOSA. *Latr.*  
1. melanocephala. *Fab.*

♂.  
♀.

GENUS 3.  
METHOCA. *Latr.*  
1. ichneumonides. *Latr.*

♂.  
♀.

TRIBE II.  
FOSSORES. *Latr.*

FAM. 1.  
SCOLIADÆ. *Lea.*

GENUS 1.  
TIPHIA. *Fab.*  
1. femorata. *Fab.*

♂.  
♀.

2. morio. *Fab.*

♂.  
♀.

3. minuta. *V. d. Lind.*

♂.  
♀.

FAM. 2.  
SAPYRIDÆ. *Lea.*

GENUS 1.  
SAPYGA. *Latr.*  
1. punctata. *Kl.*

♂.  
♀.

2. clavicornis. *Lin.*

♂.  
♀.

FAM. 3.  
POMPILIDÆ. *Lea.*

GENUS 1.  
POMPILUS. *Fab.*  
1 pulcher. *Fab.*

♂.  
♀.

2. niger. *Fab.*

♂.  
♀.

3. bifasciatus. *Fab.*

♂.  
♀.

4. variegatus. *Lin.*

♂.  
♀.

5. petiolatus. *V. d. L.*

♂.  
♀.

6. cinctellus. *Spin.*

♂.  
♀.

7. punctum. *Fab.*

♂.  
♀.

8. hyalinatus. *Fab.*

♂.  
♀.

9. rufipes. *Lin.*

♂.  
♀.

10. notatus. *Rossi.*

♂.  
♀.

11. sericatus. *Shuck.*

♂.  
♀.

12. viaticus. *Lin.*

♂.  
♀.

13. gibbus. *Lin.*

♂.  
♀.

14. crassicornis. *Shuck.*

♂.  
♀.

15. fuscus. *Lin.*

♂.  
♀.

16. affinis. *V. d. Lind.*

♂.  
♀.

17. exaltatus. *Fab.*

♂.  
♀.

18. agilis. *Shuck.*

♂.  
♀.

19. fasciatellus. *Spin.*

♂.  
♀.

GENUS 2.

CEROPALES. *Latr.*

1. maculata. *Fab.*

♂.  
♀.

2. variegata. *Fab.*

♂.  
♀.

GENUS 3.

APORUS. *Spin.*

1. bicolor. *Spin.*

♂.  
♀.

FAM. 4.

SPHECIDÆ. *Lea.*

GENUS 1.

AMMOPHILA. *Kir.*

1. sabulosa. *Lin.*

♂.  
♀.

2. hirsuta. *Scop.*

♂.  
♀.

3. affinis. *Kir.*

♂.  
♀.

GENUS 2.

MISCUS. *Jur.*

1. campestris. *Latr.*

♂.  
♀.

GENUS 3.

SPHEX. *Auct.*

1. flavipennis. *Fab.*

♂.  
♀.

GENUS 4.

DOLICHURUS. *Latr.*

1. corniculatus. *Spin.*

♂.  
♀.

FAM. 5.

LARRIDÆ. *Lea.*

GENUS 1.

LARRA. *Fab.*

1. anathema. *Rossi.*

♂.  
♀.

GENUS 2.

TACHYTES. *Panz.*

1. pompiliformis. *Panz.*

♂.  
♀.

2. unicolor. *Panz.*

♂.  
♀.

GENUS 3.

MISCOPHUS. *Jur.*

1. bicolor. *Jur.*

♂.  
♀.

GENUS 4.

DINETUS. *Jur.*

1. pictus. *Fab.*

♂.  
♀.

FAM. 6.

NYSSONIDÆ. *Lea.*

GENUS 1.

ASTATA. *Latr.*

1. boops. *Schr.*

♂.  
♀.

GENUS 2.

NYSSON. *Latr.*

1. spinosus. *Fab.*

♂.  
♀.

2. interruptus. *Latr.*

♂.  
♀.

3. trimaculatus. *Rossi.*

♂.  
♀.

4. guttatus. *Oliv.*

♂.  
♀.

5. dimidiatus. *Jur.*

♂.  
♀.

GENUS 3.

OXYBELUS. *Latr.*

1. uniglumis. *Lin.*

♂.  
♀.

