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ON
AQUATIC CARNIVOROUS COLEOPTERA
OR
DYTISCIDÆ.

BY
DAVID SHARP, M.B.,
HON. MEM. OF THE INSTITUTE OF NEW ZEALAND; MEMBER OF THE ENTOMOLOGICAL SOCIETIES OF
LONDON, FRANCE, BERLIN, STETTIN, BELGIUM, AND SWITZERLAND, ETC., ETC.

PLATES VII. TO XVIII.

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II.—ON AQUATIC CARNIVOROUS COLEOPTERA OR DYTISCIDÆ. BY
DAVID SHARP, M.B., HON. MEM. OF THE INSTITUTE OF NEW ZEALAND: MEMBER OF
THE ENTOMOLOGICAL SOCIETIES OF LONDON, FRANCE, BERLIN, STETTIN, BELGIUM
AND SWITZERLAND, &c., &c. PLATES VII TO XVIII.

[Read May 16th, 1881.]

1. PREFATORY.

Some years ago I commenced a special study of the Dytiscidæ, with the object of increasing the recorded information about this family of beetles. I had been previously, for a considerable period, specially interested in the family, and when beginning my studies, I hoped particularly that I should be able to improve the very imperfect classification in vogue, and I also wished to know whether a detailed knowledge of the varied structural peculiarities of the species would be consistent with the belief that the present condition of these had been reached by a process of gradual modification or evolution, and whether an intimate acquaintance with the intricate relations existing between the diverse components of the family would render credible the hypothesis that these are descended from a few ancestors or even from a single very remote ancestor.

Now that I am offering to the Royal Dublin Society the work that has occupied me for some years, I feel that I must in the first place make an apology for its imperfections and omissions. I have accomplished but little—so little that, in comparison with what I have left undone, I feel it to be almost as nothing. Our knowledge of the earlier stages of the life of Coleoptera, and of their metamorphoses is very imperfect, and in the case of the aquatic species there are special difficulties in the way of acquiring information of this nature, thus it happens that we know very little of the life histories of the Dytiscidæ—so little that it cannot aid at present in the classification of these insects, and I have therefore limited my efforts to producing an arrangement based on the structures of the perfect insect.

Even as thus limited the work is very incomplete; existing collections though tolerably numerous are very imperfect; a large number of species are known only by a single, or by very few individuals, and thus the basis of their taxonomy—i.e., accurate delineation of the characters of morphological species—is still very incomplete, while the important questions of the amount of variation exhibited by the different forms, and of the limits and nature of their distribution on the earth's surface can be dealt with only in a very inadequate manner.

Moreover, I have made no reference to internal anatomy, for in view of the present position of this department of entomology it is clearly premature to attempt to make a classification founded on both the internal and external structures; and

I have not endeavoured to explore the internal anatomy of the multitude of species, for to do this in such a way as to be trustworthy for taxonomical purposes would be more than the work of a lifetime.

Thus the memoir I offer to the Society is a mere imperfect sketch of the characters of the species of aquatic carnivorous beetles, and a contribution to a synthetical or natural classification thereof based on the external structures of the perfect insects.

I have commenced with a comparative sketch of the variations of structure exhibited in the family, and at the same time have touched slightly on its similarities to, and differences from the terrestrial carnivorous Coleoptera.

The next part is intended to characterize all the species I have examined, and to enable the name, and as far as possible the special characters of any species to be recognized with facility. For those using the work for these purposes it is an advantage to be as brief as possible, and I have consequently avoided lengthened descriptions of points common to a considerable number of species, and have endeavoured to limit the diagnoses and remarks to a combination of characters sufficient to distinguish a species from the allied ones known to me. The Dytiscidæ however offer in this respect a serious difficulty: owing possibly to the comparative want of variety in the external conditions in which they exist, the species resemble one another much more closely than is the case in other families of beetles; there is in fact less variety in such details of sculpture and colour as are found in other families to afford important assistance in the recognition of species; there is too a great monotony of shape or form; indeed we may say that just as the various ships and boats devised by man have a greater resemblance to one another than have the various carriages and machines for travelling on land, so do the species of water beetles show a less variety in these respects than do the dwellers on land. The discrimination of the species of Dytiscidæ is therefore not an easy task, and recourse must be had for the purpose to differences in the minor structural peculiarities. I have found that as regards the structure of the feet and legs the distinctions between the sexes vary much from species to species, and I have accordingly given particular attention to these and other secondary sexual characters; it has been the more advisable to do so because this has hitherto been much neglected, and because the sexes frequently differ so much in their characters that they cannot be recognized as one and the same species unless these distinctions are specially noted.

The analytical tables are merely intended to facilitate the determination of the species by curtailing the number of descriptions to be perused, and with this object the characters used have been arbitrarily selected, and such as are easily observed have been preferred. I have not tabulated the species of each genus, because the attempts I made to draw up such tables satisfied me that in a great number of cases I could not do this in a manner likely to be practically useful.

Eleven hundred and seventy-one species are distinguished, in a more or less imperfect manner; and in addition to these there are recorded in the Munich catalogue of Coleoptera or in recently published works some three hundred or more names, a considerable proportion of which probably represent species unknown to me. As these descriptions are extremely scattered in works in various languages, and frequently rare or difficult of access, they are reprinted for the convenience of future workers (*vide* page 649).

In the nomenclature of the species I have used the system of priority as set forth in my pamphlet on the object and method of zoological nomenclature. I treat the two words forming the name of each species as being practically one, and retain them unaltered, thus for the present abandoning the Linnæan idea of making the name of a species indicate its position in classification. The arguments I have used in the paper referred to have not, so far as I am aware, been answered; and further reflection on the subject has convinced me that the system is not only logically consistent, but is likely to be practically useful, and capable of serving as a permanent basis for a system of synthetical classification.

A large and constantly increasing portion of the space of descriptive zoological works is occupied by lists of synonyms: this burden is already so great that it has become a serious question whether zoologists can reduce the extent of these synonyms without danger to the precision and continuity of their work. The plan I have adopted of retaining as the name of the species, the original name, will serve the purpose of limiting future increase of synonyms; for a very large proportion of those usually attached to zoological descriptions consists in following the classificatory changes in the name of the species that inevitably result from the unfortunate method of making the name of the species dependent on that of the genus. Another aid is the relegation of pure synonyms (that is such as are not resultant from classification changes but from sheer error or accident) to catalogues published apart from descriptive works, where these synonyms may be recorded once and for all and then done with; a catalogue should in fact serve as the place of final interment of these unfortunate results of accident, negligence, or haste. We possess already in the Munich Catalogue of Coleoptera a work in which a large proportion of synonyms are well recorded, and I have considered the existence of this valuable production sufficient reason for omitting the synonymy already recorded therein, and have contented myself with citing in the alphabetical index of this work such names as are necessary to establish a harmony between it and the catalogue in question.

For a similar reason it forms no part of my plan to give a history of the previous and present condition of the taxonomy of the family, nor a list of all the writers who have described species belonging to it: both of these can be gathered from the pages of the Munich Catalogue. The earlier descriptions are scattered in the pages of zoological and entomological works from Linnæus till the time of Aubé; special reference is due to the work of the last named author, who in 1838 published the

“Species général des Coléoptères—Hydrocanthares et Gyriniens.” The descriptions of this justly respected writer are very good, and may continue to be consulted with great advantage in respect to the shape, colour, sculpture, and similar specific characters of the 317 species known to him. A reference to each species described by Aubé in the work alluded to, as well as to the species subsequently described by various authors, will be found in the Munich Catalogue. I would also specially call attention to the work of Schiodte (“Genera og Species af Danmarks Eleutherata”) published at Copenhagen in 1841, because six of its valuable plates consist of figures of structural details of these water beetles.

The carnivorous water beetles are included in the second volume of the Munich Catalogue which was published in the year 1868, and in the period that has since elapsed several authors have given us works or notes relating to these creatures. Of such, Crotch “Revision of the Dytiscidæ of the United States,” (Tr. Amer. Ent. Soc. 1873), Sahlberg “Enumeratio Coleopterorum Carnivororum Fennicæ (Notiser ur Sällskapetets pro Fauna et Flora Fennica Forhandligar, XIV, 1873), Regimbart Etude sur la classification des Dytiscidæ (Ann. Soc. Ent. France 1878), and Bedel “Faune des Coleoptères du bassin de la Seine,” (published as a supplement to the Ann. Soc. Ent. France, 1880,) deserve special notice, inasmuch as their works are of a systematic character, and contain a quantity of information arranged in such form that it may be easily consulted and used.

Numerous entomologists and two museums have contributed to the completion of the work, by communicating to me either extensive collections, or a few rare and little known species. The Musée Royal d'Histoire Naturelle at Brussels, and the Museo Civico di Storia Naturale of Genoa have allowed their collections of this family to remain in my hands for a considerable period, and the Comte Henry de Bonvouloir of Paris has entrusted to me for several years the whole of his collections of Dytiscidæ, comprising the larger part of Dejean's original collection of the family, and many of the specimens actually described by Aubé, and for this assistance I offer him grateful acknowledgment.

To Dr. Leconte, of Philadelphia, I am greatly indebted for the loan of a series of typical specimens of the species described and named by him in his numerous valuable entomological memoirs. Dr. Horn, of Philadelphia, M. Léon Fairmaire, of Paris, The Rev. A. Matthews, of Gumley, Leicestershire, Prof. Sahlberg, of Helsingfors, and Herr Ernst Wehneke, of Harburg on Elbe, have all loaned me specimens of which I had need and for doing this I heartily thank them. I will also mention here that I adopted the plan of determining collections and specimens sent to me by means of a number attached to the species instead of a name; the number used by me for this purpose will be found attached to each species in the present work, and is placed after the description of the habitat in each case.

The concluding part of this memoir is intended to be a contribution towards a natural classification of the species previously characterized. This classification I

have attempted to make on a purely synthetical method. Linnæus and the more immediate of his followers made their classifications by a deductive or analytical method. Natural objects were taken for granted as forming three separate kingdoms, animal, vegetable, and mineral—and then each of these hypothetical or axiomatic kingdoms was divided and subdivided until the genus and species were reached and defined. This method—most useful in the early stages of scientific development—is being gradually replaced by an inductive or synthetic system. In other words species are studied and defined and then treated as units whose relations to one another may be exhaustively considered. This method has been clearly recognized by Huxley as will be seen by consulting his paragraph on morphological groups (“Man. Anat. Invertebrated Animals,” p. 17): and it is quite evident that only by this synthetical method can we hope to ascertain whether genera and the more complex aggregates have any real existence in nature, or whether they must remain—as they undoubtedly are at present—merely conventional arrangements. On the Linnæan method it may be said with perfect truth that the genera were made by the system, whereas it is clear that on a natural science method the system must be made and built up in accordance with the actual structures ascertained detail by detail. If there be an order in Nature our zoological systems must be made in accordance therewith, and representative thereof; if there be no such order, we may then revert to the Linnæan method, for this is well adapted for purposes of artificial arrangement. At present I scarcely think there is any conscientious naturalist who after a careful review of facts would say whether there are or not in Nature, independent of classifications, such things as genera. I believe, if we limit our view to the creatures coexisting at the present moment, no naturalist could be found who would venture to deny the existence of species as real and objective. It is in fact perfectly clear that the hosts of individuals living around us are arranged in clusters or groups, *isolated* from other clusters or groups; and although there may be doubts as to the actual number of such clusters—and doubts as to whether certain masses of individuals form two isolated clusters or only one, yet no practical naturalist will be found who will deny the reality of the existence and isolation of such clusters, and it is these we call species. The nature of the connection between the individuals of these clusters, and the kind of isolation existing between them are most difficult questions, but their discussion has been commenced by Lamarck, Darwin and others; and these problems are now recognized as legitimate subjects for scientific investigation, although perhaps but few perceive their excessively complicated and difficult nature.

If, however, it be granted that species have a real existence, and if their characters have been well ascertained, it is clear that we may then deal with them as units to be classified and arranged, preliminary to considering the question whether these species are, like the individuals of which they are composed, arranged in naturally isolated clusters. This is evidently a much more complex question to deal with

than that of species; but if we suppose it to be answered in an affirmative sense, we may then treat these complex aggregates as themselves units, and study them in the same way as we have supposed to be already done in the case of genera and species. Looking at taxonomy in this aspect, species are the units of the classifier, genera are aggregates of the first degree, groups of genera aggregates of the second degree, and so on.

Whatever view be taken as to the nature of genera, it will at least be admitted that there does not prevail among naturalists at present so great concord as to their limits, as that which we find to exist about species. It is undoubtedly the case that an attempt to define genera in a thoroughly natural manner is much more difficult than the study of species; while an additional obstacle is thrown in our way by the fact that we are not yet acquainted with all existing species, so that any day by the discovery of a new and intermediate form two apparently distinct genera may be connected together.

This process of forming genera by synthesis—by the accord existing between species as to the whole of their characters other than specific—has notwithstanding its difficulties progressed in a more or less recognized manner, and is no doubt destined to supplant completely the process of artificial classification; and there can I think be but little doubt that the perfection of the method will be, for a while at any rate, accompanied by an increase in the number of primary aggregates recognized by zoologists. The enormous increase that has already occurred in the number of genera has occasioned much discussion and given rise to considerable complaint against those who make new genera; and in point of fact the history of systematic zoology presents us with a picture of constant protest by the older naturalists against the multiplication of genera by their younger fellows. And it must be admitted that the increase has indeed been enormous; Linnæus only admitted 354 genera as composing the whole animal kingdom (“*Systema Naturæ*,” Ed. xii); the number at present recognized could not be readily ascertained, but it is something enormous; there are I believe about ten thousand genera recognized merely among the beetles, and I anticipate that this number will increase to forty or fifty thousand. I do not myself feel alarmed at this extraordinary multiplication, but there is one point connected with it that is certainly to be regretted; it is the corresponding increase in the number of generic names; the enormous growth in this respect has already brought us to the unfortunate pass that few of us, even though we are specialists, recognize, much less understand, the generic names even of the department to which we have given particular attention; and thus the names of genera come to have but little value. Seeing then how uncertain are the limits of genera at present, and how doubtful it is what kind of relation the genera we now adopt may bear to those of the future when systematic zoology shall have assumed a more perfect form, we may well consider whether some method cannot be devised to limit the increase of generic names, or at any rate to render their recognition a

matter of subordinate importance. And it seems to me that a numerical linear arrangement might here be of assistance. If genera were numbered consecutively, and the number habitually quoted, we should recognize the position of the genus much more easily by means of the number than we do by means of a name; for instance if we have the knowledge that there are about 700 genera of Longicorns and have an idea of the method on which they are arranged, and if we knew that in a numerical arrangement of the Coleoptera the Longicorns begin at 3,900, and run on to 3,700, it is clear that we shall at once recognize any number between the two just named as indicating a genus of Longicorns: and further that we shall be able to recall in a more or less vague manner, what part of the Longicorn family it belongs to; whether it comes near the beginning or end of the family and consequently some ally with which we are specially familiar. There is a further advantage in a numerical expression of classification, inasmuch as it gives us a prospect of being able in the future to indicate in an exact manner, by means of a numerical formula the true systematic value of any aggregate we are required to deal with, and thus to ascertain for instance the true difference between the faunæ of two countries we might wish to compare in this respect. A numerical system applied in the way I have indicated, can however express only a linear arrangement, and as this can never be more than an approximation to a natural classification, it is clear that a simple numerical system can never do more than express feebly the complex relations existing between animals; moreover, it could only be of full service when applied systematically to all the animal kingdom; and I have accordingly adopted it here as an adjunct of my classification without attaching to it any considerable present importance; but still it seems possible that it is in the direction of numerical expression of classification that we may hope for real improvement.

In the second synthesis the genera are treated as units to be arranged into groups; and in the third synthesis these groups become the units of which tribes are formed; and this method of proceeding from the simpler to the more complex aggregates is carried on till ultimately such questions would come to be considered as whether there really exists an isolation or division of organic beings into vegetable and animal kingdoms. In the present memoir this method of classification is carried only to the extent of a synthesis of the fifth degree.

I have already mentioned that during the progress of the work I have had my attention frequently directed to those problems as to evolution and descent in which naturalists at present are so greatly interested, and the points I have more particularly kept in view were these two. First, are the structures of these creatures of such a kind as to make one believe they may have arisen by gradual modification of a precedent different structure? and second, are the various resemblances, or affinities as they are called, among the different species such as to make it appear probable they are the results of genetic community of descent

from one ancestor or a few ancestors. The first of these questions I can answer decidedly in the affirmative. That these water beetles have arrived at their present condition by a process of gradual modification or evolution, seems possible and consistent with their structures; indeed I may go farther and add that there are some points of their structure which are not comprehensible on any other hypothesis known to me.

On the second part of the problem I proposed to myself, viz, whether the great number of species of Dytiscidæ now existing have probably descended from one or a few ancestors, I have come to a decidedly negative conclusion. After a careful study of the various affinities and points of structure, I cannot consider them as indicating genetic community, and I have come to think that it is more probable that each species has been evolved along a distinct and separate line of descent. Thus I fancy I see in this mass of twelve hundred species, not a development from one ancestor but the results of twelve hundred lines of development. The numerous cross-relations between the various aggregates, and the points of resemblance between different species seem when first examined almost irresistibly to suggest that they may be accounted for by assuming descent from a common ancestor, but more careful study instead of rendering this more probable has always had the opposite result. One conclusion, I think, I can state almost positively; it is this, that whatever may prove to be the connexion between existing and extinct morphological forms, there is no relationship of an ancestral or genetic kind to be traced between actually existing species. This result although negative is not without significance, for among these twelve hundred species there are many in a later or higher stage of evolution than others, and yet in no case have I been able to consider that a lower existing form is ancestral to a higher existing form; the theory of descent from a few ancestors would however lead us to suppose that, in some cases at any rate, parental species and descendant species should for a time co-exist. In the various syntheses forming the third part of this memoir there will be found some sketches illustrating the kind of reasoning that has brought me to these conclusions. Although quite inclined to agree with Huxley's remark ("Manual of the Anatomy of Invertebrated Animals," p. 4) "that the growing tendency to mix up ætiological speculations with morphological generalisations will, if unchecked, throw biology into confusion," yet I think it must be admitted that if there is to be any expression of opinion on ætiology, it is well that it should be placed in proximity with the observations on which it is founded, for only in such case can its true value be appreciated, and I hope in the present instance it will be found that the few remarks I have made on these points in no way detract from the value of the observations with which they are associated. I will ask also permission to make now some brief remarks on these ætiological problems, my object being not to advocate any particular theory, but rather to reiterate the extremely difficult nature of these questions, and specially to point out that even if the theory

of evolution be true, community of descent is not rendered probable thereby. I have already stated that the existence of taxonomical series does not really lend any support to the theory of a few ancestors, and I would now add to this that similarity of structure as to some particular point also fails to establish the probability of community of descent; for if one hypothetical ancestor can have developed a point of structure, equally can two or more have done so.

Semper has recently pointed out that "every character which can be regarded as a true sign of large groups of animal forms, may be ultimately traced to the stage at which it first appeared, and where it was a character of adaptation" ("Animal Life," notes p. 407). This is perfectly correct, and to it may be added the fact that if we look at some character that is now probably in process of adaptation, we find that the adaptation is going on not in one favoured species, but in a number of allied species. For instance, it is the rule in the Dytiscidæ that the meso- and metasterna are connected together in the central line of the body; a considerable number of the group Hydroporini form however an exception to this rule, and one of these genera, *Deronectes*, differs only from *Hydroporus* by the fact that this connection is wanting in the former while it has been attained in the latter genus; but a study of the species of *Deronectes* seems to show that the connection in question although not at present existing is probably being gained by many of the species if not actually by all of them. Now if a structure be acquired simultaneously by a number of distinct species, it is clear that similarity of structure does not indicate community of descent. Again if I am right in supposing the species of *Deronectes* are acquiring this structure by the want of which they are solely distinguished from *Hydroporus*, it is plain that these two distinct genera are, so far as can be seen, in process of becoming one: the real difference between them is in fact one of time—*Hydroporus* has gained a particular structure before *Deronectes* has done so. Such facts appear to me gravely opposed to the *a priori* probability of descent from a few ancestors. But if the resemblances between animals do not justify the theory, there remains on the other hand the important fact that the isolation of species from one another is gravely opposed to its probability. Huxley has pointed out in his essay *On the origin of species* ("Lay Sermons, Addresses and Reviews"), that the term species expresses two different sets of facts; first, a set of morphological facts, or the agreement of series of individuals in points of structure; and second, the physiological inductions that animals consist of groups of individuals that are fertile *inter se*, but who do not produce fertile offspring when crossed with members of other groups; and in the same essay he has stated that when we look at the facts from the point of view of the morphological agreement between individuals then the theory of community of descent is possible or probable, while if we bear in mind the physiological isolation of species then the theory is unsatisfactory. The arguments of Huxley in this essay appear to me very good, except that as I have already pointed out the morphological facts do not when carefully considered support

the hypothesis to any great extent. I think his argument might be carried a step farther, and it might be pointed out that whereas the acceptance of the theory of evolution in no way diminishes the importance of the physiological differences between species, it does on the other hand very much detract from the value of the morphological agreement between them; at any rate it is I think clear that the physiological distinctions between different species may be real and permanent even though the structural characters by which they are represented in our classifications shall prove to have been fluctuating or temporary.

We know from paleontology that the totality of the organisms of the present day is very different from what it was formerly as regards the morphological structure; but we do not find traces of any facts that would lead us to believe that the earlier organisms were not isolated into separate species just as the present ones are. While the excessive resemblance between the ova of different animals coupled with the fact that these similar ova develop into totally distinct organisms, leads us to believe that distinctions of a most profound character may have been present in the earlier and simpler organisms even though the imperfection of our means of investigation would not allow us to assert this from the study of the organisms themselves. Thus it seems to be a perfectly credible theory that the isolation of species from one another is indicative of deep-seated distinctions that may have existed prior to the more conspicuous morphological differences; and it appears probable that though the species of a late geological epoch may be the descendants of differently structured animals of a former epoch yet the physiological distinctions may have been more permanent, or in other words that the lines of descent have been perfectly distinct. It will at any rate be incumbent on those who advocate community of descent to show how and when the physiological distinctions became established, and at present, so far as I know, there is no evidence of the beginning of such distinctions; we are not aware of any process by which a group of individuals fertile *inter se*, becomes divided into two or more distinct, mutually infertile groups. But those who maintain the community of descent tacitly assert that such a process has been the order of Nature.