2. ferox. *Shuck.*

♂.  
♀.

3. nigripes. *Oliv.*

♂.  
♀.

4. bellicosus. *Oliv.*

♂.  
♀.

5. argentatus. *Curt.*

♂.  
♀.

6. 14-guttatus. *Oliv.*

♂.  
♀.

7. nigricornis. *Shuck.*

♂.  
♀.

8. nigroæneus. *Shuck.*

♂.  
♀.

FAM. 7.

CRABRONIDÆ. *Lea.*

GENUS 1.

TRYPOXYLON. *Latr.*

1. *figulus. Lin.*

♂.  
♀.

2. *aurifrons. Shuck.*

♂.  
♀.

3. *clavicerum. St. Farg.*

♂.  
♀.

GENUS 2.

CRABRO. *Fab.*

1. *cribrarius. Lin.*

♂.  
♀.

2. *patellatus. Panz.*

♂.  
♀.

3. *scutatus. Fab.*

♂.  
♀.

4. *cetratus. Shuck.*

♂.  
♀.

5. *vexillatus. Panz.*

♂.  
♀.

6. *tarsatus. Shuck.*

♂.  
♀.

7. *cephalotes. Fab.*

♂.  
♀.

8. *sexcinctus. Fab.*

♂.  
♀.

9. *xylurgus. Shuck.*

♂.  
♀.

10. *Lindenius. Shuck.*

♂.  
♀.

11. *vagus. Lin.*

♂.  
♀.

12. *subpunctatus. Rossi.*

♂.  
♀.

13. *vagabundus. Panz.*

♂.  
♀.

14. *dimidiatus. Fab.*

♂.  
♀.

15. *leucostoma. Lin.*

♂.  
♀.

16. *elongatulus. V. d. L.*

♂.  
♀.

17. *luteipalpis. St. Farg.*

♂.  
♀.

18. *proximus. Shuck.*

♂.  
♀.

19. *podagricus. V. d. L.*

♂.  
♀.

20. *capitosus. Shuck.*

♂.  
♀.

21. *hyalinus. Steph.*

♂.  
♀.

22. *transversalis. Shuck.*

♂.  
♀.

23. *spinipectus. Shuck.*

♂.  
♀.

24. *Wesmaeli. V. d. L.*

♂.  
♀.

25. *pubescens. Shuck.*

♂.  
♀.

26. *obliquus. Shuck.*

♂.  
♀.

27. *propinquus. Shuck.*

♂.  
♀.

28. *geniculatus. Steph.*

♂.  
♀.

29. *Walkeri. Shuck.*

♂.  
♀.

30. *albilabris. Fab.*

♂.  
♀.

31. *Panzeri. V. d. Lind.*

♂.  
♀.

32. *exiguus. V. d. Lind.*

♂.  
♀.

33. *brevis. V. d. Lind.*

♂.  
♀.

34. *tibialis. Fab.*

♂.  
♀.

35. *rufiventris. Panz.*

♂.  
♀.

GENUS 3.

STIGMUS. *Jur.*

1. *pendulus. Panz.*

♂.  
♀.

GENUS 4.

CELIA. *Shuck.*

1. *trogodytes. V. d. L.*

♂.  
♀.

GENUS 5.

DIODONTUS, *Curt.*

1. minutus, *Fab.*

♂.  
♀.

2. luperus, *Shuck.*

♂.  
♀.

3. tristis, *V. d. Lind.*

♂.  
♀.

GENUS 6.

CERATOPHORUS, *Shuck.*

1. morio, *V. d. Lind.*

♂.  
♀.

GENUS 7.

PASSALÆCUS, *Shuck.*

1. insignis, *V. d. Lind.*

♂.  
♀.

2. gracilis, *Curt.*

♂.  
♀.

3. corniger, *Shuck.*

♂.  
♀.

GENUS 8.

PEMPHREDON, *Latr.*

1. lugubris, *Fab.*

♂.  
♀.

2. luctuosus, *Shuck.*

♂.  
♀.

GENUS 9.

CEMONUS, *Jur.*

1. unicolor, *Fab.*

♂.  
♀.

2. lethifer, *Shuck.*

♂.  
♀.

GENUS 10.

MELLINUS, *Latr.*

1. arvensis, *Lin.*

♂.  
♀.

2. sabulosus, *Fab.*

♂.  
♀.

GENUS 11.

ALYSON, *Jur.*

1. lunicornis, *Fab.*

♂.  
♀.

GENUS 12.

GORRYTES, *Latr.*

1. mystaceus, *Lin.*

♂.  
♀.

2. Fargeii, *Shuck.*

♂.  
♀.

3. 4-fasciatus, *Fab.*

♂.  
♀.

4. laticinctus, *St. Farg.*

♂.  
♀.

5. bicinctus, *Rossi.*

♂.  
♀.

GENUS 13.

ARPACTUS, *Jur.*

1. lævis, *Latr.*

♂.  
♀.

2. tumidus, *Panz.*

♂.  
♀.

GENUS 14.

PSEN, *Latr.*

1. ater, *Panz.*

♂.  
♀.

2. atratus, *Panz.*

♂.  
♀.

GENUS 15.

MIMESA, *Shuck.*

1. unicolor, *V. d. Lind.*

♂.  
♀.

2. bicolor, *Jur.*

♂.  
♀.

3. equestris, *Fab.*

♂.  
♀.

GENUS 16.

CERCERIS, *Latr.*

1. arenaria, *Lin.*

♂.  
♀.

2. labiata, *Fab.*

♂.  
♀.

3. interrupta, *Panz.*

♂.  
♀.

4. ornata, *Fab.*

♂.  
♀.

5. quadricincta, *Panz.*

♂.  
♀.

6. sabulosa, *Panz.*

♂.  
♀.

GENUS 17.

PHILANTHUS, *Fab.*

1. triangulum, *Fab.*

♂.  
♀.

Order—HYMENOPTERA.

DIVISION II.  
ACULEATA. *Latr.*

TRIBE I.  
HETEROGYNA. *Latr.*

FAM. 1.  
FORMICIDÆ. *Lea.*

FAM. 2.  
MUTILLIDÆ. *Lea.*

GENUS 1.  
MUTILLA. *Lin.*  
1. *Europæa. Lin.*

♂.  
♀.

2. *calva. Vill.*

♂.  
♀.

GENUS 2.  
MYRMOSA. *Latr.*  
1. *melanocephala. Fab.*

♂.  
♀.

GENUS 3.  
METHOCA. *Latr.*  
1. *ichneumonides. Latr.*

♂.  
♀.

TRIBE II.  
FOSSORES. *Latr.*

FAM. 1.  
SCOLIADÆ. *Lea.*

GENUS 1.  
TIPHIA. *Fab.*  
1. *femorata. Fab.*

♂.  
♀.

2. *morio. Fab.*

♂.  
♀.

3. *minuta. V. d. Lind.*

♂.  
♀.

FAM. 2.  
SAPYRIDÆ. *Lea.*

GENUS 1.  
SAPYGA. *Latr.*  
1. *punctata. Kl.*

♂.  
♀.

2. *clavicornis. Lin.*

♂.  
♀.

FAM. 3.  
POMPILIDÆ. *Lea.*

GENUS 1.  
POMPILUS. *Fab.*  
1. *pulcher. Fab.*

♂.  
♀.

2. *niger. Fab.*

♂.  
♀.

3. *bifasciatus. Fab.*

♂.  
♀.

4. *variegatus. Lin.*

♂.  
♀.

5. *petiolatus. V. d. L.*

♂.  
♀.

6. *cinctellus. Spin.*

♂.  
♀.

7. *punctum. Fab.*

♂.  
♀.

8. *hyalinatus. Fab.*

♂.  
♀.

9. *rufipes. Lin.*

♂.  
♀.

10. *notatus. Rossi.*

♂.  
♀.

11. *sericatus. Shuck.*

♂.  
♀.

12. *viaticus. Lin.*

♂.  
♀.

13. *gibbus. Lin.*

♂.  
♀.

14. *crassicornis. Shuck.*

♂.  
♀.

15. *fuscus. Lin.*

♂.  
♀.

16. *affinis. V. d. Lind.*

♂.  
♀.

17. *exaltatus. Fab.*

♂.  
♀.