There seems good reason for supposing that the physiological distinctions between species are correlative with molecular distinctions that we do not at present comprehend; and if so we may hope that the advance of the science of pure molecular physics will help to solve these problems. But if we are not content to wait patiently for such a period, and at present allow our imaginations to attempt to penetrate very far back into the darkness of the past, we may well ask those who maintain the descent of organisms from one or a few ancestors, what reason have they for supposing—what satisfaction can there be in believing—that only one or two or a few primitive organisms or germs existed?

Surely, if the passage from matter in a state of inorganic arrangement to a state of more complex organic arrangement took place naturally—under the influence of

far reaching and enduring law—the transition must have been long enduring in time and wide spread in space. Can we believe it possible that universal law should have resulted in the production of a single inconceivably minute portion of organic matter, from which all the enormous aggregate of organisms now around us has been produced in its almost unthinkable variety by a process of simple reproduction? No, I think that whatever the mode or modes may have been by which inorganic matter became organic, it will surely prove more credible that the passage extended over a vast period of time, and occurred in numerous places, and was not limited to one instant of time and a single pin point of space. If we say this we admit that it is possible that there have existed distinctions in the individual masses of organic beings from their very beginnings, and it is quite conceivable that in these aboriginal molecular differences may have originated the present physiological species distinctions,—that these are in fact absolute and direct continuations of primeval molecular differences of constitution; and it is credible that from such a myriad beginning, through the enormous ages of the world there have developed the vast multitudes of species of plants and animals amongst which we live. If anything like this has been true, we need not necessarily adopt any theory of community of descent, but we may believe that each species is a distinct record of the past conditions in which it has existed, and that resemblance in structure of two different species is the result of similar growth under similar conditions.

I shall not at present allude farther to the difficulties that surround the theory of community of descent, but I may remark that even if it should prove that we must abandon the hope of tracing the pedigree of all creatures back to a single organism, this in nowise detracts from the importance of biology. We are not called on to abandon the attempt to understand the relations between existing and extinct morphological forms, species by species, and to trace the road by which existing structures have become what we see them. The theory of evolution is in no way connected with the hypothesis of common descent; and by means of the perfected acquaintance with the structures of existing organisms we shall attain, and of the detailed knowledge we shall acquire of the special modifications that have taken place in myriad separate lines of descent on various parts of the earth's surface, we may well hope that we shall be able to read slowly but truly the great history of Nature.

Bates has an admirable remark—(“Naturalist on the Amazons,” Vol. II, p. 345) speaking of the local variations in the patterns on the wings of butterflies, he has said, “On these expanded membranes Nature writes, as on a tablet, the story of the modifications of species, so truly do all changes of the organization register themselves thereon.” By the evolutionist this sensitiveness thus truly claimed for the butterfly's wing, may logically be asserted to have always existed in all the structures of every species of the organic world. Every individual is a mass of

structures, each of which is a record of past action (of the discharge of function under certain conditions) and thus in the structure of every organic being there is written a portion of the history of the world. Just as the coarser facts of that great history are written in the forms of the hills and valleys, the shores and the abysses, so are the minute details recorded in the forms and structures of organic beings. To read that history and understand it, is the task of many generations, it is but recently we have learned that such a history exists to be read, and we have as yet scarcely mastered its alphabet.

II. COMPARATIVE REVIEW OF THE STRUCTURES OF THE FAMILY.*

SIZE.—The Dytiscidæ are of very variable size, *Notomierus brevicornis* being only 1 mm. in length, while *Megadytes ducalis* attains nearly 50 mm. The most minute forms are found among the *Noterides*, *Hydrovatini*, *Bidessini*, and *Hydroporides*; the most massive amongst the *Cybistrini* and *Dytiscini*. The *Noterides*, *Laccophilini*, and *Hydroporides*, do not comprise within their limits any individuals so large as the smallest of the *Cybistrini* and *Dytiscini*; and in respect of this point the *Colymbetides* and *Hydaticides* stand intermediate between the small insects and the large ones. The linear classification I have adopted agrees, as a whole, in a remarkable manner with the development in size of the individuals composing the groups: all the small forms come in the earlier half of the arrangement, while the massive *Cybistrini* terminate it. It may be truly said, in a generalized manner that the higher forms consist of individuals of much larger size than do the lower forms; no doubt many exceptions to this generalization may be pointed out; and much variety exists in respect of size within the limits of a single genus; for instance, in *Cybister* we have the little *C. dehaani* only 13 mm. long, while *C. owas* attains 40 mm. of length.

In FORM the Dytiscidæ show comparatively but little variety, in fact there is probably no other family of Coleoptera of equal extent so uniform in this respect. The outline is oval or oblong-oval, the greatest breadth being usually attained a little behind the middle of the length of the body: considerable differences are found in the amount of elongation, sometimes the oval is so short that the outline approaches to the circular form, as is the case in many species of *Hydrovatus* and in *Colpius*, while in the case of *Dytiscus cicurus*, Fab. (No. 956, *Rhantus*), the length is nearly $2\frac{1}{2}$ times the greatest breadth; all the intermediate grades of elongation occur. The extremely short forms are found only among the smaller species. Sometimes the anterior extremity of the body is broader than the apical, as in *Matus*, but more usually the reverse is the case, and in *Thermonectes* the hinder portion of the body is very much broader than the anterior half; in certain rare cases the extremity of the body and the wing-

* This sketch should form part of the fifth synthesis, but is placed in this position in conformity with the usual custom.

cases are so acuminate as to be spinose (*Celina*, *Methles*, some *Hydrovati*) ; this occurs only in species whose individuals are of small size, and in all such cases the swimming legs are very feeble. The most remarkable peculiarity in the outline is its continuity, or freedom from interruption at the junction of the base of the prothorax with the wing-cases : this continuity is frequently so perfect that no break in the regularity of the form can be detected at the spot indicated ; this is the case with all the higher forms, and the best swimmers. But there are in the family some exceptions in which there is a great break in the outline at this spot, the base of the thorax being much narrower than the base of the elytra (*Vatellini*, *Tyndallhydrus*, *Andex*, *Anisomera*) ; this discontinuity is always associated with a peculiarity in the sternal pieces ; in its extreme cases such as in the *Vatellini*, *Andex*, and *Tyndallhydrus*, the prosternal process does not reach the mesosternal process, while in those cases where the discontinuity is less marked, it will be found that although the prosternal process may attain the metasternum, the mesosternum is less completely vertical in its direction than usual ; this will be found to be the case in *Agabus cephalotes* and in *Dytiscus dorsalis* (No. 630, *Hydroporus*). In the genus *Deronectes* it frequently happens that there is a considerable difference between the sexes of one species in respect of the continuity of the outline of the thorax and wing-cases and it is always in the female sex that the continuity is the more broken. (See gen. *Deronectes*, No. 454 *Hydroporus lareynei*, No. 455 *Hydroporus opatrinus*, No. 472 *Dytiscus depressus*, &c.)

The group *Noterides* presents a constant difference in outline from the other *Dytiscidæ* inasmuch as the greatest width is in front of the middle of the body instead of behind it, and the species of this group have consequently the posterior portion of the body narrower than the other *Dytiscidæ*, so that in them this part is less broad than the anterior half, while, as we have just seen, in most other species of the family the reverse is the case. As regards the convexity of the body the *Dytiscidæ* show a great deal of variation, they are either subdepressed or little convex, or they may be very convex ; the flattest or most depressed forms are found in the tribes *Colymbetides* and *Hydaticides*, especially in the genera *Copelatus*, *Lacconectus*, *Platynectes*, and (a few) *Agabus*, while the most convex species are all small insects, of short form, such as *Colpius* and *Suphis* among the *Noterides*, most of the species of the groups *Hydrovatini* and *Hyphidriini*, and many of the group *Bidessini* ; in the *Hydroporini* some of the genera consist of convex forms, as in *Hyphoporus*, *Herophydrus*, *Coelambus* and *Chostonectes* ; while *Deronectes* and *Hydroporus* comprise forms which as a rule are much more depressed. The larger and more powerful forms are usually of moderate convexity. When the convexity is very great it is as a rule confined chiefly to the under surface ; this is shown in a very marked manner by *Pachydrus* and *Hyphydrus* ; in the convex *Hydrovatini* the convexity is obtained by about equal curvature of both the upper and lower surfaces ; the *Noterides* display another peculiarity in this respect inasmuch as being

always convex insects, the convexity is chiefly exhibited by the upper surface, the lower surface being unusually flat; this peculiarity is however reproduced in the Colymbetides by many species of the genus *Ilybius*. It will thus be seen that as regards form the Noterides are more peculiar and isolated than any of the other Dytiscidæ they being peculiar in their outlines both in the perpendicular and horizontal directions. Although peculiarities of form are usually to a large extent constant in allied species and genera and are even found to be characteristic in some of the still larger aggregates, yet exceptions are of frequent occurrence; thus although a certain peculiarity of form is very characteristic of the genus *Ilybius*, yet there are certain species of *Ilybius* in which this peculiarity is absent, and which would therefore at first sight be considered to belong to the genus *Agabus*. In other cases variation in facies goes to a still greater extent; thus the species of *Lacconectus* resemble *Laccophili* in size, form, and colour (although they have no approximation to that genus in any natural classification) and would scarcely be considered to belong to the Colymbetides by any one who examined them for the first time; so too in many species of the genus *Copelatus* we find in their appearance but little of the Colymbetides, they more resemble the *Hydroporides*; while certain Noterides although they have no affinity with the *Hydroporides* have been actually up to the present time always classified with them, and indeed placed in the genus *Hydroporus*.

In COLOUR the Dytiscidæ show much less variety than do the beetles dwelling on land; brilliancy of colour is indeed quite absent. The usual colour is black, or yellow, or a combination of the two, or else a colour intermediate as it were between the two; faint greenish, olivaceous, and brassy tints appear in the Colymbetides, *Dytiscini* and *Cybistrini*; the gayest and most variegate colouration is found in the tribe *Hydaticides*, where a mixture of black and yellow, in conjunction with a very shining polished surface gives rise to a very agreeable appearance: the colouration of these *Hydaticides* seems however to be in many cases so very inconstant that it can scarcely be of much service in defining the species, or in assisting in their recognition. In the *Colymbetini*, especially in the genus *Rhantus*, the elytra are frequently of a yellow colour, which is however greatly obscured by a vast number of minute black specks or dots, these become in some species so dense and numerous that the wing-cases appear nearly or quite black, though frequently their speckled nature may be detected on a closer examination, especially when the lateral portions are looked at, the specks being there always less dense than near the suture. Several species of *Hydaticus* have a similar system of colouration and indeed so much resemble these *Colymbetini* that the species of the two widely separated genera are still much confounded together, even by entomologists of good repute. In the genus *Hyphydrus* and in many *Hydroporini* (*e.g.*, *Cœlambus* and *Necterosoma*) the prevalent colour is yellow or yellowish with black marks on the upper surface forming a very irregular pattern; the black marks being usually more or less elongate longitudinal lines, which

frequently run into one another laterally, so as not to be readily distinguished. Many species of *Deronectes* are also variegate with black and yellow, but the colouration is less distinctly of a linear character than it is in the insects just referred to. The *Laccophilini* vary much in colour, and are usually pallid; frequently they are marbled with darker tints in a very indefinite manner, but some species (*e.g.*, Nos. 96 & 97) become definitely and prettily marked: a very curious colouration is found in several species of *Laccophilus* (No. 156 and allied species) consisting of numerous very waved longitudinal dark lines, such as I have not seen in any other beetles. The most pallid species of the family are the two *Eretes*; *E. australis* is of an entirely pale colour, except that the wing-cases are covered with numerous rather large punctures, each of which is black; the second species of the genus (*Dytiscus sticticus* L.) has the same peculiarity, but has in addition a black fascia on the wing-cases, and frequently also another on the prothorax. The colouration of the wing-cases in *Acilius* resembles that in *Eretes*, except that the punctures are not so large and definite and the black colour is not limited to a single puncture, but connects two, three or more punctures together, giving rise to an irregularly speckled appearance approximating to that which I have already described as existing in the genus *Rhantus*: the irregular black fascia on the wings of *Dytiscus sticticus* just alluded to is produced in a similar manner. An entirely black surface is quite frequent in the family, and is found in *Noterides* (*Hydrocanthus Australasie* and *H. funebris*) in *Hydrovatus*, *Hydroporus*, and in numerous species of *Agabus*, in *Copelatus*, *Ilybius*, *Meladema*, *Cybister*, &c. One of the most marked features of the colouration of the Dytiscidae is the fact that the lateral margins of the thorax and wing-cases are very frequently of paler colour than the rest of the upper surface, so that the body bears a more or less definite band of pale colour defining the outline of the upper surface; this yellow band finds its greatest development in the genera *Dytiscus* and *Cybister*, where it very frequently forms a perfectly definite lateral stripe of yellow colour; in other genera, however, the stripe is not so distinct and definite (*e.g.*, *Ilybius fenestratus*) and even in *Cybister* there are some species where the lateral margin is only indefinitely paler. In *Ilybius* and numerous species of *Agabi* which have a very dark coloured upper surface, a minute dot or dash of pale colour (or both of these) exists on the wing-cases, near the apex and lateral margin.

In the *Hydaticides* the head and thorax bear with great frequency transverse marks of pale and dark colour on the head and prothorax and in numerous species of *Dytiscus* the whole of the prothorax is definitely margined with yellow; and this is found again in two species of *Cybister* (Nos. 1,154 and 1,155).

Although the colour of the body is so frequently black, the antennæ nearly always remain pale; and it is the rule in the family that the palpi and legs, as well as the antennæ are paler than the rest of the body; the swimming legs however are very frequently darker in colour than the other legs.

Another peculiarity of frequent occurrence in the family, is the existence of two

indefinite spots of pale colour on the vertex of the head. The upper and under-surfaces of an individual are frequently very different in colour, the one being often pallid while the other is entirely or in great part dark (*e.g.*, *Dytiscus rœselii*, *Cybister*, No. 1,169): it is, I believe, always the case, when such discrepancy prevails, that the upper surface is darker than the under, and the latter is never much variegate as the upper surface sometimes is. As a rule the colouration of the two sexes of one species is nearly or quite similar, but to this there are a few singular and interesting exceptions; the colour of the ventral segments in *Hydroporus bistrigatus* (*Bidessus*, No. 299) is red in the female, black in the male; in other species of *Bidessus* the same fact is repeated but not in so conspicuous a manner; and we find it again among the *Hydroporini* in *Cœlambus* (*flaviventris*, *pallidulus*, &c.) and in *Hydroporus* (*Dytiscus halensis*, No. 528) and again among the *Colymbetides* in *Lancetes* (*Colymbetes præmorsus*, No. 916). In all these cases it is the males that have the ventral segments dark; the repetition of this character in a few widely separated members of the family is a very interesting fact and should engage the attention of those who are interested in the questions of sexual colouration and selection. Indeed the whole family of the *Dytiscidæ* is one that seems peculiarly adapted for throwing light on the questions of development and correlations of colour in the insecta, owing to the comparative simplicity of the facts; most of the other families of insects show such a variety of colour and pattern that these are quite bewildering to any one who wishes to comprehend their meaning; but the facts in the *Dytiscidæ* are less complex, and appear to be capable of being generalized in such a manner as to lead us to hope we may some day understand them.

In the SCULPTURE of the surface we find that the *Dytiscidæ* show less variety than the other families of *Coleoptera*: to this rule there is however one most interesting exception in the fact that difference—and frequently extreme difference—in the sculpture of the sexes is of very common occurrence. Leaving this for a while out of the question, we may note that in the larger and in the more highly developed forms the surface is remarkably smooth and polished, and punctuation is nearly absent. In these smooth species there exist, however, with remarkable constancy three longitudinal series of fine punctures on each wing-case; the series are about equidistant from one another and from the suture and outer margin, but frequently the external one of the three is much more indistinct than the others; the persistence of these punctures throughout the family is remarkable, and seems to indicate that they have some considerable functional importance. In the coarsely sculptured and punctate species, they are more difficult to trace than they are in the smoother species, not only on account of the roughness of the surface, but probably also because they are really less developed. Each of the punctures in these series bears a very fine hair, and sometimes the series can only be detected by means of these hairs, which can be distinguished as forming a series, although the punctures them-

selves are lost amongst the general punctuation of the surface: in some cases (*Colpius inflatus* *e.g.*) I fail however to find any trace of their existence, and in other cases (*vide* *Laccophilus*) they are excessively fine and indistinct, and as a rule are most regular and highly developed in large and smooth species such as we find in the genus *Cybister*; as already remarked the outer series is more irregular and less persistent than the others, the sutural series being the most permanent.

In the great tribe *Hydroporides*, the rule is that the upper surface of the body bears a true punctuation such as exists in many other families of *Coleoptera*, while on the other hand in the *Colymbetides* and *Hydaticides*, the opposite of this is the case—punctate species being exceptional.

When present, the punctuation is of various degrees of fineness and coarseness, of density and sparsity, and is more usually seen on the elytra than on any other parts; in many of the genera of *Hydroporides*, however, the hind coxæ are very persistently punctate. The most remarkable punctuation occurs in the genus *Pachydus*, where certain species have a deep coarse punctuation on the wing-cases, the punctures moreover being more or less elongate in a peculiar manner. In many species of the genus *Hyphydrus* the elytra have a double punctuation, very fine punctures being mixed with considerably coarser ones.

In the *Agabini* punctuation is nearly absent, the surface being either smooth, or—and this is the more frequent—covered with a very fine reticulation, formed by fine scratches placed so as to form meshes of irregular shape, and varying much from species to species. In *Copelatus* the sculpture is peculiar, and in its highly developed form consists of numerous longitudinal grooves or striæ on the wing-cases arranged in a very regular manner. In the *Colymbetides* the most peculiar sculpture of the family is found: in *Colymbetes* the wing-cases are marked with transverse scratches, striæ or grooves, placed very near to one another, and varying greatly from species to species. In *Meladema* (*vide* *M. coriacea* No. 978) a still more remarkable sculpture exists; the elytra bear a large number of crescentic marks, which at the base are readily distinguished as such, but towards the extremity of the body become somewhat changed in shape and are very densely placed, so that an appearance is caused somewhat as if the surface were covered with overlapping scales.

In the *Hydaticides* the surface is usually smooth, but in *Eretes* the wing-cases are marked with rather large quite round punctures, and in *Acilius* both the upper and under surfaces of the body are much punctate. In some species of *Noterus* there exists a peculiar punctuation consisting of large round isolated punctures placed chiefly on the hinder part of the wing-cases; and in *Synchortus* there is a somewhat similar sculpture, except that the punctures have their front margins somewhat raised giving rise to a peculiar rough appearance.

It is worthy of notice that when punctuation is absent from the greater part of

the upper surface, it still often exists to a greater or less extent on the apical portion of the wing-cases (*vide* gen. *Dytiscus*, numerous species); and in the case of many species where the sculpture is peculiar, it frequently loses its peculiar character to a greater or less extent on this part and approximates on it more or less to ordinary punctuation.

The anomalous *Amphizoa* presents us with the only case among the *Dytiscidæ* where sculpture approaching to what is so usual in the *Carabidæ* exists. In the latter family the elytra very frequently bear each eight or nine rows of punctures or striæ or punctate striæ, and in *Amphizoa* something of the same sort is found, but the sculpture in this case is without the regularity and definiteness it possesses in the *Carabidæ*. Elevated costæ or ribs on the wing-cases are very rare in the *Dytiscidæ*, but occur in *Darwinhydrus* in conjunction with a punctate surface. In many *Hydroporini* the surface bears an extremely fine, short, depressed pubescence, but this is an exception to the condition usually prevalent.

It is worthy of note that in nearly all the cases in this family where we find a peculiar sculpture present and well developed, we may see in allied species such sculpture present in a more rudimentary manner, and thus, as it were, indicating the steps by which it has been developed: this is well exemplified in the genus *Copelatus* (for notes on the sculpture of which, see page 201).

The most remarkable fact in the sculpture of the *Dytiscidæ* is the sexual disparity found in numerous species. This sexual disparity when present is of such varied character that I can here only allude to a few instances. In the first series—*Dytisci Fragmentati*—no instances of well marked difference in the sculpture of the sexes have been recorded, but it is possible that the peculiar punctuation observed in certain species of *Synechortus* (*vide* *Hydrocanthus asperatus* No. 18) may prove to be confined to the female sex; the differences existing in the sculpture of the prosternal process in the two sexes of some species of *Hydrocanthus* is accompanied by a change of form in the part, and is no doubt a phenomenon of a quite different category to the remarkable distinctions in the sculpture of the upper surface found in the *Dytisci Complicati*.

In many species of *Hydrovatus* the distinct punctuation of the female is the same as in the male, but yet the former sex has the surface rendered dull (coriaceous) by a very fine additional sculpture.

In *Hyphydrus* we find that the females have the punctuation of the upper surface very obsolete in comparison with the males, but, nevertheless, in the former sex there is a development of an excessively fine sculpture which renders the surface quite dull: in this genus we find that certain species have two forms of the female, one of them resembling the male in sculpture while the other is dissimilar in the manner just described; and this phenomenon of dimorphism in the females continues to be of very frequent occurrence in the *Dytisci Complicati*. Passing to the group *Hydroporini* we find that in *Cœlambus* certain species show great differences in the

sculpture of the two sexes; thus in *Dytiscus parallelogrammus* (No. 416) the female differs from the male in that the punctuation is very much finer and less deep and the surface is dull, and on examination with a considerable power of the microscope it is seen that the dullness arises from the surface being covered with a very dense minute sculpture of a peculiar character, but a good deal similar to that which is seen on a larger scale in *Meladema coriacea* (No. 978). In another species of *Cœlambus* (*Dytiscus impressopunctatus* No. 409) the phenomena are quite different; here the female usually resembles the male in sculpture except that its punctuation is a little denser and finer: there occurs however very rarely a second form of the female (*Dytiscus lineellus* Gyll.) very different from the male, the surface being much more finely punctured and dull, and on examination with a considerable power of the microscope it is seen that the dullness arises from the surface being covered with an extremely fine obsolete sculpture of a reticulate nature such as is seen in *Agabus*. In the large genus *Hydroporus* the females frequently differ in sculpture from the males in a more or less conspicuous manner, and the difference is sometimes dimorphic (*vide* *Hyphydrus memnonius* No. 558). In the *Agabini* we find in the genus *Agabus* that sexual differences of sculpture are of frequent occurrence: the differences is sometimes slight as in the case of *Dytiscus guttatus* (No. 670) where the female has the sculpture a little coarser than in the male; or it may be very considerable as in *A. lecontei* and *A. griseipennis* (No. 731 and 732), where the male is less but the female is more reticulate than is usual in the genus; or the sexual differences of sculpture may be variable as in the cases of *Dytiscus congener* (No. 706), and *Dytiscus bipustulatus* (No. 751), and in these cases the variations seem to be, to some extent at any rate, dependent on the locality the specimens inhabit.