18. *agilis. Shuck.*

♂.  
♀.

19. fasciatellus. *Spin.*

♂.  
♀.

GENUS 2.

CEROPALES. *Latr.*

1. maculata. *Fab.*

♂.  
♀.

2. variegata. *Fab.*

♂.  
♀.

GENUS 3.

APORUS. *Spin.*

1. bicolor. *Spin.*

♂.  
♀.

FAM. 4.

SPHECIDÆ. *Lea.*

GENUS 1.

AMMOPHILA. *Kir.*

1. sabulosa. *Lin.*

♂.  
♀.

2. hirsuta. *Scop.*

♂.  
♀.

3. affinis. *Kir.*

♂.  
♀.

GENUS 2.

MISCUS. *Jur.*

1. campestris. *Latr.*

♂.  
♀.

GENUS 3.

SPHEX. *Auct.*

1. flavipennis. *Fab.*

♂.  
♀.

GENUS 4.

DOLICHURUS. *Latr.*

1. corniculus. *Spin.*

♂.  
♀.

FAM. 5.

LARRIDÆ. *Lea.*

GENUS 1.

LARRA. *Fab.*

1. anathema. *Rossi.*

♂.  
♀.

GENUS 2.

TACHYTES. *Panz.*

1. pompiliformis. *Panz.*

♂.  
♀.

2. unicolor. *Panz.*

♂.  
♀.

GENUS 3.

MISCOPHUS. *Jur.*

1. bicolor. *Jur.*

♂.  
♀.

GENUS 4.

DINETUS. *Jur.*

1. piectus. *Fab.*

♂.  
♀.

FAM. 6.

NYSSONIDÆ. *Lea.*

GENUS 1.

ASTATA. *Latr.*

1. boops. *Schr.*

♂.  
♀.

GENUS 2.

NYSSON. *Latr.*

1. spinosus. *Fab.*

♂.  
♀.

2. interruptus. *Latr.*

♂.  
♀.

3. trimaculatus. *Rossi.*

♂.  
♀.

4. guttatus. *Oliv.*

♂.  
♀.

5. dimidiatus. *Jur.*

♂.  
♀.

GENUS 3.

OXYBELUS. *Latr.*

1. uniglumis. *Lin.*

♂.  
♀.

2. ferox. *Shuck.*

♂.  
♀.

3. nigripes. *Oliv.*

♂.  
♀.

4. bellicosus. *Oliv.*

♂.  
♀.

5. argentatus. *Curt.*

♂.  
♀.

6. 14-guttatus. *Oliv.*

♂.  
♀.

7. nigricornis. *Shuck.*

♂.  
♀.

8. nigroæneus. *Shuck.*

♂.  
♀.

FAM. 7.

CRABRONIDÆ. *Lea.*

GENUS 1.

TRYPOXYLON. *Latr.*

1. *figulus*. *Lin.*  
♂.  
♀.
2. *aurifrons*. *Shuck.*  
♂.  
♀.
3. *clavicerum*. *St. Farg.*  
♂.  
♀.

GENUS 2.

CRABRO. *Fab.*

1. *cribrarius*. *Lin.*  
♂.  
♀.
2. *patellatus*. *Panz.*  
♂.  
♀.
3. *scutatus*. *Fab.*  
♂.  
♀.
4. *cetratus*. *Shuck.*  
♂.  
♀.
5. *vexillatus*. *Panz.*  
♂.  
♀.
6. *tarsatus*. *Shuck.*  
♂.  
♀.
7. *cephalotes*. *Fab.*  
♂.  
♀.
8. *sexcinctus*. *Fab.*  
♂.  
♀.
9. *xylurgus*. *Shuck.*  
♂.  
♀.
10. *Lindenius*. *Shuck.*  
♂.  
♀.
11. *vagus*. *Lin.*  
♂.  
♀.
12. *subpunctatus*. *Rossi.*  
♂.  
♀.
13. *vagabundus*. *Panz.*  
♂.  
♀.
14. *dimidiatus*. *Fab.*  
♂.  
♀.
15. *leucostoma*. *Lin.*  
♂.  
♀.
16. *elongatulus*. *V. d. L.*  
♂.  
♀.
17. *luteipalpis*. *St. Farg.*  
♂.  
♀.