In the genus *Copelatus* a difference in the sculpture of the two sexes is very frequent, and the differences are in some species very great, in others only slight, and are quite as frequently found on the surface of the prothorax as on the wing-cases; they usually consist of very short linear impressions, or fine, rather irregular scratches, dimorphism of the females is occasional, and when it exists is strongly marked, the female being either similar to the male in sculpture, or having a large area of the surface covered with an additional sculpture (*vide* *Copelatus neglectus* No. 841). It should be remembered that this genus is unique among the Dytiscidæ by reason of the existence in it of a remarkable sculpture common to the two sexes: this non-sexual sculpture is of quite a similar nature to the sexual sculpture of other genera: the impressions on the thorax of *Colymbetes sulcipennis* (No. 895) and the regular grooves on its elytra are just such as would (from what exists in the females of other genera) make one suppose them to be a female sexual sculpture, and yet they are equally developed in both male and female; it is further interesting to note, that the females of the species I am alluding to (and of other *Copelati*) have an additional sexual sculpture consisting of some extremely fine irregular

scratches on the wing-cases : it might therefore be roughly said that in *Copelatus* the males have gained a highly developed and pseudo sexual sculpture as well as the females, but that the latter have in addition to this a minute sculpture of a different character and confined to their sex. In the genus *Coptotomus* there exists a minute difference in the punctuation of a portion of the wing-cases, the punctures in the female being more elongate than in the male. And in *Matus* (*Colymbetes bicarinatus* No. 907) the females have the upper surface less shining than the males, owing to the existence of an extremely minute, almost imperceptible, sculpture, which appears to be slightly more developed in the former of the two sexes. In the genus *Rhantus* sexual differences of sculpture are usually either absent or very slight, but in some species become important. Thus in *Dytiscus bistriatus* (No. 949) the female may on a very careful examination be seen to possess a slight development of a more coarse reticulate sculpture than the male on certain spots situated along the lines of serial punctures ; and in *Dytiscus pustulatus* (No. 945) there are two small patches of a similar but deeper reticulation, one on the outer, and the second on the middle of the two rows of serial punctures, some little distance behind the base. In *Rhantus anisonychus* ♀ the sculpture on the outer and basal portion of the wing case, is a good deal deeper than in the male ; and in *Rhantus discedens* (No. 938) a deep coarse sculpture exists in the female on the part just mentioned ; while in *Dytiscus notatus* (No. 947) the whole of the wing-case, except a small portion at the outer and apical part, is covered with such sculpture : in this latter species however the female is sometimes smooth like the male, and individuals occur in which the sculpture is intermediate in extent between these two extremes. The peculiar sculpture of the genus *Colymbetes* exhibits some very interesting sexual peculiarities ; although in several species no appreciable difference between the sexes in this respect can be detected, yet in others very notable differences exist ; in *Colymbetes sculptilis* (No. 968) the peculiar transverse scratches of this genus are placed closer to one another in the female than they are in the male ; while in *Dytiscus dolabratus* (No. 971) and in *D. striatus* (No. 972) the female peculiarity is that the scratches are very much deeper than in the male ; in *Colymbetes exaratus* (No. 966) the striæ or scratches are a little deeper and a little closer together in the female than they are in the male, and moreover in the former, the basal portion of the wing-case is rendered very dull, by the development of an excessively minute sculpture (consisting of very small longitudinal corrugations) which is quite absent in the other sex : in *Colymbetes dahuricus** the sculpture of the female presents very exceptional peculiarities, it is decidedly finer than in the male, but it is more irregular, owing to the transverse scratches, being less elongate, and so running much more frequently into one another, and the surface is duller than in the male owing to the greater development of an exces-

* There is some little doubt whether the specimens of this species I here allude to are really the sexes of one and the same species.

sively minute interstitial sculpture, having a somewhat granular appearance. Passing to the Dytiscini we meet in that group with some most remarkable facts: in the genus *Hyderodes* the females are usually smooth and polished like the males, but they are dimorphic, inasmuch as a second form of the female is met with (apparently only rarely) in which the surface is excessively rough, the whole of the upper surface, except the head, being covered with deep coarse erosions or corrugations, irregular in shape and direction. In the genus *Dytiscus* considerable discrepancies exist among the various species in the sexual sculpture; in *D. punctulatus* the female has ten grooves on the basal portion of the wing-cases, and the whole of the rest of the upper surface, including the interstices of these grooves bears a close fine punctuation, while in the male the grooves are wanting, and the elytra are punctured only on the apical portions; the female in this species has also even the undersurface rendered dull over a considerable portion of its area by the existence of fine, short scratches or reticulations which are not found in the other sex; in *D. fasciventris* the facts are similar except that the fine sculpture is less extensively developed, so that as regards this latter peculiarity the sexes are more alike than they are in *D. punctulatus*. In *Dytiscus habilis*, in *D. hybridus*, and in *D. verticalis* the females have no grooves on the wing-cases, but they differ from the males by a greater development of the punctuation on the apical portion of these parts, and also by possessing an additional fine punctuation on the lateral basal portion of the wing-case; in *D. verticalis* this additional punctuation is very small and unimportant; the females of these three species all possess too a conspicuous special sculpture on each side of the prothorax; in *D. sublimbatus* the female characters are approximately the same as in *D. punctulatus* and *fasciventris*, but in this species there also exist females differing in sculpture from the males only by their possessing a fine scanty punctuation on the lateral portions of the prothorax; a similar condition is present in *Dytiscus marginalis*, the females differing greatly from the males by their grooved and much punctate surface, but individuals of their sex are found differing from the males only by a slight punctuation on the thorax and a little greater development of that on the elytra. In *D. circumcinctus* we again find the females possessed of a grooved and much punctate surface, but here a second form of the female occurs quite without sexual punctuation or grooving of the wing-cases. The females in the genus *Dytiscus* differ then from the males by possession of a fine sexual sculpture, and by a grooving of the elytra, this latter feature is however not found in certain species, and in certain other species is sometimes present, sometimes absent, while the fine sexual sculpture of the females is more constant, but may also be occasionally quite absent, and is only present in its greatest development in such females as are sulcate. In the Hydatioides, we find certain species of *Acilius* possessing females with grooved wing-cases, but the grooves are very different from what exists in *Dytiscus*, they being but four (instead of nine or ten) in number, and furnished with a pubescence

which is confined to them; and the spaces between the grooves are without punctuation, while in the males all the surface is punctate; the females of the different species of this genus differ much in their characters from one another as to the development of the grooves and the punctuation and pubescence, and in *Dytiscus sulcatus* (of the genus *Acilius*) we find a patch of pubescence occupying a depression on each side of the prothorax.

In *Thermonectes* the surface is highly polished, and when the females possess a sexual sculpture, it consists of beautiful elongate punctures placed on the basal part of the wing-cases but not extending over a large part of their area. In *Sandracottus* the surface is very highly polished and the female is destitute of sexual sculpture. In *Graphoderes* the females are usually destitute of any sexual sculpture, except a slight corrugation of the surface on each side of the prothorax, but in this genus we meet occasionally with a more extreme development of sexual sculpture than any found elsewhere in the Dytiscidæ or indeed in the whole of the order Coleoptera, the surface of the wing-cases being rendered rough by a very coarse sculpture almost like tubercles (but not very different from what exists in *Hyderodes*) while the prothorax is covered with beautiful deep corrugations; these exceptionally sculptured females are very rare and it has been thought they were only a second form of that sex in a species (*D. zonatus*) having usually smooth females, but I think more probably they belong to one or two distinct species of the genus.

The Hydatiini are insects with a very smooth surface, and many species are without sexual sculpture, but others exhibit such well marked; in this group the chief seat of the sculpture is a portion of the area of each side of the thorax, but sometimes also it is situate on the basal portion of the wing-cases; it consists usually of coarse, short, irregular impressions, but little connected with one another, and sometimes there exists on certain individuals (*vide* in *Dytiscus goryi* No. 1020) only one or two such impressions; in a few New World species however the sexual sculpture consists of a circumscribed, and remarkably well defined patch of quite fine sculpture on each side of the thorax, formed by very closely placed fine rugæ (*vide* *H. subfasciatus* No. 1019). In the Cybistrini there is frequently present in the female, a highly developed sexual sculpture, consisting of fine anastomosing scratches, which frequently nearly cover the entire upper surface of the insect, but in other cases are restricted to a much smaller area, sometimes this sculpture is more developed on the thorax than it is on the elytra, while at other times we find the reverse of this; in many species of *Cybister* there frequently exists a sexual sculpture so fine and slight that it can only be detected by a careful examination, and many females are quite smooth; in this genus, great variation of the sexual sculpture is quite common in certain species: some species of *Megadytes* (*vide* *M. steinheili* No. 1108) show a most beautiful sexual sculpture, the prothorax being quite smooth, in great contrast to the wing-cases which are covered, at any rate on

their basal portion, with regularly placed elongate impressions; the largest of the Dytiscidæ, viz., *Cybister giganteus* No. 1117 and *Megadytes ducalis* No. 1118, have no sexual sculpture whatever: in Homœodytes we find the females of two species to possess a most excessively fine sexual sculpture, consisting of extremely delicate, short scratches, giving rise to a silky appearance on the basal part of the elytra.

From this imperfect review of the sexual sculpture of the Dytiscidæ it will be gathered that much variety exists as to its character, and as to its degree of development, and that the occurrence of two forms of the female of a single species is not unfrequent in various portions of the family: there is considerable reason to suppose that the development of the sexual sculpture is to some extent connected with local and climatic conditions, and it may prove to be that it is of more frequent occurrence in temperate and cold climates than in warmer ones: if it serves any, or what purpose is still undetermined, but it is certainly amongst the most interesting peculiarities of the Dytiscidæ, and of considerable importance in respect to its bearings on the questions of sexual variation and selection.

The peculiar sculpture of the species of *Copelatus* is of much interest and well deserving investigation. In some of the higher forms of the genus (*Col. sulcipennis*, Lap. *e.g.*) it appears as very deep and regular striæ or grooves, to the number of 10, 11, or 12 on each wing-case, and extending nearly their whole length, but becoming finer at the extremity, where usually some of them are more abbreviated than others. In other species no trace of such striation can be detected; but in some of these cases the fine punctuation of the wing-cases assumes the form of very short fine scratches, which while they may be very distinct in the female, can sometimes scarcely be traced in the male (*C. simplex*, Clk.) The scratches displayed in such cases frequently assume a different direction on the hinder portion of the wing-case, becoming transverse there, when they have a longitudinal direction in front (*Celina australis* No. 806); while in some other species only the transverse posterior scratches exist (as in *C. ferrugineus*).

In some of the cases where the elytra are truly striate, *i.e.* display elongate regular straight lines, it can be perceived that these are developed along the series of impressed punctures which are so constant a feature of the Dytiscidæ; this is not the case in those species, where the scratches are short, for they are not then more developed near the series of the punctures than they are elsewhere; so it would seem there are as regards the sculpture three different series of species, viz., 1, punctuation ordinary; 2, punctuation elongate, and diffuse; 3, punctuation elongate, but only along the lines of serial (and secondarily of the interserial) punctures; the punctuation of this latter category becoming in the most differentiated cases, highly developed symmetrical striæ.

It seems impossible to believe that the development of this beautiful sculpture can have been determined by the action of natural selection; preserving those individuals of a species in which it was more developed than in others, for in

certain species it is so excessively slight as to be almost inappreciable, and the amount of variation to be detected in such cases being likewise very slight, one cannot believe in these slight differences of development exercising any appreciable effect on the existence of the creature. The sculpture however is most certainly correlative with sex even in its rudimentary forms; thus in *Dytiscus agilis* (No. 825) the female has the punctuation on the basal portion of the wing-cases more elongate than in the male; and in the allied *Copelatus atriceps* the difference is exhibited in a still more rudimentary form: while in the very interesting *C. dimorphus* (No. 827) we have a species displaying true striation in a rudimentary form, and in the male in a much more rudimentary manner than in the female. And throughout the genus, wherever there is a difference it is that the females have the sculpture more developed than the males. We are entitled to believe then that whatever the influences may be that have brought about in *Copelatus* this peculiar sculpture, they are influences which have acted at first more strongly on the female than on the male, but that continued during a long period such disparity has disappeared, or tends to disappear.

It may be thought that these striæ were of assistance in giving holding to the claws of the male, and that their direction enabled the male tarsi to arrive at the position most convenient for supporting the insect during the process of fertilization, and that the sculpture first gained by the female, was transmitted by heredity to the other sex. But these suppositions do not seem to me very satisfactory. One does not see why the females should be in the scratched species more different from the males, than they are in the striate ones; for certainly the influence of heredity or sexual transference must be acting constantly, and not confined to the higher forms of development of the sculpture; and it is excessively doubtful whether the highly developed sculpture is as useful for this sexual function as the rudimentary form: for the beautifully perfect straight striæ and grooves do not seem to me adapted at all for serving a useful purpose of the kind above suggested; the twenty-four deep broad parallel striæ on the wing-cases of *Col. sulcipennis* can scarcely serve as agents to direct the claws to their requisite position, and I am at a loss to see in what other way they would be useful. Besides this, it is worthy of remark that in numerous species where the striation has attained a great development (similar in each sex) there exists in addition a very fine true sexual sculpture, peculiar to the female. The generalization of the facts in accordance with any theory of common origin, or of natural selection does not seem therefore to be warranted; but on the other hand the presumption that each highly developed species has reached its development by passing through a series of lower stages similar to such as are found still existing as the maximum of development in other species, is perfectly satisfactory and indeed irresistible to the imagination; and the conclusion I come to on this subject of striation is that if we could gradually subtract from a highly developed species its

later acquisitions, and so go back step by step till we reached the striation in its rudimentary form, we should find it similar to, but not identical with, that of other species; which is equivalent to saying that each species has had a truly separate line of development.

As a striking instance of the probable truth of this statement, I would point to the New Caledonian *Copelatus aubei*—the species in which the striation of the elytra reaches its maximum. The locality where it is found is remarkably rich in possessing very different forms of the genus; one of these forms *C. interruptus* (No. 847) has a striation of the elytra quite peculiar to itself; the striae are twelve in number but they are fragmentary, and slightly irregular in a peculiar manner. Now the only other species having so many as twelve striae is the *C. aubei* above alluded to, and on examining this species one is brought to remark that on the portion of the wing-case where the striae are usually least perfect—the apical portion—they show a fragmentary condition similar to what exists over the whole elytra in *C. interruptus*. In addition to this there is a true highly developed submarginal stria in *C. aubei*, and in *C. interruptus*, this stria is not present but is represented by a regular series of punctures, which only require extension to form the stria as seen in *C. aubei*. Now both these species are highly developed ones, found in one (isolated) locality, and the conclusion that their similarities are due to similarity of environment, and their differences due to a different condition of more original punctuation, is perfectly satisfactory to my mind. I conclude that *C. interruptus* and *C. aubei* have been developed from similar (but not identical) primitive conditions; and that the serial punctures which seem to determine the lines of development of the striation, were less regular in the primitive ancestors of *C. interruptus*, than they were in the primitive ancestors of *C. aubei*, and that as the resultant of this the former species as we now see it has less regular striation than the latter has.

The HEAD in the Dytiscidae is of remarkably short, broad form, and is inserted on the prothorax in such a manner as to completely fill up the front part of the latter and so avoid any discontinuity of outline at the junction of the two; it is considerably broader than long, and in *Laccophilus*, where the abbreviation is greatest, the width is about double the length; its upper surface shows but little convexity, and is marked on each side, near the front, at a little distance from the inner margin of the eye, with an irregular depression or fovea; and close to the suture with the labrum there is a transverse depression or short impressed line on each side; the clypeus is nearly always so completely joined to the posterior portion of the head, that the suture between the two is obliterated, although frequently its commencement can be traced near the eye, on each side, whence it extends inwards towards the anterior part of the irregular depression before alluded to; in the genus *Dytiscus* (as also in *Pelobius*) the clypeal suture is distinct across all the width of the head, and in *Meladema* (especially in

Dytiscus lanio) it can also be traced nearly across the head; on the other hand in *Noterini*, *Laccophilini*, and the *Hydroporides*, the clypeal suture is totally obliterated: in the genus *Dytiscus* where this suture, as already remarked, is unusually distinct it is in some species greatly deeper in one sex than in the other (*vide* *Dytiscus dauricus*, No. 998). The clypeus itself terminates over the labrum as a thin edge, so that the labrum continues the plane of the surface of the clypeus; but in *Hyphydrus* we find an exception to this, the anterior part of the clypeus being deflexed at right angles, so that the labrum is placed on a different plane to that of the front of the head; in this case a slightly raised line passes in a curve from eye to eye, and marks off the small deflexed anterior portion of the clypeus from the rest of the surface; there are other members of the *Hydroporides* in which the deflexed anterior portion of the clypeus exists in a less distinct manner, (*vide* *Dytiscus inæqualis* and allies in the genus *Cœlambus*), and this is also the case with the raised margin, which exists in various degrees of obliteration; or partial development, the middle part of this line is frequently absent, even when the lateral part remains distinct on each side, (*vide* species of *Herophydrus* and *Hydrovatus*); I have spoken of this margin as existing in various degrees of obliteration, but it is doubtful whether this is really the case, and perhaps it may rather be that it is in some cases partially developed; this question can scarcely be determined without the aid of embryological research, but as the deflexed and margined clypeus is accompanied by a change in position of the parts of the mouth, inasmuch as they are in such case placed more on the undersurface, and as it seems to be an advantage to these predaceous beetles to have the parts of the mouth, more especially the mandibles and maxillæ, quite in the anterior part of the head, I think the process of evolution is to bring about the diminution of the deflexed anterior portion of the head, and so permit the labrum, and the mandibles and maxillæ which this covers to be brought quite to the front of the head; but from other considerations, which I need not here enter into, the reverse of this might be argued.

The depressed line, which I have described as existing on each side of the head close to the front angle of the clypeus, exhibits much variation, and is in the *Hydroporini* frequently so indistinct as to be nearly absent; in other cases these lines assume a greater extension so as to nearly join in the middle, and form a nearly continuous line parallel with the front of the clypeus (*Dytiscus maculosus*, No. 92, *e.g.*); in those species where the front of the clypeus is deflexed, there may be detected at its very front edge a transverse depression, which seems to have arisen from the extension of these lines (*vide* *Hyphydrus major*); in the *Noterides* these clypeal depressions are usually placed nearer together, and so farther from the angles of the clypeus, while in *Colpius* they appear only to be represented by a very vague impression at a rather greater distance from the front edge. In the larger *Dytiscidae*, these depressions assume more the form of foveæ than of lines, and are of remarkably

large size in *Meladema*. In the *Agabini* and some of the neighbouring genera, the clypeal depressions appear to be entirely wanting, but on a careful examination of *Dytiscus bipustulatus* it will be seen that the front of the clypeus appears to be provided with a fine margin, and on looking at other species of the genus (*Agabus*) it will be seen that the depression causing the margin arises from the extension in the transverse direction of the clypeal depressions.

The clypeus or epistoma is usually of a paler colour than the part of the head behind it, this is displayed in a very marked manner by the species of the genus *Dytiscus*, where the clypeus is yellow, and the front of the epicranium nearly black; the darker colour of the epicranium frequently extends more or less on to the clypeus, so as to leave the anterior portion of this latter paler than the posterior part, but it is only very rarely indeed that the anterior portion of the clypeus is quite black in colour.

The upper surface of the head shows no trace of any other suture besides the one existing between the epicranium and clypeus; the transverse suture between the epicranium and protocranium which is very strongly marked in most of the *Carabidæ* (in the natural condition concealed by the pronotum) being completely absent. The front of the epicranium on each side bears a well-marked irregular depression or fovea, which is occasionally more or less distinctly divided into two depressions placed one before the other (*Meladema*); these frontal foveæ are entirely absent in the *Noterides*, and are only very indefinitely present in *Hyphydrus*, and some other *Hydroporides*, and are very much effaced in many members of the family having a very smooth and polished surface, such as the *Hydaticides* and *Laccophilini*; these foveæ are more punctate than the rest of the upper surface, and carry some very fine and short depressed hairs. The large eyes encroach on the upper surface of the epicranium, and their inner edge is usually limited by a more or less punctate depression. The vertex, or portion of the epicranium behind the eyes is much broader than the front, and is covered at the sides by the angles of the prothorax; thus, the eyes notwithstanding their large size are not prominent, and the breadth of the head behind the eyes is as great (or very nearly as great) as it is across the eyes, this being contrary to what exists in the *Carabidæ*, where the greatest breadth of the upper surface lies on a line drawn between the convex portions of the two eyes; there is no trace of any constriction behind the eyes. In the *Colymbetides* the surface of the head, when dark in colour, is usually marked by two more or less definite paler spots placed between the eyes, these frequently become united into one, and in *Dytiscus* are not only united, but placed so as to form an angular mark on the middle of the head; and in the *Hydaticides*, the head is usually pale but with dark vertex, and angular dark marks in front, of variable extension according to the species examined.

The antenna is inserted more or less conspicuously on the undersurface of the head; the anterior angle of the epicranium being inflexed, the cotyloid cavity for

the antenna is situated on it, and in front of the cavity the side of the clypeus is likewise a little infolded ; in the case of *Eretes* (and in a less striking manner in the other *Hydaticides*) where the eyes are large, and the anterior parts of the head are very much reduced in size, the antennæ are inserted rather on the upper than the under surface, the antennal cavity being quite visible from the front and above, owing to the diminution in size and the comparatively slight folding of the front angle of the epicranium ; on the other hand where the front of the clypeus is deflexed or inflexed, as in *Hyphydrus*, *Queda*, *Hydrovatus*, *Pachydrus*, the antennal cavity is situated quite on the undersurface of the head, the point of insertion being invisible when the insect is looked at from the front and above. The surface of the eye likewise is curved downwards, and continued on to the undersurface of the head so as to form a considerable portion of its area ; between its inner termination and the elongate maxillary cleft of the buccal cavity there intervenes a narrow space, with a very polished surface, which serves as a groove for the lodgment of the base of each antenna when these organs are placed in repose on the under surface of the head.

The gula (*pièce basilaire* of the French authors) is broad and distinct, each of the sutures separating its sides from the epicranium, terminates as in the *Carabidæ*, in front by a deep impressed puncture ; this puncture is placed at a considerable distance behind the mental suture, and from it there is directed outwards a fine but distinct suture, extending as far as the maxillary cleft ; in this manner a large transverse piece is situated behind the mentum, but this piece in the middle is not separated from the gula by any suture, and it is doubtful whether it should be considered a lateral expansion of the front of the gula (which in such case is T shaped) or as a submentum (*pièce prebasilaire* of the French authors) : this same formation exists in the *Carabidæ*, but is there excessively obscure owing to its being of smaller size, and limited by more or less obsolete sutures.*

Behind the eye there is a transverse suture or mark, which is clearly the remnant of the suture seen in the *Carabidæ* as separating the epicranium from the protocranium : in a few cases this suture is very obsolete, thus in *Dytiscus duodecimpustulatus* (No. 462) it can scarcely be traced : it occupies much the same position in relation to the hind margin of the head as it does in *Carabidæ*, but is much nearer to the anterior part of the head than it is in that family, though it is more than probable that there exists much difference amongst the members of the *Carabidæ* in this respect ; indeed I find that in *Carabus violaceus*, the suture in question is much nearer to the front than it is in *Harpalus caliginosus*. The relations of the parts near this suture may be summed up by saying that in the *Dytiscidæ* as well as in the *Carabidæ* the cheek is separated from the temple by a transverse suture, but that the cheek is very much shorter in the *Dytiscidæ* than

* I believe myself that this transverse front bar of the gula is quite homologous with the submentum (*pièce prebasilaire*) of some other *Coleoptera*.

it is in the Carabidæ, although the temples remain of approximately similar magnitudes in the two families.

There are but little variations in the structure of the head within the limits of the Dytiscidæ; in Amphizoa the head is not so short in proportion as it is in the other members of the family, and the antennal cavity is not quite so concealed, and the transverse sutures of the under surface are extremely obsolete; these differences are however but slight, and in other respects the head of Amphizoa is essentially similar to that of the Dytiscidæ.

The most important characteristics of the Dytiseid head besides its short, broad form, are first, its great extension transversely behind the eyes, so that its shape is far from being cylindrical, and second, the great extension of the eyes on the under surface, so that they approach very near to the maxillary cleft: to these may be added as subsidiary, the broad gula, and the existence of the protocranial suture on the under but not on the upper surface.

In the genus *Pelobius* we meet however with insects possessing a head different from that above described as characteristic of the Dytiscidæ; its posterior portion is cylindrical and not laterally dilated behind the eyes, which are prominent and convex; there is no protocranial suture either on the upper or under surface, and the anterior angles of the clypeus are more produced or acute than in any other of the Dytiscidæ: on the other hand the gula is broad, and the eyes extend on the under surface near to the maxillary cleft, these being points characteristic of the Dytiscidæ. Some of the members of the Pseudomorphini, one of the aberrant groups of the Carabidæ—approach the Dytiscidæ in several details of the structure of the head; the antennæ in *Silphomorpha*—one of the genera of Pseudomorphini—are inserted far on the under surface of the head; the eyes are not prominent and approach on the under surface near to the maxillary cleft; and the protocranial suture is distinct on the under surface but not on the upper surface; while the general form of the head is broad and flat, and departs very far from the cylindrical form; it is however comparatively narrow behind, the cheeks are very much longer than the temples, and there is a very deep and remarkable antennary groove between the eye and the maxillary cleft: this head, therefore, though far from agreeing with that of the Dytiscidæ, has the insertion of the antennæ, and the development of the antennary groove an exaggeration of what exists in that family, and is thus in these points more different from the normal Carabidæ than are the Dytiscidæ. The Haliplides have a head which is remarkably deep in the vertical direction, the insertion of the antennæ is conspicuously exposed on the upper surface of the head, there being no trace of that folding under of the antero-lateral portion of the epicranium so universal in the Dytiscidæ (but which however is wanting in *Eretes*); the protocranial suture is distinct on the under, wanting on the upper surface, the cheek is very short, the temple large, and the gula broad, characters of the Dytiscidæ: and the submental piece (*pièce prebasilaire*) is of large size, although its

sutures are obliterated, so that its extent can only be determined by the two large punctures which mark the anterior limits of the lateral gular sutures.

The eyes in the Dytiscidæ are always very large, and are placed at the sides of the head, but also encroach largely on its upper and under surfaces; they are very smooth and very finely faceted, but in this latter respect there exist some slight differences, as may be seen by a comparison of *Agabus* and *Hydrovatus*, with *Eretes* and *Laccophilus*, the facets being distinctly larger in the former genera. When looked at from the front of the head the curved outline of the eye is frequently much indented or emarginate just behind the antenna, by the side of the front part of the epicranium; but in other cases the outline is preserved nearly intact at this point, so that the eye may be described as possessing in front a circular inner margin: *Agabus* and *Hydrovatus* may be referred to as exhibiting the former, *Eretes* and *Cybister* as exhibiting the latter structure; as might be expected intermediate forms occur as regards this point, such are seen in *Laccophilus*, and even in *Dytiscus*.

The labrum is usually quite conspicuous, and placed on the front of the epistome or clypeus in such a manner as to continue its curve; but in a few genera it is more or less withdrawn to the under surface of the head, and is correspondingly inconspicuous; in *Queda* it is completely concealed, and in *Pachydrus*, and numerous species of *Hydrovatus* its front margin alone can be seen; in *Hyphydrus* although visible and exerted, it is placed more on the under surface of the head; this position of the labrum depends entirely on the formation of the front of the epistome, for the labrum being always attached to the front edge of this part, varies in position according as this is inflexed or not; thus in *Queda* and *Pachydrus* the front of the epistome is quite doubled or folded under, and thus carries the labrum back to the under surface of the head, while in *Hyphydrus* the front of the epistome, though not completely doubled under, is placed at right angles to its posterior part, and the labrum assumes a corresponding position; *Cœlambus* is a variable genus as regards the form of the front of the clypeus, and the exposure of the labrum. In its form the labrum shows but little variation; it is always strongly transverse, greatly broader than long, and its front edge is more or less emarginate in the middle, the emargination varying much as regards its breadth and depth; the curve of the emargination is fringed with ciliæ implanted in a transverse groove: in *Queda* where the labrum is concealed, the whole of its anterior edge appears to be set with elongate fine ciliæ, and in *Hyphydrus* the ciliæ extend nearly across the whole breadth of the labrum, but in the great majority of the family the rule is that the emargination of the labrum is confined to a comparatively small width in the middle, and the ciliæ are quite short. In the *Noterides* the emargination is very slight, and the ciliæ are quite wanting: in *Dytiscus latissimus* the emargination is very slight. The labrum is always yellow in colour, and its upper surface is completely destitute of the isolated exerted setæ which are so con-

spicuous in the Carabidæ and Cicindelidæ. In *Pelobius* the emargination of the labrum is destitute of the ciliæ found in most other Dytiscidæ. In *Amphizoa* the middle of the labrum appears from above rather prominent than emarginate, but when looked at from in front and beneath, it appears very much the same as in the ordinary Dytiscidæ, but is destitute of the central series of ciliæ. On the inner face of the labrum in the middle in front there is in the Dytiscidæ a prominent triangular space, densely covered with pubescence, and this exists equally in *Amphizoa*, but is absent in *Pelobius* and the *Noterides*, while in the Carabidæ the rule appears to be that there is a glabrous space on the middle of the labrum, with pubescence on either side, completely the reverse of what prevails in the Dytiscidæ.

The mandibles are always short, and in the condition of repose nearly or quite concealed by the short labrum, they are very broad, their outer edge forms a very regular convex curve, while the upper and inner face is much twisted and is irregular in form, and the apex is turned into a broad somewhat sharp edge, which is a little prominent at each of its two corners; the under surface is flat and bears along its inner edge a band of fine, dense, very short pubescence, and there is also usually an isolated patch of similar pubescence near the apex.

The maxillæ are provided with two lobes, the outer one of which is quite slender, and is divided a little below the middle so as to form a two-jointed palpus; the terminal joint is longer than the basal one, and is slender and cylindrical, usually a little acuminate towards the extremity, and the division between it and the basal joint is very perfect, so that the outer lobe of the maxilla is a perfect two-jointed palpus; in *Pelobius* however the articulation between the two joints is imperfect, and the terminal joint instead of being cylindrical is broad and flat and has a large angular prominence on its inner edge, and an acute apex, so that the transformation of the maxillary lobe into a jointed palpus is very much less complete in this insect than it is in the ordinary Dytiscidæ; in *Amphizoa* the outer maxillary lobe is curved and slender, but it is flattened and not cylindric, and the only trace of a division is the existence of an emargination or notch on the inner edge, so that the condition of the outer maxillary lobe in this insect is very much that of the Gyrinidæ. The inner lobe of the maxilla is always strong and horny, and has an acute, bent inward termination, which plays the part of a hook in holding the food; this terminal portion is always free from ciliæ, but the lower portion of the lobe, along its inner edge is always fringed with ciliæ. These ciliæ are subject to much difference in the family; in *Noterus* there are only a few of them placed at a distance from one another, while in other cases (*vide Eretes*) they are dense and elongate; on the upper face of the maxilla it may be seen that the inner lobe has at its base internally a membranous or semicorneous space, and it is usually on this space that are placed the longest and finest ciliæ; it is rare that the ciliæ of the maxilla are very fine, but they are frequently very coarse, as may be seen in *Dytiscus*, where some of the terminal ciliæ are so stout as to form really powerful

hooks. In *Pelobius* the ciliæ are nearly entirely absent, the inner edge of the maxillary lobe bearing merely two short, fine setæ; in *Amphizoa* the ciliæ are abundant, and the lower portion of the lobe is furnished with dense fine pubescence, while the upper portion bears stouter ciliæ, a considerable space nearly free from ciliæ intervening between these two groups.

The maxillary palpi are four jointed, the basal joint shorter than any of the others but quite distinct; the second and third joints are nearly similar to one another in length; frequently the third is a little longer than the second; the fourth joint is a little, or considerably longer than either of the others; occasionally the terminal joint is notched or emarginate at the extremity (*Noterides*). The maxillæ and their palpi are entirely destitute of any pubescence or setæ (with the exception of the ciliæ of the inner lobe). The maxillæ of the *Dytiscidae* are similar to those of the *Carabidae*, except in the absence of any outstanding setæ and in the less elongate second joint of the palpi; in this latter respect the *Pseudomorphi* agree with the *Dytiscidae*.

The mentum is a transverse corneous piece, of very hard consistency, articulated by a distinct suture with the piece behind it; this suture is slightly curved or bisinuate, or nearly straight, but is quite obsolete in *Amphizoa*: the sides of the mentum are rounded in such a manner that the greatest width is at the base; in front there is a large piece cut out of the middle for the reception of the ligula, so that the mentum is thus made to consist of two lateral lobes, projecting from a transverse basal piece; the base of the excision is not straight, but projects farthest forwards in the middle, owing to the excision being deeper on each side in adaption to the piece supporting the labial palpus; there is thus formed a slightly projecting, more or less distinct central lobe at the base of the excision; this lobe is variable in form, and is usually short in proportion to its width, and with a rounded front edge; but is sometimes emarginate in front; when the labial palpi are approximate to one another this lobe is narrow; or nearly absent (*vide Deronectes*) and may form a small acute tooth; such a tooth exists in *Noterus* but has in that genus a bifid extremity. The side wings or lateral lobes of the mentum vary a little but not much in form; in *Hyphidrus* their front termination forms a more acute and elongate angle than it does in other groups. In *Pelobius* the mentum is very much shorter than in any other *Dytiscidae*, so that the very broad excision is very short, and the very broad lateral lobes are extremely abbreviate; in *Amphizoa* the mentum is remarkable for its large size, the basal transverse piece being very elongate, but in other respects it is formed as in the ordinary *Dytiscidae*.

The ligula is large and very conspicuous, it appears externally as a quadrate or transverse horny plate, filling up and projecting beyond the excision of the mentum: its free front margin varies a little in form, it may be nearly straight as in *Cybister*, or slightly rounded or even very feebly prominent in the middle, so as to be bi-emarginate, and is usually furnished with elongate very fine ciliæ, placed some-

times so as to form two or more fine pencils, but sometimes extending along the whole margin in an equal manner: the outer surface of the ligula is impressed on each side for the accommodation of the labial palpi, so that along the middle it is more or less bulged or prominent: on the inner face the ligula is membranous, except that there is a transverse horny strip at the extremity. The paraglossæ are closely united to the ligula, and do not project beyond it; on the outer face of the ligula they are difficult to detect, but are nevertheless visible on each side, as forming a more transparent corneous outer edge to the ligula; but on the inner face of the ligula they are very conspicuous, as each of them has its inner margin, fringed with an elongate series of very fine, dense ciliæ. The supports of the labial palpi are conspicuous and at their base are attached to the outer face of the ligula, and covered by the front portion of the central piece of the mentum; their extremity is on the contrary very conspicuous, and appears in the form as it were of a stout basal joint to each palpus; this joint bears a deep notch on its antero-external face and thus the palpus is capable of being bent back over the mentum as well as moved in a forward and dependent manner. The labial palpi are of moderate length and are three-jointed: the basal joint is considerably shorter than either of the others, while the second and third differ but little from one another in length (except in the *Noterides*); the second joint frequently bears a minute prominence on the middle of its inner face causing it to appear faintly bi-emarginate on this face: the apical joint is usually simple and cylindrical, but may be dilated, and bear a notch (*Coptotomus*).

In the *Noterides* the labial palpi are peculiar, the basal joints being short, while the apical one is large, more or less dilated, and bears a notch: in *Hydrocanthus* this dilatation of the terminal joint of the labial palpus becomes extreme.

The labial palpi and the outer face of the ligula, are, like the maxillary palpi, polished and shining and destitute of any exerted setæ. In *Pelobius* the ligula shows much difference from that of the *Dytiscidæ*, it is short, and its anterior portion is flexed upwards so as to assume an obliquely vertical direction, this semi-vertical portion is rather coarsely punctate. I can detect no paraglossæ, and the supports of the labial palpi are not emarginate. In *Amphizoa* the ligula does not project beyond the lateral wings of the mentum, owing to the great development of these latter, but its structure is quite that of the *Dytiscidæ*.

The parts of the mouth in the *Dytiscidæ* offer two points of interest—first, the great uniformity they show throughout the family, and second, the way in which the different pieces are coadapted so as to close together quite completely and exclude the entry of water: the mandibles are curved so that they close under the labrum, and of the maxillæ only the very hard, hooked, extremities are at all exposed, the ligula and mentum completely closing the underside of the mouth; notwithstanding this close packing together of the parts of the mouth the whole of the maxillary and labial palpi are entirely exposed—more completely, in fact, than is usual.

The small amount of variation exhibited by the trophi throughout the family is perhaps largely connected with the different parts being thus closely packed together. However this may be, the absence of any conspicuous developments of the trophi is remarkable, especially when we recall the fact that these parts in the Dytiscidæ are extremely similar, except in some minor details, to those of the Carabidæ, and remember the great modifications of these parts that the latter family displays; if the labrum of *Carabus*, where the ligula is merely a small semi-membranous piece connecting the anterior parts of the large paraglossæ, be contrasted with that of *Anthia*, where the ligula is a very large, elongate, horny lobe, at the base of which on each side is attached the insignificant paraglossa, the great difference here displayed will render very striking the uniformity of the corresponding parts throughout the Dytiscidæ.

The parts of the mouth show no important differences from those of the Carabidæ, but there are two or three comparatively unimportant details as to which a sufficiently constant difference exists to make them worthy of mention; these are—first, the complete absence of outstanding setæ from the palpi or other parts of the mouth: second, the fact that the second joint of the maxillary palpi is only about equal in length to the third, whereas in the Carabidæ in the vast majority of cases the second joint is considerably longer than the third; and, third, the deep emargination of the extremity of the lower face of the supports of the labial palpi. These characters are not, it will be admitted, of great importance, and as regards the second of them it may be mentioned that, in the Pseudomorphini, the second joint of the maxillary palpus remains, as in the Dytiscidæ, scarcely longer than the third joint. The undivided external maxillary lobe seen in *Amphizoa* is also paralleled among the Carabidæ (*Callistus*, and one or two other genera).

The ANTENNÆ of the Dytiscidæ are always eleven-jointed, and are usually slender with the joints elongate, the second being, however, frequently shorter than the others, and the joints from the third to the apex each a little shorter and more slender than its predecessor. Although this is the structure in the larger and higher forms, there is a considerable diversity in other parts of the family. The *Noterides* are especially peculiar in this respect, their antennæ, being short and more or less distinctly incrassate in the middle; in this group even when the antennæ are apparently slender and simple as in *Hydrocanthus*, it will be found that the middle joints (joints 6 to 8) are a little broader and longer than the following or than the preceding ones. In the *Hydroporides* the rule is that the second joint is as long as, or longer than the third, and the antennæ are only as long as, or shorter than the head and thorax, and not remarkably slender, while in the *Hydrovatini* and *Hyphidriini* and *Bidessini* it is not unusual that they should be feebly serrate internally. In the *Colymbetides* the antennæ are slender and filiform or setaceous, but never become very remarkable on account of elongation and tenuity, and in the earlier genera of the group, are usually comparatively thick; it is in the

Hydaticides and Cybistrini and Laccophilus that the tenuity of the antennæ becomes extreme; in some of the larger species of Cybister, such as *C. owas*, the antennæ are so long and slender, and the joints are so very feebly connected together that it is difficult to find in collections a specimen with these organs unbroken. In some genera of the family the males have the antennæ distinctly different from the female, the difference being usually that the middle joints are more or less dilated and assume peculiar shapes; this sexual difference is seen to its greatest extent in the genus *Noterus*; in some Hydrovatini (especially in *Hydrovatus aristidis*) the antennæ of the male are remarkable for their form; in the males of some species of *Sternopriscus* the form of the antennæ is excessively bizarre, and two or three species of *Agabus* (*Dytiscus serricornis* No. 755, *e.g.*) are remarkable inasmuch as the apical joints of the antennæ are dilated in the male.

The most striking peculiarity of the antennæ of the Dytiscidæ, is that they are quite free from setæ, from sensitive pubescence or from punctuation, their integument being quite shining and polished. In *Pelobius* however the very large basal joint of the antennæ is very distinctly punctate; and in *Amphizoa* the antennæ are still more considerably punctate, the four or five basal joints showing an extensive though rather irregular and obsolete punctuation, and the following ones being each in succession more sparingly punctured, so that only the apical joints appear entirely glabrous and shining.

This condition of the antennæ is one of the most important of the distinctions between the Dytiscidæ and Carabidæ, the members of this latter family having the antennæ setose, and the joints, except the three or four basal ones, covered with an excessively fine, short, and dense pubescence which, in conjunction with numerous minute pits on the surface of the joints, makes them dull, and is considered to be an external apparatus of sensation. This glabrous condition of the antennæ in the water-inhabiting Dytiscidæ is therefore of interest as helping us to interpret the function of the antennæ in insects—a very complicated and difficult subject.

There are certain facts which render it probable that the simple condition of the antennæ of the Dytiscidæ is not to be attributed directly to their aquatic existence, but is rather correlative with their not being in contact with the atmosphere. The species of *Hydrophilus* (aquatic beetles of the family Hydrophilidæ) breathe in a very peculiar manner, by protruding from the surface of the water the three apical joints of their antennæ, and by their means carry down a supply of air to the under surface of the body; now it is a remarkable fact that these three apical joints thus exposed to atmospheric influences are covered with a very dense and fine sensitive pubescence, while all the rest of the antenna which remains in the water is completely glabrous and shining like the antennæ in Dytiscidæ. There are, moreover, certain Carabidæ in which the sensitive pubescence of the antennæ is nearly absent, and it is interesting to note that there is reason to suppose that these are species which in the perfect state are nearly or completely withdrawn

from the air on account of their completely subterranean existence; we may therefore conclude that it is under the influence of much exposure to the atmosphere that the sensitive pubescence on the antennæ of beetles has been developed. The more elongate exerted setæ present in the Carabidæ but absent in the Dytiscidæ have probably a totally different function from the fine sensitive pubescence; it is quite possible that they are tactile organs similar to the whiskers of the cat, and that they are absent in the Dytiscidæ because the resistance of the water when the insect is active would move the setæ, and, if they are as I have supposed sensitive to pressure, render them a nuisance to their possessor. The study of these structures falls however to the Carabophilist, but I must remark in connexion with the question of the relations between the Carabidæ and Dytiscidæ, that in the former family there exists considerable differences in the clothing of the antennæ; thus in the rare and anomalous *Trachypachys* there is a complex and symmetrical system of antennal setæ, but sensitive pubescence seems to be entirely absent; while in other cases, as in *Anthia*, there is a beautiful development of the sensitive pubescence and a nearly complete absence of setæ. In the Scaritidæ and Broscidæ the four basal joints of the antennæ are glabrous (except that in some Broscidæ porosity begins at the apex of the fourth joint) but on the other joints the rule is that the porosity is confined to the edges of the more or less compressed joints, the flattened sides being glabrous. Exceptions occur in which the porosity covers the whole of these joints, and there are other exceptions—these much more remarkable—in which the porosity is almost entirely absent. It is especially noteworthy that the forms presenting this latter peculiarity are those which from their form and appearance, are probably most completely subterranean in their habits, such as *Monocentrum*, *Teratidium*, *Neocarenum*, *Passalidius*, and *Metaglymma*. In *Passalidius* there are neither punctures nor hairs, but there are grooves on the edges of the joints. In *Neocarenum* there exists scarcely any pubescence but a few coarse punctures. In *Scarites excavatus* there are large punctures mixed with the fine porosity on the edges of the joints. Thus we see that in the subterranean Carabidæ, where the antennæ are less subject to atmospheric influences than the other members of the family, the antennæ have their sensitive structures less largely developed than usual, and that in the most completely subterranean forms of the family the antennæ approximate to those of the aquatic Dytiscidæ, without however being so completely simple as in the water beetles.*

* I am greatly indebted to Mr. H. W. Bates for furnishing to me the information above recorded about the sensitive structures of the antennæ in the Scaritini and Broscini. Mr. Bates has examined many species in the following genera with the results thus tabulated—*Carenum*, *Psimachus*, *Emydopterus*, *Euryscaphus*, *Carenidium*, *Oxylobus*, *Scaraphites*, *Crepidopterus*; in the above the compressed joints 4-II are glabrous only along the middle of the flattened sides; while in *Monocentrum*, *Teratidium*, *Neocarenum*, *Passalidius*, *Metaglymma*, *Brullea*, the antennæ have a diminished band of porosity on the edges or are entirely smooth; in *Scarites* they are much as in *Carenum* but more variable; in *Gnathoxys* there are rather distant pores, and in *Pereosoma* there is dense porosity.