18. *proximus*. *Shuck.*  
♂.  
♀.
19. *podagricus*. *V. d. L.*  
♂.  
♀.
20. *capitosus*. *Shuck.*  
♂.  
♀.
21. *hyalinus*. *Steph.*  
♂.  
♀.
22. *transversalis*. *Shuck.*  
♂.  
♀.
23. *spinipectus*. *Shuck.*  
♂.  
♀.
24. *Wesmaeli*. *V. d. L.*  
♂.  
♀.
25. *pubescens*. *Shuck.*  
♂.  
♀.
26. *obliquus*. *Shuck.*  
♂.  
♀.
27. *propinquus*. *Shuck.*  
♂.  
♀.
28. *geniculatus*. *Steph.*  
♂.  
♀.
29. *Walkeri*. *Shuck.*  
♂.  
♀.
30. *albilabris*. *Fab.*  
♂.  
♀.
31. *Panzeri*. *V. d. Lind.*  
♂.  
♀.
32. *exiguus*. *V. d. Lind.*  
♂.  
♀.
33. *brevis*. *V. d. Lind.*  
♂.  
♀.
34. *tibialis*. *Fab.*  
♂.  
♀.
35. *rufiventris*. *Panz.*  
♂.  
♀.

GENUS 3.

STIGMUS. *Jur.*

1. *pendulus*. *Panz.*  
♂.  
♀.

GENUS 4.

CELIA. *Shuck.*

1. *troglydites*. *V. d. L.*  
♂.  
♀.

GENUS 5.

DIODONTUS. *Curt.*

1. minutus. *Fab.*

♂.

♀.

2. luperus. *Shuck.*

♂.

♀.

3. tristis. *V. d. Lind.*

♂.

♀.

GENUS 6.

CERATOPHORUS. *Shuck.*

1. morio. *V. d. Lind.*

♂.

♀.

GENUS 7.

PASSALÆCUS. *Shuck.*

1. insignis. *V. d. Lind.*

♂.

♀.

2. gracilis. *Curt.*

♂.

♀.

3. corniger. *Shuck.*

♂.

♀.

GENUS 8.

PEMPHREDON. *Latr.*

1. lugubris. *Fab.*

♂.

♀.

2. luctuosus. *Shuck.*

♂.

♀.

GENUS 9.

CEMONUS. *Jur.*

1. unicolor. *Fab.*

♂.

♀.

2. lethifer. *Shuck.*

♂.

♀.

GENUS 10.

MELLINUS. *Latr.*

1. arvensis. *Lin.*

♂.

♀.

2. sabulosus. *Fab.*

♂.

♀.

GENUS 11.

ALYSON. *Jur.*

1. lunicornis. *Fab.*

♂.

♀.

GENUS 12.

GORYTES. *Latr.*

1. mystaceus. *Lin.*

♂.

♀.

2. Fargeii. *Shuck.*

♂.

♀.

3. 4-fasciatus. *Fab.*

♂.

♀.

4. laticinctus. *St. Farg.*

♂.

♀.

5. bicinctus. *Rossi.*

♂.

♀.

GENUS 13.

ARPACTUS. *Jur.*

1. lævis. *Latr.*

♂.

♀.

2. tumidus. *Panz.*

♂.

♀.

GENUS 14.

PSEN. *Latr.*

1. ater. *Panz.*

♂.

♀.

2. atratus. *Panz.*

♂.

♀.

GENUS 15.

MIMESA. *Shuck.*

1. unicolor. *V. d. Lind.*

♂.

♀.

2. bicolor. *Jur.*

♂.

♀.

3. equestris. *Fab.*

♂.

♀.

GENUS 16.

CERCERIS. *Latr.*

1. arenaria. *Lin.*

♂.

♀.

2. labiata. *Fab.*

♂.

♀.

3. interrupta. *Panz.*

♂.

♀.

4. ornata. *Fab.*

♂.

♀.

5. quadricincta. *Panz.*

♂.

♀.

6. sabulosa. *Panz.*

♂.

♀.

GENUS 17.

PHILANTHUS. *Fab.*

1. triangulum. *Fab.*

♂.

♀.







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