As regards the slenderness of the antennæ in the Dytiscidæ it may be remarked that the degree of tenuity may probably prove to be in direct ratio with the activity of the species: very slender antennæ are found only in the best swimmers, and we can readily understand that it is favourable to active locomotion that the antennæ should be very slender and flexible, so as to stream back with facility along the under surface of the body during rapid motion, and thus offer no obstacle to progression.

The PROTHORAX is at its base very intimately applied to the elytra and mesosternum, and so accurately fitted therewith as to shut out the entry of water, although this great articulation still permits considerable movement of extension: in front it very closely and accurately clasps the head. It is always strongly transverse, its greatest length being, in consequence of the prolongation of the anterior angles, at the outside, but the breadth is usually twice, or more, its greatest length. The sides are generally gently curved, and the breadth increases from the front angles to the base or very near it, the sides therefore diverging from the front to the base; rarely this divergence is absent, as in *Vatellini*, less rarely the greatest width is across the middle, the sides being slightly contracted from thence towards the base (*Amphizoa*, *Tyndallhydrus*, *Andex*, many *Deronectes*, and a few *Agabi*). When the prothorax is broad at the base, the hind angles are well marked, frequently acute, and in *Neptosternus* they are produced so far backwards as to be spinose; in other cases the hind angles are nearly rectangular; in *Deronectes* frequently obtuse and rounded, and obtuse in a few *Agabi*: it is worthy of remark that the continuity of the outline of the thorax and elytra is very complete in the higher Dytiscidæ, and in the exceptions where it is very incomplete it is apparently always or nearly always an accompaniment of an imperfect articulation of the prosternal process with the mesosternum and metasternum. Thus in *Andex*, *Tyndallhydrus*, and the *Vatellini*, where the pronotum is narrow, and not at all continuous in outline with the wing cases, the prosternal process fails to articulate with the metasternum at all, and is abbreviate in front of the middle coxæ instead of being prolonged between them; while in the genera of *Hydroporini* in which the outline of thorax and elytra are very discontinuous, the mesosternal fork is disconnected with the metasternum, and in those *Agabini* where the hind angles of the thorax are obtuse or rectangular, the articulation between the prosternal process and the metasternum is very imperfect (*vide* *Agabus wasastjernæ*, *A. cephalotes*, &c.), only when the prosternal process is very perfectly held or fixed do we find the base of the thorax become very broad so as to completely continue the outline of the afterpart of the body, and render perfect the form for motion through the water: it is in the *Hydaticides* and *Cybirtrini* that we meet with the most perfect outlines, and these are the groups where the prosternal process is most perfectly articulated with the metasternum. On the other hand in these most perfected forms the capability of extension or mobility of the prothorax from the afterbody is nearly completely lost.

The side of the pronotum is most frequently limited above by a raised margin ; this margin may be broad as in *Hyderodes*, or very fine as in *Eretes*, or may be entirely absent, as in the *Cybistrini* and numerous others, and all the grades of connection exist between these extreme instances. In a few cases the anterior edge of the pronotum is also finely margined as in *Coptotomus* and *Laneetes*, but this is rare, and a raised front margin is generally nearly absent, although usually more or less distinct traces of its existence may be seen in the part of the thorax near to the anterior angle. In *Pelobius* the anterior margin is conspicuously ciliate, and in *Amphizoa* it is furnished with a narrow strip of pale membrane ; in the other *Dytiscidæ* it is destitute of either membrane or ciliæ, except that frequently the ciliæ may still be seen on a small extent of the front margin close to the anterior angles, as may be well observed in *Cybister* ; these rudiments of ciliæ are usually confined to an extremely small space, and are very difficult to detect without dissecting the head from out of the thoracic cavity. The base of the pronotum in those genera having a visible scutellum is usually a little sinuate on each side near the outer angles ; in those genera where the scutellum is invisible the base is a little produced backwards in the middle so that a more or less distinct angle is formed. The surface of the pronotum never bears any setæ, and has no distinct basal or other foveæ, but very frequently a more or less distinct transverse series of punctures near the front margin but not reaching the sides may be seen, and also a second series near the hind margin, but more or less broadly interrupted in the middle : on the disc traces of a longitudinal channel may be seen in the shape of a fine short impression, and in *Laneetes* this channel becomes so elongate as to extend half the length of the thorax, while in *Amphizoa* it is entire : in *Bidessus* and in *Sternopriscus* there exists a peculiar longitudinal plica or fold on each side at some considerable distance from the middle.

On viewing the prothorax from the side it is seen that the sides of the pronotum form a more or less conspicuous roof-like expansion ; this expansion is a growth of the pronotum and does not include any portion of the prosternum, for on looking at the under surface it is seen that the junction between the pronotum and the pieces of the prosternum is not at the outside edge of the thorax, but entirely on its under surface, at a considerable distance from the edge. The prosternum proper is a transverse piece, connected with the episternum by a suture which is usually very distinct, but in *Hydroporides* is quite obsolete ; its lateral termination connects with the side of the pronotum by a very short suture which is frequently quite open in front ; although the sides of the prosternum proper are thus very short (in the longitudinal direction) the middle portion has a very large development, it takes a downwards and backwards direction between the anterior coxæ and is prolonged behind them to articulate with the middle of the meso- and metasterna ; the prosternum proper may therefore be described as consisting of a middle longitudinal piece, and a lateral wing on each side of it in front. The longitudinal portion is of much impor-

tance, and is more or less distinctly marked off into three parts, 1. The portion behind the coxæ, this is called the prosternal process ; 2. The portion lying between the coxæ, which may be called the intercoxal band ; and 3. The portion in front of the coxæ, which may be called the anterior band. This anterior band forms on either side the front boundary of the coxal cavity, and at the outer side of the coxa is prolonged backwards, and articulates by a very distinct suture with the posterior side-piece or epimeron ; external to the coxa the anterior band is continued outwards, forming the side wing of the prosternum proper ; this side wing is always very short (in the longitudinal direction). The anterior band varies somewhat in length, according to whether the front coxæ reach very near to the anterior edge of the prosternum or not ; it is extremely short in *Hyphydrus* but is considerably longer in most of the *Noterides*, and in the *Colymbetides*, *Dytiscini*, *Cybistrini* and *Hydaticides* it is of moderate length (except in *Eretes* where it is exceptionally short), and in these groups, which might be called the *Macro-Dytiscidæ*, in consequence of their greater size contrasted with the other groups, it is thickened along the middle, though to a variable extent ; this thickening causes the undersurface of the prothorax to be of a keel-like form, as may be well seen in the *Cybistrini* where it reaches its greatest degree of development ; in the *Colymbetides* this keel-like thickening is usually much less than it is in the *Cybistrini* and *Hydaticides*, and in the lower forms of the *Agabini* such as *Agabus cephalotes* (No. 663) and *A. cordatus* it may be seen in its rudimentary condition ; *Coptotomus*, however, is an exception in this respect to its allies. Passing now to the intercoxal portion of the prosternum, we find that in the *Hydroporides* this part forms a slender band between the coxæ, and that it attains its greatest elongation in *Hyphydrus* ; in some of the *Bidessini* (*Pachydrus*), a very peculiar condition of this band exists, in front its margins are a little raised so that it is somewhat depressed or sulcate along the middle, but about halfway of its length it becomes suddenly very prominent or protuberant, and convex instead of sulcate, giving rise to the suggestion that the anterior and posterior portions are distinct pieces ; traces of this division of the intercoxal band into two portions exist in numerous members of the *Hydroporides*, inasmuch as the posterior portion is less flat transversely than the anterior, and that there is a more or less distinct tubercular prominence at the junction of the two parts (*vide* *Dytiscus parallelogrammus*, No. 416, and numerous other species of *Cœlambus* and the allied genera). In the *Macro-Dytiscidæ* the condition of the prosternum between the coxæ is very different, for the thickening or incrassation of the middle which I have described when speaking of the anterior band, is continued between the coxæ, so that here the prosternum projects beyond the level of the coxæ, or appears as it were to be arched over them, not merely produced between them, as in the *Hydroporides*. Behind the coxæ, the prosternum becomes broader, though sometimes only slightly so (*Cybister*, *Dytiscus*, and many others), and is more or less prolonged backwards to form the prosternal

process ; this process differs greatly in its shape or form, and offers very important and constant means of recognizing some of the genera and species ; it is sometimes very broad and short, the extreme of this condition being seen in *Hydrovatus*, where the prosternal process projects but little behind the coxæ, and is much broader than long, and is moreover nearly truncate behind, the hind margin showing however (when the prothorax is separated from the after-body) an obscure angle in the middle ; the other extreme is seen in *Laccophilus*, where the prosternal process, is very narrow, and is prolonged backwards as a longer or shorter slender spine ; a great number of other forms more or less intermediate exist between these two extremes ; but in *Neptosternus* we find a very exceptional prosternal process, the process itself being trispinose, and consisting of an elongate slender spine in the middle, with a shorter, and very slender, divergent spine on each side. The prosternal process is either flat in the transverse direction, as in most *Hydroporides*, some *Agabini* (*Platambus*, &c.), or is more or less compressed (*Ilybius*), convex, (*Coptotomus*) or even indistinctly carinate along the middle (*Herophydrus*) ; it is margined at the sides, the margin being the backward prolongation of a similar margin existing along the front of the coxal cavity (*vide* *Cybister*) ; this margin sometimes extends for the whole length of the process (*vide* many *Agabini*, *Dytiseus fuscipennis* No. 752 *e.g.*), or becomes slender and terminates before the extremity (*Dytiseus*, *Cybister* and many others) ; sometimes the margin exists at the side of the prosternal process, although it has become quite obsolete along the front of the coxal cavity, and it appears to be the rule in the *Hydroporides* that this margin of the coxal cavity and prosternal process is absent or only very partially developed : the most remarkable condition of the margin of the prosternal process is that found in *Neptosternus*, for on examining *N. tridens* in comparison with some other *Dytiscida*, it will readily be seen that the lateral spines of the prosternal process are simply the lateral margins which are detached and divergent ; this peculiar condition of the prosternal process in *Neptosternus* is well worthy of the attention of entomologists who think that the doctrine of community of descent may be true in the case of allied genera and species, if not in the case of all living beings ; for we have here a perfectly isolated and most peculiar form of appendage, which there seems every reason to believe must have been developed *pari passu* with the prosternal process, for it is almost impossible to suppose that the margin was in the ancestors part of the prosternal process, and has since become gradually detached ; whereas we can well understand the prosternal process and its margins as being each a distinct growth, amalgamated in other beetles, but distinct in *Neptosternus* ; if such be the case how far back must we go in the ancestral record before we could hope to find a common ancestor for the allied genera *Neptosternus* and *Laccophilus* ? We must go back to the period when there existed no prosternal process. But the existence of a prosternal process is an absolutely constant feature of the *Dytiscida* ; and must no doubt have been one of the earliest developed of

the special characters of the family. So that the epoch to which we must remount before we can imagine a common ancestor for these two allied genera is enormously remote: while to believe that there may have been a common ancestor for the whole of the Dytiscidæ becomes almost impossible.

The anterior coxal cavities are placed as a kind of excavation, one on each side of the middle piece of the prosternum, and vary in shape in conformity with the coxæ; they are imperfect inasmuch as they only very partially enclose the coxæ, especially in those forms where the coxæ are elongate as in *Hyphydrus*; owing to their peculiar form and position, the cavities appear to be open behind, but this is not really the case, and in fact all the Dytiscidæ have the coxal cavities closed behind; the closing of the cavities is effected, as usual, by an expansion given off from either side of the posterior aspect or edge of the middle piece of the prosternum; this expansion is in the Dytiscidæ nearly colourless, and might be supposed to be membranous, or semimembranous in consistency, but it is really quite corneous: moreover it does not connect together the posterior extremities of the side pieces as is usual in the Coleoptera with closed coxal cavities, but is placed as it were somewhat in the interior of the prothorax, and so leaves the angles of the side pieces free and prominent; this mechanism is highly important as it is, in conjunction with the articulation between the prosternal process and the afterbody, the means of securing a perfect articulation between the prothorax and the afterbody, and consequently of excluding water from the interior of the insect; the prominent transverse portion of the bridge closing the coxal cavities, actually enters into the interior of the mesosternum (of which it has exactly the width) while on each side there is left a groove or depression into which the front edge of the mesosternum fits, the free edge of the prothoracic side piece playing over that of the mesothoracic piece. The coadaptation of the various parts of the posterior aspect of the prothorax, to corresponding parts of the afterbody and base of the wing-cases is extremely perfect and very complicated; proceeding from below upwards we have, first, the prosternal process stretching beyond the mesosternum to be received in a metasternal groove; directly above the prosternal process we see a considerable protuberance or prominence which fits into the fork of the mesosternum; then come the posterior aspects of the coxæ which fit into facets on the face of the mesosternum, and on a still higher level we have the transverse bridge closing the coxal cavities which fits into the interior of the mesosternum, while on the upper surface we find that the base of the mesothorax and scutellum are shaped so as to allow the hind margin of the pronotum to overlap and accurately fit them, while the shoulders of the wing cases are prominent, and rest on an expansion of the posterior face of the pronotum which is beautifully sinuate and emarginate to facilitate the coadaptation. This jointing is so perfect in the higher forms such as *Cybister*, that if after the prothorax has been detached from the afterbody an attempt be made to replace it in its natural position, this

s very easily effected; and it will then be found that the thorax retains its position in spite of considerable efforts being made to dislodge it; it may however be instantly separated by the point of a needle being thrust under the apex of the prosternal process. The most completely fixed prothorax is found in the Noterides, and more specially in the genus *Hydrocanthus*, where the excessively broad, truncate prosternal process is so accurately fitted to the metasternum, that the two parts look as if they were soldered together. The epimera and episterna of the prothorax sometimes exist in the Dytiscidæ with their sutures distinct (as in *Aeilus* and *Cybister*) so that the shapes and the comparative areas of the two pieces can be readily distinguished; but in the *Hydroporides* the sutures are usually obsolete. When they can be distinguished it is seen that the larger part of the side of the prosternum is formed by the episternum, the epimeron being a comparatively linear piece: the front coxal cavity is formed however by the junction of the epimeron with the anterior band of the prosternum proper; the epimeron sends off a prolongation for this purpose along the border of the coxal cavity, which entirely cuts off the episternum from forming any part of the articular cavity.

The structure of the prothorax in the Dytiscidæ is essentially similar to that of the Carabidæ, the most important differences being the great development and perfection of the prosternal process, and the mode in which the coxal cavities are closed behind. There are some Carabidæ which possess, however, a highly developed prosternal process like the Dytiscidæ (*vide* especially *Cyclosomus*): and in *Trachypachys* and *Systolosoma* of the Carabidæ, the structure of the prothorax approaches very much to what exists in the Dytiscidæ, and indeed shows comparatively little difference from that of *Amphizoa*. These three genera, *Trachypachys*, *Systolosoma* and *Amphizoa* may truly be said to show a structure of the prothorax intermediate between that of the Dytiscidæ and Carabidæ. The prothorax of *Pelobius* is very different—quite different one might say—from that of *Amphizoa*, *Trachypachys* and *Systolosoma*, and in certain respects is formed like that of the Carabidæ, though on the whole it must be pronounced to be a very different prothorax from that of any of the Dytiscidæ or Carabidæ; its general form, apart from its acuminate and large and remarkably elongate prosternal process, is rather that of the Carabidæ than of the Dytiscidæ, and the very conspicuously ciliate front margins are found in no other Dytiscidæ but are the rule in Carabidæ; leaving the general shape and prosternal process out of consideration we find that it has the characters of the Dytiscid prothorax, but in a quite peculiar form; the middle band of the prosternum assumes immediately at its front margin a directly vertical direction, and then curves backwards arching over the coxæ which are very elongate; this marked prominence and incrassation of the middle of the prosternum is found only in some of the higher Dytiscidæ, such as the *Cybirini*; the intercoxal band shows on each side a raised margin, which is quite independent of the usual margin of the coxal cavity and prosternal process, but appears to be really similar to the fine raised margin found in a similar position in *Cy-*

bister scutellaris (No. 1101): these facts suggest that it is just possible that the remote and less perfected ancestors of *Cybister scutellaris* may have possessed a prothorax somewhat similar to that of *Pelobius*. The prothorax of the Haliplidæ is likewise intermediate between the Carabidæ and Dytiscidæ, its general shape being Carabideous, while it possesses a large prosternal process and the coxal cavities are closed behind, by what may be called a horny membrane so as to be in these respects nearer to the Dytiscidæ; it shows however characters extremely different from *Pelobius*, the front coxæ being short and globular, instead of elongate as in *Pelobius*, the anterior margins destitute of ciliæ, and the prosternal process broad, and quite truncate behind instead of acuminate.

In the Carabidæ the peculiar genus *Omophron* has been supposed to be in respect of its prothorax an approximation to the Dytiscidæ, but this is not really the case, for the coxal cavities are closed behind in a manner thoroughly Carabideous, and quite different from what we find in Dytiscidæ, Haliplidæ, *Pelobius*, and those Carabidæ which approximate them (*Trachypachys* and *Systolosoma*). The prothorax of *Silphomorpha* (Carabidæ) in some respects approaches that of the Dytiscidæ, but in others it is very different; the broad roof-like sides, and the existence of a prosternal process, and the absence of ciliation on the upper front margin are the points of approximation, while the form of the prosternal process, the mode of closure of the coxal cavities, and the very short coxæ, are very different from what we find in the Dytiscidæ. If, however, the prothorax of a *Carabus*, of an *Agabus* and of a *Silphomorpha* were taken for comparison, I think we might quite as justly conclude that the thorax of the water beetles was intermediate between those of the two Carabidæ, as that any other linear arrangement of the three was correct.

In concluding this slight sketch of the structure of the prothorax in the Dytiscidæ and some of the forms that approximate to the family, I may be pardoned for pointing out that any attempt to account for the resemblances we find to exist by a theory of heredity or community of descent only leads one into a maze of perplexities, which becomes the more distressing the farther we pursue it. If, however, we attempt to account for the resemblances as being adaptations, either by evolution or special creation, to the conditions of existence, or the environment, we find them quite comprehensible; in the beetles inhabiting water, viz., Dytiscidæ, Amphizoa and *Pelobius*, it has been necessary to exclude the water from the interior of the body, and to fix the prothorax solidly so that it shall not be moved from its place during locomotion; thus we find perfect coadaptation of the parts to suit those of the afterbody, and the locking of the parts together by a prosternal process reaching to a part behind the articulation required to be rendered secure; moreover in the higher forms which move much and rapidly in the water we find all projections and prominences that would impede forward motion diminished or removed, and it is possibly for this reason that there is an absence of the ciliæ of the anterior margin.

Thus in the very different *Pelobius*, *Amphizoa*, *Dytiscidæ*, and *Haliplidæ*, we find a similarity of structure of the prothorax existing, not because of community of descent, but because water having to be excluded from the interior of the body, the simplest and best method of accomplishing that end has been used in all these different forms. As regards the peculiar *Carabidæ*, *Trachypachys* and *Systolosoma*, we do not know enough of their mode of life to explain the structure: but as regards *Silphomorpha* and their allies we know that they are dwellers under bark, and we can feel sure that if this has been the case throughout a very long period of the ancestral record it must evolve a structural condition very different from that of the cursorial *Carabidæ*. *Omophron* has a peculiar mode of life, concealing itself for long periods in fine wet sand, and we find that in it the articulation between the pro- and meso-thoraces is well fitted to guard against the entry of fine sand, although it would not be sufficient to keep water from gaining access to the interior.

The prothoracic stigma is placed high up, near the junction of the epimeron with the pronotum, and is protected by a hollow in the front edge of the mesothoracic episternum; the orifice is short and small, but the stigma is perfectly fitted for respiration, although it is not used for inspiration during the aquatic life of its possessor.

The MESOTHORAX in the *Dytiscidæ* might, when the under surface of the body is looked at, be supposed to be absent, for it is not exposed in front of the metasternum, but is, as it were, turned inwards, so as to be placed more or less at right angles with the longitudinal axis of the body; the result of this is, that a kind of cavity or fissure, roofed above by the sides of the prothorax, exists in front of the metasternum, and in this hollow the flexed front and middle legs are packed during the process of swimming. This position of the mesosternum is however by no means invariable in the family, for though carried to an extreme extent in *Hyphydrus*, *Hydrovatus*, *Cybister*, and other higher forms, yet in the *Vatellini*, *Sternopriscus* and others the position differs but little from that of the *Carabidæ*. The mesonotum has been hitherto but little studied although the visibility or invisibility of the scutellum has largely determined the classification of the family. It offers however considerable modifications which should not be neglected. The scutum appears in the form of two lateral lobes joined together along the middle line; their base is nearly straight except that in the middle it is frequently (*Dytiscus*, *Cybister*, *Graphoderes*, &c.) intruded on by an angular projection from the middle of the front of the scutellum; taken together the two lobes appear in front always more or less emarginate, being longest at the outer side, shortest at their point of junction in the mesial line; this emargination may be very slight (*Dytiscus bipustulatus* No. 751 gen. *Agabus e.g.*), or very deep (*Dytiscus rœselii* No. 1169, *Cybister e.g.*) In *Noterus* the base of the scutum is deeply transversely impressed, and the impression divided in the middle by a raised line, but in general the lobes are slightly convex, and without any definite impression. The mesonotum is very small in *Hyphydrus*, *Laccophilus* and

Hydrovatus, and the scutum is then very inconspicuous; in *Laccophilus* especially it appears as a short band in front of the scutellum without any division into two lobes. I have already remarked that the hind margin of the scutum is impinged on in the middle by what appears to be an angular prolongation from the front of the scutellum; this prolongation is however probably a distinct piece of the scutum, as it certainly is in the Carabidæ, in some members of which family (*Harpalus caliginosus* *e.g.*) it appears as a large piece, nearly as large as the scutellum, reaching quite to the front of the mesonotum, and thus widely separating the two lobes of the scutum. The scutellum always comes to the surface of the body at the base of the suture of the elytra, but is very frequently invisible (*Laccophilus*, *Noterides*, *Hydroporides* and *Methiles*) owing to its being covered by the middle of the base of the prothorax; but in the Macro-Dytiscidæ the scutellum is always visible. In the groups where it is concealed it varies in form and size, thus in *Noterus* it forms a very short broad triangle the apex of which is directed to the hind part of the body; in *Laccophilus* also it forms a short broad triangle with rounded sides: in *Hyphydrus* it forms an irregular four-sided figure, broadest behind, the hind margin straight and with projecting lateral angles; in *Hydrovatus* it reaches its extreme diminution, and can only be detected as a minute transverse raised band: in the other Dytiscidæ it has the form of a more or less elongate triangle, with the base in front attached to the scutum, but the sides forming a free edge, under which lock the anterior parts of the sutural edges of the wing cases. The post-scutellum is a transverse band on a lower level than the scutellum; on it rests the base of the wing case when closed, and to its extremity is attached a small membrane; this membrane is sometimes ciliate at its edges (*Dytiscus*, *Cybister*) and is always present in the Dytiscidæ, and also in some Carabidæ, though it has been supposed by Lacordaire (*Introduction à l'Entomologie*, I., p. 347) to be peculiar to *Dytiscus*.

The most important piece of the mesosternum—the mesosternum proper or medisternum—consists of a middle portion, giving off above a lateral branch on each side, so that it may be roughly described as being somewhat T shaped; the middle portion is the lowest part of the mesosternum, and has more or less the form (when disarticulated) of a short six-sided column, as seen in *Dytiscus*, *Cybister*, and most of the larger Dytiscidæ, but in the case of such of the smaller Dytiscidæ as have only a very slight extension of the mesothorax in the longitudinal direction, the columnar appearance is quite lost (*Laccophilus*, *Hydrovatus*, *Hyphydrus*, &c.), and it is also but little conspicuous when the depressed form of the insect causes the column to be very short (as in *Copelatus*). Like the prosternum proper, the medisternum appears to consist of two pieces placed one in front of the other, and distinguished by a very prominent line of junction. The front of the column is placed immediately behind the anterior coxæ, and is on each side usually more or less hollowed for their accommodation, so that in fact the column bears two facettes in front which are sometimes separated by a channel (*Cybister*); in *Dytiscus*

however the facettes are nearly or quite absent so that the front of the column is comparatively plane; at its lowest point the column is very deeply channelled or impressed, to receive a protuberance of the posterior part of the prosternum, the sides of the channel being frequently divergent so that a kind of fork is formed (mesosternal fork); the front extremity of the fork is usually a slight angular prominence, and the hinder termination of the fork or channel, is sometimes also angularly prominent (*Dytiscus*, *Cybister*, &c.); the floor (or roof) of the channel behind usually connects with the intercoxal process of the metasternum, and sometimes is prolonged backwards to effect this junction (*Dytiscus* and many other Macro-Dytiscidæ), while in other cases the metasternal process is sufficiently perfected to articulate completely with the mesosternal fork without this latter being furnished with any backward prolongation (*Cybister*). Although the mesosternal fork is in the great majority of the Dytiscidæ connected with the metasternum; yet in *Pelobius*, in the *Vatellini*, in a large portion of *Hydroporini*, and in *Sternopriscus* this is not the case, and the middle piece of the medisternum does not connect at all with the metasternum: this is of considerable importance, for in the *Carabidæ* these pieces seem, so far as I know, to be always connected and are sometimes even soldered together (*Anthia*); the development of the prosternal process in the Dytiscidæ, is greater than in the *Carabidæ*, while on the other hand the corresponding part of the mesosternum is smaller than in the *Carabidæ*, though very highly modified in other respects. It is well worthy of remark that even where the mesosternum fails to connect with the metasternum there is frequently (*Deronectes*) a growth backwards from it towards the nearest part of the metasternal process, as if a connexion were in process of evolution (for remarks on this, *vide* last part). Sometimes the apex of the medisternal column does not reach so far down as the front of the metasternum, and the connexion between it and the metasternum, if such exists at all, is comparatively imperfect (*Eretes*, *Hyphydrus*). It may also be remarked that the perfection of this connexion is to a considerable extent correlative with the distance between the intermediate coxæ, as when these are very close together, and more especially when they are also prominent from their cavities (*Vatellini*, *Sternopriscus*,) then the connexion is wanting, while when the coxæ are well separated (*Hydrovatus*, *Noterides*, most *Hydaticides*) then the connexion is perfect. The side of the middle column is distinct in most of the Macro-Dytiscidæ (*see* *Dytiscus*, *Meladema*, *Ilybius*), but when the mesothorax has lost almost absolutely its extension in the longitudinal direction and become merely a diaphragm between the meta- and prothoraces (*Laccophilus*, *Hydrovatus*, *Hyphydrus*), then the column is so compressed that it becomes a mere lamina, bearing two facettes for the accommodation of the front coxæ; the two sides which form the back of the column are quite concealed so that they can only be viewed by disarticulating the mesothorax, they form a part of the anterior portion of the articular cavities for the middle coxæ.

The lateral wings of the medisternum are each very short in the longitudinal direction, and extend on each side so as to assist in forming the anterior portion of the middle coxal cavity ; they become each a little longer towards the outside of the coxa, where they terminate by the junction of the outer extremity with the lower portion of the epimeron ; throughout the family they are very constant showing no important variations in size and form.

The larger portion of the area of the mesosternum is formed by the episterna ; each of which is a large piece rising from the upper edge of the side-wing of the medisternum directly over the middle coxa ; its upper extremity is shorter (in the true longitudinal axis) than the lower, and rises higher than the other parts of the mesosternum and plays an important part in the articulation of the wing-case ; the inner margin of the episternum is the border of the large foramen affording the means of communication between the prothorax and afterbody ; this inner margin has the appearance of being a distinct piece, articulating at its lower part with the front piece of the middle column of the medisternum (referred to above as being probably a distinct piece) ; at its upper extremity this inner margin expands and becomes hollowed, in a more or less evident manner, and thus affords space for the expansion or play of the prothoracic stigma which lies immediately in front of it. The episternum although forming so large a portion of the mesosternum is of little taxonomic importance, as it varies very little throughout the family, it is remarkably large in the *Noterides*, and in *Hydrovatus* a large part of its area is impressed for the accommodation of the middle femur. It is on the episternum that the torsion by which the mesosternum becomes diaphragm-like, is effected ; the front edge always preserves the natural direction, but the episternum is more or less gradually bent, so that the hind part of the mesosternum is placed something like at right angles to the front edge, which thus appears to form a very short neck.

The epimeron of the mesosternum is always smaller than the episternum, and its lower extremity always penetrates to the middle coxal cavity ; its inner (more correctly anterior) margin is closely connected with the episternum, the suture between the two being fine, but usually distinct, but in *Bidessus* and *Sternopriscus* it is most frequently very indistinct : the outer margin is applied to the front edge of the metathoracic episternum. The epimeron is always very short (in the truly longitudinal direction) at its lower part, but usually becomes broader as it reaches to the shoulder, and after its angle of junction with the humeral angle of the metathoracic episternum it again becomes narrower, so that it forms a rather irregular, narrow and elongate triangle ; in some cases, however, the epimeron becomes scarcely any broader at the metathoracic angle (*Bidessus* and *Noterides*) so that it may be described as linear, although in point of fact it always shows a well marked, sharply defined angle at its point of junction with the angle of the metathoracic episternum. In the *Noterides* the linear form of the epimeron is accompanied by a very large development of the episternum, but this is not the case

in *Bidessus*, where the episternum and epimeron are each small in area; the *Noterides* are therefore distinguished by the sublinear epimeron and the fact that this is very small in comparison with the episternum. Although the epimeron is always smaller than the episternum, yet in the higher forms it increases so much in size that it becomes almost equal to the episternum in area (*vide* *Laccophilus*, *Acilius*, and others). The upper extremity of the epimeron, extends the whole length of the mesosternal flank, terminating, at the upper articulation of the wing-case, behind the extremity of the episternum; its upper edge is grooved to receive the margin of the inflexed base of the wing-case.

There are some points specially characteristic of the mesothorax of the *Dytiscidæ*, and a comparison of these with the *Carabidæ* is of interest; they are—1. The direction of the mesosternum; 2. The magnitude of the anterior sternal pieces; 3. The magnitude of the posterior piece; 4. The separation of the middle coxæ; and 5. The penetration of the epimeron to the coxal cavity. 1. As regards the first of these, there does not exist to my knowledge any *Carabid* in which the direction of the mesosternum is so remarkably divergent from that of the metasternum as it is in most of the *Dytiscidæ*, and in the great majority of the members of the two families this difference is very considerable; there are, however, some *Dytiscidæ*—the *Vatellini* and *Sternopriscus*, (and even a species of the genus *Hydroporus*, *Dytiscus dorsalis* No. 630)—in which the mesosternum has only to a comparatively slight extent assumed the diaphragmatic position it possesses in their allies; and on the other hand in *Systolosoma*, *Trachypachys* and *Cyclosomus* of the *Carabidæ*, the direction of the mesosternum becomes to a great extent that of the *Dytiscidæ*; no absolute distinction exists therefore between the two families in this respect. 2. The medisternum, and the episternum are very much larger in the *Carabidæ* than they are in the *Dytiscidæ* (the head and prothorax must be separated from the afterbody before this can be appreciated). This distinction is remarkable and is no doubt correlative with, if not dependent on the fact that the prosternum has a connexion with the metasternum in the *Dytiscidæ*, this being of course much facilitated by the abbreviation of the intervening mesosternum; while as another explanation of the curtailment, we have the fact that the anterior part alluded to is prolonged to allow of a greater or less extent of rotation and nutation of the prothorax in the *Carabidæ*, while in the *Dytiscidæ* this power has been held in abeyance in consequence of the more supreme necessity for fixing and securing these parts to prevent the admission of water to the interior of the insect. Thus it is in the *Carabidæ* where the head and prothorax are quite free and mobile that we find the greatest difference from the *Dytiscidæ* in the point alluded to, while where there is a prosternal process in the *Carabidæ* the medisternum and episternum become shorter: *Cyclosomus* and *Trachypachys*, *Systolosoma*, with others of the fragmentary series of *Carabidæ* (in which series it is that we find a prosternal process of not unfrequent occurrence) have therefore shorter anterior

pieces to the mesothorax than have the other Carabidæ. In none of them, however, do I find the abbreviation to be so considerable as it is in the Dytiscidæ; in *Systolosoma* for instance (the only one of the three genera just mentioned that I have been able to dissect) the middle of the mesosternum is decidedly more elongate than it is even in the most Carabid like of the Dytiscidæ—*Amphizoa*. In describing the medisternum (*ante* page 223) I remarked that its central column appeared to consist of two distinct parts, and further that the inner or front margin of the episternum had also the appearance of being a distinct piece connecting with the front piece of the central column. In the Carabidæ these pieces are still more distinct, and it is in fact by the much larger size of these front pieces of the medisternum that the mesosternum of the Carabidæ differs from that of the Dytiscidæ. As the structure of the mesosternum in the Carabidæ has not so far as I am aware been thoroughly examined, I must for the present leave this subject, merely remarking that in *Carabus catenulatus* the middle of the mesosternum appears certainly composed of three parts superposed one on the other. The third point in which the mesothorax of the Dytiscidæ differs from that of the Carabidæ, is the greater development of the posterior side piece in the former group; this is, however, by no means constant, for in the whole of the tribe *Noterides*, as well as in some *Hydroporides*, of the Dytiscidæ, the epimeron is as small and linear as it is in most of the Carabidæ; and in *Silphomorpha* of the Carabidæ, the shape and size of the epimeron is similar to the Dytiscidæ, (except that it does not penetrate to the coxal cavity). Fourth, the rule in the Carabidæ is that the intermediate coxæ are very distinctly separated, but in the Dytiscidæ they are more approximate; this however is liable to numerous exceptions; in the *Pseudomorphides* (and according to *Lacordaire* in the *Ozænides*), the middle coxæ are very approximate as in the Dytiscidæ, and the Dytiscidæ themselves differ considerably in this respect, thus although the coxæ are contiguous in *Vatellini*, they are in *Hydrocauthini* and *Suphisini* as widely separated as they are in Carabidæ; and even in some of the higher forms—as the *Hydaticini*—the separation of the middle coxæ is moderately broad. Fifth, in the vast mass of the Carabidæ, the mesothoracic epimeron does not penetrate to the coxal cavity, whereas in the Dytiscidæ it invariably reaches the cavity; but the first, or fragmentary, series of the Carabidæ resemble the Dytiscidæ in this respect, the epimeron reaching to the cavity as in the water-beetles.

Turning to the special points of approximation between the two families in respect of the mesosternum we find, first, that there is but little difference between the mesosternum of *Systolosoma* and *Amphizoa*, still the former is a little more Carabidiform than the latter in this respect; and both differ but little from the Dytiscidæ; second, the mesosternum of *Omophron* is very similar to that of the *Noterides*; third, although the *Pseudomorphides* resemble the Dytiscidæ as regards the mesosternum, inasmuch as their coxæ are approximate, and that sometimes

(Silphomorpha) its epimeron is Dytiscidiform in shape, yet the group differs widely from the Dytiscidæ inasmuch as the anterior pieces are very large, and the epimeron does not penetrate to the coxal cavity. In *Pelobius* the mesothorax might pass as belonging either to Dytiscidæ or Carabidæ, the epimeron being rather small and its superior metathoracic angle little developed, so that in this respect it is Carabidiform; while as regards its direction it is indeterminate, and with respect to the size of the anterior pieces it is Dytiscid rather than Carabid. In the Haliplides too, the mesothorax fails to support their classification either with the Dytiscidæ or Carabidæ; the epimeron is large, but quite different in form from any Dytiscidæ, for it has no trace of any superior metathoracic angle, and its greatest length (in the true longitudinal direction) is not at the line of this angle, but near to the coxal cavity; the anterior pieces are quite small, and different therefore from the Carabidæ.

The METASTERNUM. The metanotum is of much larger area than the mesonotum, but in those forms in which the mesothoracic scutellum is least developed (*Hydrovatini*, *Hyphyrini*, *Laccophilini*, and, but not so markedly, *Hydroporini*) it is much smaller than in those having the scutellum largely developed and of very firm consistency, as it is in the Macro-Dytiscidæ generally. It is of complex structure, and it appears to me very difficult to determine accurately of how many pieces it is essentially composed, and to decide as to their homologies. It is of course covered entirely by the elytra, and although it is horny, it is thinner than are the exposed parts of the skeleton. It is traversed in the middle, by a deep and broad longitudinal depression, into which is received an incrustation on the basal portion of the inner face of the suture of the elytra. In the middle in front it is armed with a small angular vertical projection, which acts to some extent as a support to the free extremity of the mesothoracic scutellum, and which probably represents a portion of the præscutum, which is otherwise absent: this projection is not present when the scutellum is rudimentary (*Hyphyrini*, *Hydrovatini*, *Laccophilini*), and is small in the *Noterides*, and *Hydroporini*; in fact its development appears to be strictly correlative with the growth backwards of the scutellum. The larger part of the metanotum is occupied by the scutum, which is divided in a more or less irregular manner, longitudinally and transversely so as to form four pieces. The anterior pieces—one on each side—are shining and glabrous, and are especially reduced in size in the *Hyphyrini*, *Hydrovatini* and *Laccophilini*, while in the *Noterides* these plates are small, and placed chiefly in the vertical instead of in the horizontal direction. Behind these two anterior plates there are placed the two posterior plates of the scutum; these are not shining like the anterior ones, but are dull and frequently bear a few hairs. Behind the scutum, the scutellum is visible as a transverse linear band on each side, but in the middle it has a considerable extension in the anterior direction, by encroaching on the hind border of the posterior plates of the scutum. The post scutellum is placed behind the scutellum, and on a rather

lower level than it, it extends completely across the body as a horny band connecting by its extremity with the metathoracic epimeron; to its hind margin is attached the basal abdominal segment. In *Hydrocanthus australasie* this band is very peculiar, for instead of passing across the body in a straight line, it diverges backwards in the middle, so that between the scutellum and post scutellum there exists a large membranous space.

The metasternum consists of two side pieces on each side, and a middle piece—the metasternum proper; this last is of very peculiar form, its hind margin is very firmly connected with the front of the hind coxæ, so that these are frequently supposed to be a portion of the metasternum; in the middle in front this latter stretches forward and extends between the middle coxæ, so forming an intercoxal process; on each side of this are the middle coxæ; an inflexed portion of the metasternum forms in fact the posterior half of the coxal cavity; outside the coxæ the metasternum comes in contact with its episternum, and forms a curved or oblique suture in adaptation with this part; its hind border is encroached on by the extension forward of the hind coxæ, and thus between the episternum and the coxa, the metasternum is more or less—frequently excessively abbreviated—so as to form a wing, called the lacinia or wing of the metasternum; in the posterior direction the metasternum projects farther back at the expense of the coxæ, so forming in the middle behind a more or less acute angle; thus the metasternum is elongate along its middle, but extremely short externally on each side.

The intercoxal process in the majority of the Dytiscidæ is connected in front with the fork of the metasternum, and when so connected it is marked in the prominent middle part with a groove or depression—the metasternal groove—for the reception of the apex of the prosternal process, which is usually lodged in it: the intercoxal process differs much in shape and in its various details, and is one of the best means of recognizing genera and species: when the mesosternal fork is not sufficiently elongate to reach the same plane as the front of the metasternum, then the apex of the metasternal process is curved or bent up, so as to enter the mesosternal fork (*Dytiscus*) or at least to touch it (*Hyphydrus*, *Eretes*); the nature of the intercoxal process seems chiefly to have been determined by the distance separating the middle coxæ; when the middle coxæ are quite contiguous, and project from their cavities, then there is properly speaking no intercoxal process (*Vatellini*, *Sternopriscus*) the middle of the metasternum showing merely a prominent angle behind, and in adaptation to the coxæ; where the middle coxæ are broadly separated (as in *Hydrovatini*, *Pachydrus*) then the intercoxal process is correspondingly broad and short, and its connexion with the mesosternal fork is very intimate or exact, thus in *Pachydrus* each of its lateral angles projects and articulates with the raised angle of the extremity of the mesosternal fork, which in these cases is reduced, in the longitudinal direction, to a mere lamina, while the raised margin round the coxal cavity is continued inwards along the front of the intercoxal process; in the

Hydrocanthini and the Suphisini, the intercoxal process is very large, being both elongate and broad, and is nearly truncate in front, in adaptation to the broad truncate extremity of the prosternal process, the two edges of these pieces fitting together at their line of junction in a most perfect manner: usually the intercoxal process is impressed to receive the extremity of the prosternal process, and the metasternal groove thus formed, coincides in shape with that of the point of the prosternal process; when the intercoxal process is very broad, (Hydrocanthini, Suphisini, Hydrovatini, Pachydrus) then it bears no groove, for the prosternal process is brought very closely into adaptation with the intercoxal process; and there is in these cases excessively little mobility of the prothorax, these being the forms in which this characteristic of the Dytiscidæ has become almost absolute; when the intercoxal process is very narrow, (as in many Agabi, especially group 12; Eretes, &c.) then the groove is elongate, narrow, and indefinite, consisting of a mere depression along the middle of the process; and when the prosternal process is short, feeble, and acuminate, which usually occurs in such forms as have the middle coxæ rather approximate, and the intercoxal process more or less curved upwards at its extremity (as in Hyphydrus, Cœlambus, and other Hydroporini in which the mesosternal fork is not connected with the intercoxal process) then it can scarcely be said that there is any metasternal groove present; while its maximum of perfection is attained in the Cybistrini, where it is deep, with very definite sides, and perfectly adapted to the prosternal process, but yet when the point of the process is slightly lifted allows some movement of extension between the prothorax and after-body.

The central piece of the metasternum, is more or less produced behind between the front parts of the hind coxæ, its sides usually meeting to form a more or less acute angle; in Hyphydrus however the posterior portion of the metasternum does not form an angle, but has a comparatively broad rounded extremity. From the front of the intercoxal process to its posterior angle the metasternum is usually elongate, but varies much in this respect and in Hydrovatus it is short and consequently its posterior angle is obtuse; the greatest reduction of the middle of the metasternum occurs in the short globose Dytiscidæ, and is exhibited by Suphis and Colpius, where its posterior part has scarcely any backward prolongation in the middle. Nearly always there is a fine longitudinal channel running along the middle of the metasternum, but this is frequently very obsolete. The most peculiar character exhibited by the middle of the metasternum, is that in the Noterini and Hydrocanthini, it is more or less raised or prominent, so as to form in conjunction with the prosternal process, and the middle portions of the hind coxæ, a kind of broad flat keel, increasing in width as it progresses backwards; this peculiar structure reaches its greatest development in Hydrocanthus, and is without any parallel in other beetles. The lacinie or side wings of the metasternum are as it were compressed between the posterior coxæ, lying behind them, and the episternum lying

in front of them, and their form therefore depends largely on the shape of these adjacent parts: when the hind coxa, has become very large it forms an arch in front and thus encroaches on the lacinia, which suffers a corresponding diminution in area, but as its external extremity is fixed to the outer side of the coxa, and this does not grow forward so much as the middle does, consequently the outer portion of the lacinia extends backwards outside the arch of the coxa as a more or less slender band according as the coxa is more or less extremely developed; the extreme forms thus assumed are very remarkable, (see *Hyphydrus*, *Eretes*, *Laccophilus*); in the genus *Agabus* great variation exists as to the size of these lacinia, and in most other genera considerable diversity exists on this point. Usually the outer extremity of the lacinia terminates as a more or less acute point, but in the *Thermonectini* and *Eretes* the lacinia becomes a little broader near its apex, thus giving rise to a peculiar shape, which in *Eretes* where it is most extreme, may almost be described as clavate, the extremity of the wing appearing obtuse or almost rounded. In the *Noterides* the wing of the metasternum assumes a peculiar form characteristic of the tribe, but as this as well as some other variations, is correlative with the shape and development of the hind coxa, it will be better spoken of when those organs are described. In *Pelobius* and *Amphizoa*, the metasternum has near its hind margin in the middle a transverse line or suture, which is not present in any other of the *Dytiscidæ*, although it is a nearly constant character of the *Carabidæ*.

The metathoracic episternum is a large and conspicuous piece forming the shoulder of the metasternum; it is nearly triangular in form, its front margin being in apposition with the hind margin of the mesothoracic epimeron; the base of the triangle is adapted to the wing of the metasternum, and is curved in the *Thermonectini* and *Eretes*, *Hyphydrus*, *Laccophilini*, and in such other forms as have the hind coxæ very largely developed, while in other groups it deviates but little from a straight line, till it is near the intermediate coxæ, where it is always curved, sometimes (*Hydaticus*) abruptly so; its inner angle penetrates to the middle coxal cavity in the *Dytisci Complicati*—a point of structure which has not yet been detected in any other *Coleoptera*—but in the *Dytisci Fragmentati*, it fails to reach the cavity, stopping short in the *Vatellini* at a considerable distance from the outside of the cavity, but in *Laccophilus* very nearly reaching to it. The posterior angle of the triangle extends as far backwards as, or even slightly farther than, the apex of the metasternal wing, and forms there a blunt, or rounded truncate angle, touching the margin of the elytron, or at a little distance from this: its third or humeral angle is covered by the wing-case; the upper edge of the episternum just behind this angle shews a groove into which the inflexed edge of the epipleura fits. The anterior edge of the episternum is thickened so as to form a margin along its front, and when this margin is very large and much exposed as it is in *Hydrovatus*, and numerous others, it has

extremely the appearance of being a distinct piece of the sternum, which however is not the case. The upper or outer portion of the episternum is, at any rate in its anterior portion, covered by the wing-case, and when the part covered by the wing-case is large, as in *Hydrovatus*, then the posterior extremity appears very slender and acuminate, but on the elytra being taken off it will be seen that in such cases the termination of the episternum is really obtuse, the greater portion of its area being turned upwards at an angle with the exposed portion; this covered portion of the episternum may readily be mistaken for the epimeron, more especially as it is of a different texture from the exposed part, and is traversed by a sort of line, having somewhat the appearance of a suture, between the covered and exposed portions. The epimeron of the metathorax, unlike the episternum—is very indistinct, and might on a careless inspection, be supposed to be absent; it is however always present and is placed on the upper posterior portion of the episternum, but extends farther backwards, than this piece does; the suture between the episternum and epimeron is covered by the wing-case, and is often very fine and indistinct, but is always conspicuous when the part is properly cleaned and exposed; the episternum towards its extremity becomes, as above stated, narrower, and thus trenches away from the edge of the wing-case, and an angle is thus formed between it and the upper and outer portion of the hind coxæ, and into this angle the epimeron protrudes, so that at this point it approaches more to the under surface than it does elsewhere, and in many forms (especially in *Eretes*, *Thermonectini*, and *Cybistrini*,) the epimeron becomes visible, even when the wing-cases are closed, as an acutely angular projection at the upper and hinder angle of the apex of the episternum. Behind this point the epimeron again completely covered by the wing-case, proceeds farther backwards along the external or upper part of the hind coxa, till it terminates behind by connecting with the side of the basal segment of the abdomen or hind body; sometimes the connexion between these two parts is effected not by actual contact, but by means of an intervening membranous space (*Acilius*, *Hydaticus*, and many others, but in other cases (*Hyphydrus*, *Eretes*) there is complete contact between the horny portions of the two parts; between the extreme degrees of separation (as seen for instance in *Coptotomus*) and the absolute contact of *Hyphydrus* and *Eretes*, there exist every grade of connexion; thus in *Agabus* it would be almost equally correct to describe the two parts as separated by a membrane or as in contact. The upper portion of the epimeron becomes membranous, and connects with the pieces of the metanotum. In those cases where the middle coxæ are widely separated, and there is no mobility of the pieces of the thorax (*Hydrovatus*, *Hydrocanthus*, *Pachydrus*) there is a most extreme and perfect adaptation of the inflexed edge of the epipleura, to the side of the body, and in these cases the epimeron remains nearly entirely membranous, a mere strip of semicorneous matter, along its lower edge and its extremity, serving for the suture with the episternum

and hind coxa, while in *Eretes* where there exists considerable capacity for thoracic movement, and very little adaptation of the elytra to the sides of the body, the whole of the large epimeron is horny.

The more important of the characteristics of the metasternum in the Dytiscidæ are, 1, the peculiarly formed side wings; 2, the intercoxal process grooved for the reception of the prosternal process, and 3, the absence of a transverse suture on its posterior part. None of these characters however are constant enough to serve as marks of distinction between the Dytiscidæ and Carabidæ; the first of them is excessively variable in the Dytiscidæ; it is chiefly dependent on the great development of the hind coxæ, and in *Amphizoa* and *Pelobius*, and even in *Colpius* and *Suphis*, the form of the metasternum is quite Carabideous. The groove of the intercoxal process too is far from being constantly present in the Dytiscidæ, it is absent as we have seen in all cases where the middle coxæ are widely separated, and all that can be said is that it never occurs in the Carabidæ, but is present in the great majority of the Dytiscidæ. As regards the transverse suture in the metasternum, it occurs in the Dytiscidæ only in *Pelobius* and *Amphizoa*, while on the other hand it becomes indistinct in some Carabidæ, although I have not succeeded in finding any in which it is effaced.

The metasternum of the Haliplides has none of the peculiarities of the Dytiscidæ; the intercoxal process is not grooved; the outline is completely Carabideous, and the transverse suture is present, though without dissection it is not easily appreciated owing to a series of very large punctures placed on it.

The contiguity or amount of separation of the middle coxæ in the carnivorous Coleoptera appears to me to be dependent rather on the metasternum than on the mesosternum. In the Carabidæ these coxæ are nearly always very considerably separated by the intercoxal process, so that the one group of that family—the subfamily *Ozenidæ*—in which the coxæ are unusually approximate is, according to *Leconte*, well distinguished by this character from all the rest of the family. In the Dytiscidæ, greater variety in respect to the contiguity of the middle coxæ is found, but still the character appears to me to be one of great importance; indeed if I might exercise my imagination I would suppose that in the early history of the Dytiscidæ the fact whether the middle coxæ were well separated, or were approximate, exercised a most important, or indeed predominant influence on the future mode of evolution. When they were distant this fact appears to me to have facilitated rapid co-adaptation of the contiguous parts for the purpose of protection and keeping out water from entering the body by the great fissure between the prothorax and the after-body by a process of mere placing together of accurately fitting surfaces; and this involved complete disuse of any mobility or extension between these parts, and rendered sedentary habits of advantage, for in all movements there was the danger of these parts becoming separated, and it was necessary to keep the pieces of this great joint without any motion, and yet they

were not locked together by any mechanical contrivance. But in those cases where the coxæ were more approximate, the accurate adaptation of the parts at this important spot was much less easily effected owing to the more complex faces to be co-adapted; and the locking together of the pieces was effected by the more tardy but superior process of growth of the prosternal process to rest in a groove of the metasternum, and by the fitting together of numerous less superficial parts and edges; this plan probably placed the original developers of it for a period at a disadvantage, but permitted ultimately a development of the parts consistent with greater general activity and with a consequent general higher organization. In the cases where the coxæ are absolutely contiguous (as in *Vatellini*, *Andex* and a few others) space was wanting to permit of the penetration of the prosternal process between the middle coxæ and so the prothorax was fixed by a short process being received into the mesosternal fork, leaving a very incomplete joint; or (as in *Sternopriscus* the prosternal process grew backwards under the projecting middle coxæ (instead of between the coxæ) and so only connected with the metasternum in a very imperfect manner. However this may have been, I believe that the distance between the middle coxæ has in each species been very constant during very long periods of its evolution, and may prove of much assistance in deciding as to the relationship of particular fossils to particular existing forms.

HIND COXÆ.—Although truly a part of the leg, yet the hind coxa in the *Dytiscidæ* is developed to such an extent that it frequently forms a considerable portion of the external skeleton, and is therefore actually a part of the body rather than of the limb. It is from a taxonomical point of view, the most important part of the *Dytiscidæ*, and its various modifications are very interesting on account of their great variety in detail and uniformity in more important particulars.

The pair of hind coxæ extend all across the under surface of the body, and thus largely separate (when an undissected individual is looked at) the hind border of the metasternum from the ventral plates of the hind body. The coxa is completely destitute of mobility, for it is soldered in front, along its entire breadth to the metasternum, while behind it is accurately fitted to the basal ventral segment, and in the *Bidessini* is completely soldered thereto, so that in this group we find that the whole of the middle of the lower surface of the body—from the middle legs to the end of the third ventral segment, consists of a single, solid, hard piece; in all other *Dytiscidæ*, however, the ventral segments are not soldered to the coxæ; although the apposition between the two parts is so perfect that they look as if they were but one, yet really great mobility exists at this articulation. Each coxa articulates with five distinct pieces of the skeleton, viz., 1, its fellow coxa, 2, the metasternum proper, 3, the metasternal episternum, 4, the metasternal epimeron, and 5 the basal ventral segment. It consists of two distinct parts, viz., 1, the lamina interior, and 2, the lamina exterior. The internal lamina it is that carries the articulation of the swimming leg, and the two internal laminae are accurately

fitted together, and more or less strongly soldered together on the middle line of the body by a straight longitudinal suture; a suture or impressed line runs near the outer border of the internal lamina, and proceeding forward, either reaches the anterior border of the coxa (as in most *Agabi*), or becomes obsolete in front; in this latter case no real line of demarcation exists between the external and internal laminae in front of the part where this line stops short; this line I call the coxal line, or speaking of the two together, coxal lines. The hinder part of the internal lamina is prominent, and presents a free edge over which the trochanter of the swimming leg plays, and which by its shape determines to some extent the kind of motion made by the swimming leg; this is the coxal process, or coxal lobe. This process or lobe usually has, at any rate towards its termination, a kind of external margin or border, marked off by the terminal portion of the coxal line; this is the coxal border. The hinder edge of the coxal process is very frequently marked by a short closed suture (see *Dytiscus*) or a small notch or emargination; this I have called the coxal notch. The external division or lamina of the hind coxa is always larger than the other, sometimes enormously larger; its front border proceeding from the middle is directed outwards and at the same time more or less forwards, but before reaching the side, turns more or less abruptly backwards, so as to form a sort of curve or arch of very diverse forms; it is soldered to the metasternum, but it passes outwards beyond this latter behind the posterior point of the episternum, thus reaching the margin of the epipleura; it does not, however, there terminate but (as is seen on taking off the wing-case) is reflexed upwards passing behind the epimeron and terminating externally, in an either angulated or rounded form, by articulation with the outside of the post-scutellum, by the intervention of a small piece considered by Schioedte (*Dan. El.* p. 377) to be a trochantin. The hind margin of the exterior lamina (as seen where the specimen is entire) is likewise directed somewhat towards the front, and near the epipleura forms a considerable curve or sweep, which is continued under the wing-case, to the outside extremity of the coxa; this apparent hind margin is not however the real hind margin, for on dissection it is seen that the coxa is to a large extent reflected in a very round curve upwards to the interior of the insect; this reflected and concealed portion of the coxa may be called its abdominal portion, and in *Hyphydrus* is very distinctly marked off along the whole breadth of the coxa by a raised line or margin. The exterior lamina of the coxa differs greatly in size and shape, and its variations offer one of the best modes of distinguishing the genera and species. The changes of form occur on its anterior portion. Thus in *Pelobius* and *Amphizoa* where the Dytiscid coxa is seen in its most rudimentary condition, the metasterno-coxal suture proceeds directly outwards, without stretching forwards at all, so that the two sutures together form a nearly straight line extending all across the under surface: we find the other extreme in the genus *Eretes*, where the metasterno-coxal suture proceeds almost directly forwards, thus the sutures of the two sides at their

point of connexion form a very acute angle, and proceeding forwards like the branches of a letter V diverge but little till they have become quite near to the middle coxa when they are rather abruptly turned outwards. In *Hydrovatus* these sutures of the two sides diverge from one another only at a very obtuse angle, and therefore are directed but little forwards at first, but when rather near to the outside of the body, the direction becomes more abruptly forwards, but only to be almost immediately even more abruptly bent back: a similar form of the coxa is pretty general in the *Hydroporini*. The anterior border of the coxa of the *Dytiscidæ* thus forms in front an arch which is very various in its form, in *Eretes* as we have seen it is a broad, very flat arch; while in *Hydrovatus* a narrow abrupt curve placed near the outside of the body is formed. Various intermediates between these extremely different forms occur; and it is only in the *Noterides* that we find a really distinct form of the coxa, owing to the fact that this part attains its greatest extension forwards near to the middle of the body, and then becomes shorter towards the side. In the *Cybistrini* the coxa assumes in front a shape characteristic of the group, its greatest anterior extension being gained near the outside of the body, while external to this point it so abruptly retreats as to form almost a right angle. In size the external lamina varies even more than it does in form; it is, compared with the average of other *Coleoptera*, always large, and within the bounds of the family is least in *Pelobius* and *Amphizoa*; in certain species of *Agabus* (*Dytiscus uliginosus*, No. 694, *Agabus maderensis* No. 666), it is not greatly larger than in *Amphizoa*, and with every gradation of growth in various species and genera, reaches a truly enormous size in *Hyphydrus*, *Eretes*, *Acilius* and *Coptotomus*.

Though the external lamina is of much interest and importance, yet the internal lamina on account of its being the seat of the articulation of the portion of the leg used for swimming is much more important, and much more complex and varied. The base of each trochanter is placed in a kind of box, and the larger the opening of the box the greater is the range of motion of the limb, and the more powerful its sweep, and in the higher forms of the *Dytiscidæ* the articulation is constructed so as to allow the leg to make a sweep extending round the complete half circumference of a circle, and yet the articulation is so well constructed that no water can obtain entrance by it to the interior of the body where the muscles are situated. The socket is formed above by an arched plate, which appears to be merely a prolongation of the abdominal portion of the external lamina of the coxa, and below by the coxal lobe or process, there being left between these two parts a large circularly transverse cleft looking backwards and laterally; the internal wall is concealed owing to its being closely connected with its fellow of the opposite side of the body; in fact in all the higher forms of the family, there seems to be only a single opening for the two legs—in other words the two transverse clefts appear joined into one—but when a dissection is made, it is seen that they

are separated by a vertical wall, or plate; this wall ascends from the common suture between the two coxæ, and at its termination, spreads out above into a kind of winged or bifid process which completely fills up a gap that would otherwise exist between the arched roofs of the two cavities. The articular portions of the coxa project backwards, and on each side of the projecting portion there is a hollow or axilla which permits the base of the swimming leg to be rotated forwards till the front edge of the femur can quite attain the longitudinal middle line of the body. In the higher and larger forms of the Dytiscidæ which I am now describing, the articular cavities are entirely concealed by the coxal processes, which project from the surface more or less slightly backwards, and are thus very conspicuous on the under surface of the body, the swimming legs protruding as it were from the hind part of the projection, and being so close together that their inner margins touch one another at the point of articulation. This structure, with modifications in some details such as the size and form of the coxal lobes, prevails throughout the Macro-Dytiscidæ, without any exception. But in the smaller Dytiscidæ the articulation of the swimming legs is of a different and much less uniform nature. If a *Hyphydrus* be looked at—and with this object one of the two swimming legs should be carefully disarticulated—it will be seen that the swimming legs do not project from behind and above any prominent coxal processes, and that they are not contiguous, but are separated by a considerable space, and if the leg has been carefully disarticulated, without damage to the articular cavity it will be seen that this is a circular orifice, completely exposed and not concealed by any projecting lobe, and a farther examination renders it evident that the space separating the articulations of the two sides of the body, consists of the coxal processes. Here then we have the articular orifice exposed and placed outside of the coxal process, separated from its fellow and circular in form, instead of being placed above the coxal process, concealed by it, and contiguous with its fellow; on separating the hind body from the coxa it is farther seen that the upper portion* of the articular box projects further back than the coxal processes, these latter, being adpressed to, and soldered to the former: thus the coxal processes, are not prominent from the level of the base of the abdomen, and there is no axilla formed to permit the flexion of the leg forwards: indeed the articular cavity being circular and exposed permits the leg to be rotated forwards even farther and more freely than in the Macro-Dytiscidæ. This is the type of structure which admits of the greatest amount of motion of rotation for the swimming leg and it attains its maximum of development in the New-World genus *Pachydrus*, where it is accompanied by a consolidation of the coxa with the abdominal segments. Many of the *Hydroporini* have the articular cavities constructed in a manner that is intermediate between that just described, and that of the Macro-Dytiscidæ; as a good instance of an intermediate

* I have in my descriptions occasionally spoken of this upper portion of the articular cavity, when it is visible under the name “pyxal process.”

condition, *Hydroporus gigas* No. 427 (*Chostonectes*) may be mentioned. In *Pelobius* and the *Hydrovatini* we have another form of articulation of the swimming leg : inasmuch as the coxal cavities are rather widely separated, but yet are concealed by a coxal lobe ; the inner termination of the articular cavity appears therefore in these cases in the form of an opening or excision on the hind margin of the internal lamina. I have already spoken of a mark which commonly exists on the hind margin of the internal lamina, either as a slight notch or interruption of the outline of the coxal process (*Cybister*, *Ilybius*, &c.) or as a closed short suture (*Dytiscus*). This coxal notch is remarkably persistent, and indeed though it appears to be absent in many forms (*Acilius e.g.*) yet on careful examination I have always found some traces of it, it exists also in the *Carabidæ*, and is perhaps an indication that this part of the coxa is formed by the coalescence of two distinct pieces ; its persistence is at any rate very remarkable, and is clearly an indication of some formerly different structural condition of these parts. I had thought at first that the articular opening existing in *Pelobius* and *Hydrovatini* was merely an enlargement of this coxal notch but such is not the case, for in *Pelobius* the coxal notch may be seen existing on the coxal process, just outside the articular opening. In the *Noterides* the coxal lobes are of large size and peculiar form, reaching furthest backwards at their outer angle, which is thus more or less acute, they are greatly prominent from the rest of the under surface, and thus form a deep elongate axilla, while the articular cavities themselves are completely concealed ; in respect therefore of the development of the coxal processes, and concealment of the articular cavities, the *Hyphydrini* and the *Noterides* stand as the opposite extremes of the family. In *Amphizoa* the articular cavities are widely separated, and are concealed, but their inner termination is distinctly visible on the hind margin of the coxal process, the coxal notch being placed immediately outside of this opening : this differs from the articulation in *Pelobius*, inasmuch as the termination of the articular opening is not prolonged forwards, and thus forms a shallow emargination instead of a deep excision, if we suppose the space separating the two cavities in *Amphizoa* to be absent, the structure would not then differ materially from what exists in the *Macro-Dytiscidæ*.

The structure of the hind coxa in the *Dytiscidæ* may be summed up as differing from that of the *Carabidæ* in the following points ; 1. The large size or area of the external lamina ; 2. The arched anterior border of this part ; 3. The accurate adaptation and soldering of the two internal laminae together by a straight and perfect suture ; and 4. The contiguity of the articular cavities. As regards the first of these points, it is certain that so far as the large majority of the *Dytiscidæ* are concerned, the greatly increased size of the outer lamina of the hind coxa is very remarkable and is one of the modifications of structure most characteristic of the family : it is however only a question of degree, and varies extremely in the different groups, so that *Amphizoa* and *Pelobius*, in which forms it is smallest, appear rather to be *Carabidæ* than *Dytiscidæ* in respect of this peculiarity : I am not aware however of

any Carabidæ, in which the area of the external lamina of the hind coxa is anything like as large as it is even in *Pelobius* and *Amphizoa*. In *Trachypachys* and *Systolosoma* of the Carabidæ, the hind coxa is large, but it is made so by the increase in size of the internal rather than of the external lamina. In *Silphomorpha* the internal lamina is very small, and the external one correspondingly large, thus making a slight approximation to the *Dytiscidæ*. [Second, As regards the arched anterior border of the hind coxa in the *Dytiscidæ*; such a character is I believe absolutely unknown in the Carabidæ, but unfortunately it is not always present in the *Dytiscidæ*, being absent in *Pelobius*, *Amphizoa*, and *Colpius*, and very nearly absent in *Suphis*. Third, The accurate coadaptation of the two internal laminae at their junction on the middle line is quite characteristic of the *Dytiscidæ* and is always present; it is however approximated by some Carabidæ, viz., the *Pseudomorphides*, *Trachypachys* and *Systolosoma*; but the only one of these that really makes any near approach in this respect to the *Dytiscidæ* is *Trachypachys*. Fourth, As regards the contiguity of the articular cavities, this is very conspicuous and characteristic in the Macro-*Dytiscidæ*, but in many other *Dytiscidæ* it is not present (*Pelobius*, *Hydrovatini*, *Hyphydrini*, *Bidessini*, *Colpius*), indeed a slight separation of the cavities is so common in the lower forms of the various groups, as to strongly suggest the idea that all the species of *Dytiscidæ* have had ancestors with separated posterior coxal cavities like the Carabidæ.

The *Haliplides* show not the least approach to the *Dytiscidæ* in the structure of the hind coxæ; on the contrary they possess a peculiar development, which is not approximated by any Carabidæ or *Dytiscidæ*, of these parts.

HIND-BODY, OR ABDOMEN.—The dorsal plates of the hind body are eight in number, and they differ but little from one another in length: they are membranous in texture, but usually dark in colour; the seventh and eighth are a little thicker than the others, and have thus a leathery consistence, and they are also dull and more or less punctate, especially the eighth, while those in front of them are shining: in *Dytiscus* the two basal segments bear a large quantity of very fine, elongate hair, and other genera show sometimes a similar development though to a less extent. In *Hydrovatus* the dorsal plates are very thin and delicate, and pallid in colour, and the apical one differs but little from the others. The basal segment is attached to the hind margin of the metanotum, and each segment is attached by its sides, by the intervention of a very delicate membrane, to the harder side pieces of the body. The metathoracic stigma is placed at the hind margin of the metathorax, at the side of the body, and may be either small and inconspicuous (*Cybister*), or elongate in the transverse direction (*Dytiscus*): there are seven pairs of true abdominal stigmata; the first abdominal plate is without a stigma, but each of the other plates bears at the outside a stigma placed in its delicate membranous border, the stigma of the eighth or terminal segment, is usually placed quite at its front edge, but in *Cybister* is placed near its hind margin. The stigmata vary greatly in their size and develop-

ment and are at their maximum in *Dytiscus*, where all are large, and those placed on the two apical segments are, contrary to the usual rule, larger than the others, and are of a transversely elongate, elliptical form. In *Cybister* and *Megadytes* the abdominal stigmata are all small, and the quite small apical one, passes through the segment in the form of a tunnel, instead of opening directly through it as it does in others of the family; moreover in the two genera just named, the terminal segment appears to be much more retractile and mobile than it is in other forms. The side pieces of the hind body consist of a hard membrane, becoming externally harder and corneous, and attached to the side of the turned up edge of the ventral plates; the side piece of the basal segment is marked in the *Colymbetini* and *Dytiscini* with transverse rugæ, which do not occur in any other *Dytiscidæ*, and are probably of some assistance in the process of respiration.

The ventral plates or segments, are six in number, and are hard and corneous; they are transversely arched and each one has its outer margin turned upwards, and even somewhat inwards, and this part is marked off from the rest of the surface by a raised margin, so that the upper edges of the ventral plates look at first sight as if they did not belong to this part of the body, but were rather the abdominal side pieces; the margin giving them this appearance is however nothing but a raised carina for the accommodation of the edges of the elytra, a similar margin being developed, on the outside of the hind coxa and even along the side pieces of the metasternum. The basal segment is very much modified in form to accurately adapt it to the hind coxa, and for this purpose its middle appears to be completely cut away, so that in an undivided insect, the first visible ventral segment appears to be separated into two pieces placed one on each side and separated in the middle by a considerable interval; but on dissecting off the hind body it is seen that the two pieces are connected together by a slender isthmus, but that this middle piece or isthmus is concealed by being turned upwards at right-angles to the rest of the plate. The basal segment carries on its upper face (and therefore as it were in the interior of the body) a transverse corneous partition, extending all across the hind body, and adapted to the reflexed posterior portion of the hind coxa; this concealed transverse partition is the true first ventral plate, the basal plate just spoken of being really a portion of the second segment: it results from this arrangement that the first dorsal plate is attached to what is truly the second ventral plate, the second dorsal plate to the third ventral, and so on; but this nomenclature is not in use and the first visible ventral segment or true second plate is called the first plate. The second ventral plate is more or less slightly emarginate in the middle in front, by being adapted to the projecting internal laminae of the coxæ; in some cases this emargination is but slight (*Cybister*, *Dytiscus*) but in others *Dytiscus duodecim-pustulatus* No. 462 *e.g.*) it extends nearly to the hind margin of the segment, so that in such a case if the ventral plates are counted along the middle line they appear to be only four in number. The sutures between the first and second, and

between the second and third segments are more or less fine and indistinct, these segments being in fact soldered together and immovable, but the remaining ventral sutures are distinct, the plates being mobile: the fourth and fifth ventral plates are shorter than the others, but usually not very greatly so; the sixth or last plate is more elongate, more or less obtusely pointed, and with its hind edge more or less finely margined—very finely in *Hydroporides*, coarsely in *Cybister*; in *Ilybius* this plate shows a considerable difference of form according to the sex, but this is a rare exception. The outer or upper portion of the ventral segments, placed under the wing-cases, and marked off as I have already described by a raised carina, varies a good deal in its width, especially on the last three segments; it is broad in *Hyphoporus* and in the convex forms, such as *Hydrovatus*, and *Hydrocanthus*, and it is very narrow in *Dytiseus*; in the *Colymbetini* this upper piece of the fourth and fifth segments is much narrower than it is in the *Agabini*.

No important or constant character can be pointed out as distinctive of the *Dytiscidæ* in opposition to the *Carabidæ* as regards either the structure or connexions of the hind body. In the *Dytiscidæ* owing to the great development of the hind coxæ, the abdominal segments in the middle of the body are to all appearance widely separated from the metasternum, whereas in the *Carabidæ* it is quite frequently the case that the second ventral plate of the hind body, touches in the middle of the body the point of the metasternum; but there are numerous *Carabidæ* in which this is not the case (see especially *Pseudomorphides* and *Trachypachys*); the fact is not of any importance otherwise than as indicating the constant and complete apposition and union of the two internal laminae of the coxæ in the *Dytiscidæ*.

Recollecting the aquatic life of the *Dytiscidæ*, and their very peculiar method of obtaining a supply of air, we should expect to find some notable character in the breathing orifices or stigmata. Such is not the case however, and it is only in the few species constituting the group *Dytiscini*, that we meet with any peculiar development of the stigmata; while in the larger portion of the family the stigmata show no character by which they can be distinguished from those of the *Carabidæ*.

ELYTRA OR WING-CASES.—The elytra in the *Dytiscidæ* play a very important part, as it is by their means that water is excluded from all the dorsal portion of the body behind the pronotum. They are always hard and never abbreviate, and they fit so accurately to one another along their suture, and at the sides of the body, that the insect is enabled to carry about under them in the water a supply of air for respiratory purposes. They are never soldered together at the suture as is so frequently the case in the *Carabidæ*, and they are kept in the closed position by an extremely beautiful combination of adaptations of various parts; they lock together at the suture by a kind of joint similar to that called a rabbit by joiners: a raised line is developed on their inner face which serves as a stop for the upturned edges of the ventral plates to repose against, while the inflexed epipleura rests its edge

on a raised carina developed near the borders of the ventral plates and the outside of the hind coxa, and at the shoulder is received in a groove on the upper edge of the metathoracic episternum; the base rests directly on the vertical mesosternum, and the sutural angle is shaped so as to fit under the edge of the raised scutellum; by these means accurate adaptation of the wing-cases to the after body is secured, and then the hind margin of the pronotum rests on the base of the elytra, while the prothorax itself is firmly kept in its position by its prosternal process being locked in the metasternal groove; this latter part in fact plays the part of the keystone of the arch.

Each elytron is articulated to the mesothorax by a projection from the base of the former about half way between the suture and outer margin; external to the articular point the front margin is turned downwards, till it reaches the humeral angle, which is usually more or less prominent and nearly rectangular; behind the shoulder the margin continues deflexed, and persists till towards the hind part, gradually becoming narrower, it ceases altogether at some distance before the hind sutural angle; this deflexed portion of the wing-case is called the epipleura, its lower (or inner) edge is bordered by a very fine raised margin, and its junction with the upper surface is more or less distinctly marked by a raised edge, which forms the external outline of the body (after the prothorax). The epipleura attains its maximum of development so far as this family is concerned in some species of *Megadytes* (*Cybister costalis*, *e.g.*) while its minimum is found in *Eretes* and *Cœlambus*; and in many of the family the epipleura becomes extremely slender behind the middle (*Agabus*, *Ilybius*, &c.) In some forms of *Hydroporides* (*Hydrovatini*, *Hyphidriini*, *Cœlambus*, &c.) there is more or less conspicuously marked off at the shoulder of the epipleura a triangular space, which I have called the genicular or humeral area; this receives the knees of the front and middle legs and permits these parts to be very closely packed away when not in use. The epipleura never extends so far as the hinder sutural angle, indeed the extremities of the wing-cases always terminate as a thin edge, and thus permit of the protrusion of the hind margin of the terminal segment of the hind body; a supply of air is obtained during life by the insect separating these two parts which are protruded at the surface of the water, and are closed when under water by accurate apposition; the inner face of the elytra at this apical part is frequently pubescent (*Ilybius*, *Cybister*, *Dytiscus*); the terminal portion of the wing-case is frequently slightly twisted or arched (*Ilybius*) and sometimes also slightly truncate (*Lancetes*, *Dytiscus*): the sutural angle varies from being about rectangular, (*Dytiscus*) to very acute (*Hydrocanthus*).

On the inner face of the wing-case near the outer margin there frequently exists a ridge parallel to the margin, this is frequently absent (*Eretes*) or but slightly developed (*Rhantus*, *Acilius*): this elytral ridge is wanting on the front part of the wing-case, only commencing about the middle or behind it, and usually does not extend to the extremity, but disappears a considerable distance before that; in

Agabus however it usually extends to the apex. In Hyphydrus the elytral ridge shows a very peculiar structure; a little in front of the extremity there is an elongate prominent tongue, which projects towards the edge of the wing-case and even a little beyond it, leaving a small space between it and the inner face of the wing-case, and into the deep groove so formed fits the upper portion of the ventral plate; as the result of this the two wing-cases at the extremity are so firmly locked together, that they can only be separated by first lifting them up from the body till the extremity of the ligula is free: a similar but smaller ligula is seen in *Coelambus*, and in some other genera of Hydroporini it is found in a still less perfected state. In *Queda* and *Pachydrus* the elytral ridge attains its greatest development; it is elongate, and for nearly its whole length forms with the face of the elytron a kind of groove into which are received the edges of the vertical segments; near its extremity it becomes more prominent and thickened, and waved in such a manner as almost to form a broad double ligula, the elytra are thus locked together in an extremely firm manner. In *Pelobius* there exists two structures of an unique character on the inner face of the wing-case; one is a raised longitudinal band at the extremity near the suture, on each elytron; these bands are marked with transverse striæ, and are a part of an apparatus for producing sound. The second is a large protuberance near the outer margin, just in front of the middle; this protuberance forms a cavity into which is received a horny process on the upper edge of the basal ventral segment, and like the ligula in *Hyphydrus* serves the purpose of very firmly locking together the two wing-cases.

WINGS.—Wings are always present in the Dytiscidæ, and are well developed and large, except in a very few species (*Colymbetes bifarius* No. 757 *c. g.*) where they are rudimentary. They are folded in a complex manner, and placed in close adaptation to the inner surface of the wing-cases, not touching the body, and thus when the elytra are more than usually diaphanous (as in many *Laccophili*) the veins of the wings may be slightly visible through the wing-cases, giving the latter the appearance of being marked or coloured in an unusual manner. There are two different folds to adapt them to the size of the wing-cases; one of these is a simple lapping over of the basal portion, but the other is a very complicated longitudinal and transverse fold and is situated on the front part of the wing just beyond the middle, and is exactly similar to the corresponding fold of the wing in the *Carabidæ* and *Cicindelidæ*. The costal and subcostal nervures are close together, and form the front border of the wing, the former of them is continued to the apex of the wing, and it is by traction on this costal nervure that the wing is unfolded, as may be readily ascertained by cutting off the wing of a freshly killed specimen, and then pulling the base of this nervure with a pair of forceps; the subcostal nervure on the other hand is continued only as far as the transverse fold (or carpa) of the wing, when it is turned backwards, so as to leave an irregular cell or stigma immediately behind the costa; this subcostal nervure is, when

traction is exercised on its base, of assistance in folding the wing. The median nervure is a broad one, and runs from the base of the wing obliquely across it towards the hind margin in such a manner as to divide it into two approximately equal parts; it does not however extend so far as the hind margin of the wing, but its extremity is connected with the hind part of a closed, oval cell extending forwards and connecting with the carpal cell (carpa of Lacordaire, *Int. à l'Ent.* 1., p. 365). The submedian vein is a double one; its two portions starting from the base of the wing, run nearly parallel to one another about half across the wing, and are then connected by a short oblique nervule, and then some distance behind this converge, so as to form a narrow, elongate cell, from whose point a single nervure is continued to the hind margin of the wing; near the base of the wing the inner portion of the submedian vein sends off an elongate accessory nervule, which extends nearly or quite to the hind margin of the wing. The anal nervure is simple and descends in a gentle curve to the hind margin, and marks off very distinctly an anal area. At the place where the wing is transversely folded, there is situated a large cell, whose hinder part is connected with the cell placed on the extremity of the median vein; and from the outer portion of this cell are sent off some veinlets towards the apex of the wing; the anterior of these veinlets are more or less indefinite and tend towards the front margin, the lower one of them indeed runs more or less parallel with the apical portion of the costa and reaches (or very nearly) the apex of the wing: from the lower part of the carpal cell, a curved nervule proceeds outwards to the hind margin of the wing; the lower of the ultra-carpal nervules is connected with the submedian cell, and is short and very curved. Between the subcostal and the median veins there is a more or less distinct accessory vein which runs from near the base of the wing to the inner angle of the carpal cell. The median vein gives off about its middle a nervule which starting at first towards the inner margin of the wing, is quickly curved towards the hind margin and bifurcates before reaching it, and thus makes with the margin a triangular space in which is placed obliquely an oblong patch of pigment near the middle of the posterior edge of the wing. The inner margin of the wing at the base is bordered by a more or less distinct fine vein; the median and submedian nervures are connected near their base, by a short, somewhat indefinite transverse nervule; and rarely (in *Noterus*) the cell on the submedian vein at the point where it approaches very closely to the flexuous vein given off by the median, is connected to it by a very short transverse nervule. In *Dytiscus marginalis* this short nervule is present, but rudimentary.

The wings of the Dytiscidæ vary a good deal in form, and also in their pigmentation: the wing of *Pachydrus* is short and broad, and very rounded at the apex, while in *Cybister* the apex is acuminate. The pigmentation differs much even in the same genus; in *Eretes* the membrane of the wing is quite colourless, while in *Hydaticus flavolineatus* (No. 1024) it is suffused with a smoky

pigment, and has besides large sharply defined patches of nearly black pigment. In *Pelobius* the basal portion of the wing is pigmented with yellow, while the outer portion is smoky.

The wings of the Dytiscidæ in their neuration vary very little and are extremely similar to those of the Carabidæ and Cicindelidæ so that no certain character can be pointed out as distinctive. Usually the anal area is larger in the Dytiscidæ than it is in the Carabidæ, but in the *Noterides* this part is quite as small as in the Carabidæ. The oblong pigment mark near the middle of the hind margin appears to be wanting in the Carabidæ, but is also frequently absent in the water beetles (*Bidessus*, *Ercetes*). In *Amphizoa* the pigment mark is very largely developed, but the anal area is rather small; in *Pelobius* the pigment mark is absent, and the anal area is small as in the Carabidæ.

I have already mentioned that in one species of the family (*Colymbetes bifarius* No. 757 *Agabus*) the wings are rudimentary: on careful examination of this species, the costal, subcostal, and median veins are found to exist, as does also the accessory vein between the subcostal and median veins, and even the flexuous adjunct to the latter; and the pigment mark is largely developed; the interior portion of the wing is however scarcely represented, a portion of the submedian vein is indeed present and forms the boundary of the wing, but the parts that should lie internal to this are quite undeveloped.

Although the Dytiscidæ live in water, they are only adapted for aquatic life by modifications almost confined to their external structure. As however, owing to the modifications of their legs for swimming, they are very ill adapted for walking, it is highly important to them that they should possess wings to transport them to fresh localities when, as very frequently happens, the pools of water in which they have been living dry up. That these dwellers in the water should possess highly developed wings is not therefore so peculiar as it at first sight appears; but it certainly is a remarkable fact that their wings should be so extremely similar to those of the Carabidæ and Cicindelidæ. The Cicindelidæ especially are very rapid runners, and take very frequent short flights, opening their wings with extreme haste, to enable them to pounce on their prey; the Dytiscidæ on the other hand, only very rarely fly, their flights are then probably for long distances, and the insect only takes to flight at all with difficulty and after a laborious preparation of itself for the purpose; it is then certainly a most remarkable fact that the wings in these two families should be so extremely similar.

The development of an elegant pigmentation on the wings of certain species of the family (especially *Hydaticus flavolineatus* No. 1024) is specially worthy of the attention of those who may be engaged in considering the origination of colour in insects; the wings in the Dytiscidæ are completely withdrawn from all the external influences that may be supposed to regulate the development of colour and pattern, and yet they show extreme differences in the development of pigment, and when

present in a high degree this assumes the form of complex patches or patterns. The explanation of this condition will probably therefore prove to be a physiological one.

The **FRONT LEGS.**—The front legs in the Dytiscidæ are always short, so that when the insect is moving through the water, they, as well as the middle legs, are capable of being quite packed away into the large hollow on the undersurface of the body between the metasternum and prosternum, except in Amphizoa where the front legs are longer than in the other Dytiscidæ. The coxæ are more or less conical, and are most elongate in Hyphydrus, but in the Noterides they are spherical; owing to the peculiar form of the prosternum they are very much exposed, the cavities excavated for their accommodation on the sides of the projecting middle portion of the prosternum covering only the base and inside of the cone; the muscles pass into the coxa at the base of the cone, so that the limb is capable of very free rotation. The articulation with the trochanter is at the apex of the coxa, and takes place by means of a slender neck, permitting of a great range of motion; the trochanter is nearly triangular in form, and its broad base is attached to the base of the femur, but the connexion between these two parts is not a firm one, and the suture is frequently quite open behind, and at the lower part even altogether yawning. In the males of the genus Hyphydrus the anterior trochanters are the seat of extraordinary and incomprehensible modifications of form. The femur is short, and is thickest at its point of junction with the trochanter; usually it is not cylindrical, but more or less compressed from behind backwards, but in Colpius it is very nearly cylindrical; its upper margin is slightly curved, and its lower is more or less hollowed for the reception of the tibia, when completely flexed; the hollow is greatest at the knee, and there, in consequence of it, both the front and hind faces of the femur present a free edge below, but towards the base of the femur, the hollow becomes less marked, and the front sharp edge quite disappears: this hollowing of the lower surface of the femur frequently differs much in the sexes of the same species, for in the males of many of the Macro-Dytiscidæ, the tibiæ are greatly modified in form, and the under portion of the femur is shaped in accordance with these modifications. In the Dytiscini, Cybistrini and Hydaticides, the underface of the femur usually bears one or two pencils of setæ just at its junction with the trochanter; in Eretes it is fringed with long dense ciliæ, and in Thermonectes it bears a few isolated, rigid setæ: the upper edge bears along its posterior margin a more or less conspicuous series of setæ, of various lengths and degrees of coarseness. The tibia is about the same length as, or slightly shorter than, the femur, and is articulated with it in such a manner as usually to allow of very complete approximation of the two by flexion: the tibia is rarely nearly cylindrical (Hyphydrus), but usually compressed so as to show a flat face in front, and is broader at the apex than at the knee, so that it has thus the form of a more or less elongate triangle; the outer lower angle of

this triangle is usually broadly rounded off; and as the inner edge of the tibia is longer than the outer one, the apex is oblique in its direction: the articular cavity for the tarsus cannot be seen from the front, being placed always on the posterior face of the tibia, and as the result of this the extremity of the tibia in front is a more or less chisel-like, or cutting, edge; this edge being however always fringed with ciliæ, setæ, or spines. The tibiæ are very greatly modified in form according to the sex: in the Dytiscini, Cybistrini and Hydaticides, the tibiæ are dilated, and in addition a greater or less extent of the outer part of their lower face is cut away, so as to create a hollow, which permits of the rotation of the dilated tarsus when its convex upper face is turned back, or when the tibia is pressed down on the tarsus: and the sexual change in form is accompanied by modifications in other respects as will be presently mentioned. The front face of the tibia is punctate and its posterior one smooth; the outer edge bears setæ, spines, or ciliæ of various lengths, and degrees of coarseness, and the front of the inner face usually bears a dense series of extremely short ciliæ. The extremity of the tibia is, as already remarked, not a truncature, but an edge, owing to the lower portion of the back of the tibia being more or less cut away, so that here there is seen a smooth polished space, and in this space is placed the cavity for the articulation of the tibia; it is usually very near the extremity and quite close to the inner angle, but when the tibia becomes much modified in form (as in the males of *Cybister*) the cavity may be situated nearer to the outer than to the inner margin. Usually it is a simple circular depression but in *Cybister* ♂ the lips of the orifice become prolonged into a circular neck, and a similar modification, though to a less extent, occurs in other genera where the males have highly modified tarsi. The hollowed space on the back of the tibia is an adaptation to the form of the tarsus and may be called the tarsal area. This tarsal area varies in size, as the tarsus varies in its development, as may be well seen by comparing a species of *Cybister* where the male tarsus is of small size (No. 1122) with another where it is large (*C. owas* No. 1135). The tibial spurs also vary greatly, they may be two in number, but so small and inconspicuous as to be readily overlooked, this is the case in the *Hydrovatini*; and indeed in the whole family *Hydroporides* the spurs of the front tibiæ remain small and in this case are inserted at the inner margin of the tibia one at its front the other at its hind edge; that in the latter situation being longer than the other and placed a little higher up on the tibia. In the larger *Dytiscidae* the spurs are much more developed and conspicuous, and in the females are placed in a similar position to that they occupy in the *Hydroporides*, but in the males where the tibia has much changed its form the spurs are apparently much changed in their position; thus in *Cybister* ♂ the anterior spur is placed quite at the extremity of the tibia while the posterior one is far up on the inner edge; in *Dytiscus* ♂ the anterior spur is altogether absent, and the posterior one is placed on the inner edge a good distance above the extremity;

in the males of the Hydatioides both spurs are absent on the front legs. In the Noterides the front tibiæ undergo a modification of form, which attains its maximum of development in Suphis, where the tibia is changed in position owing to a twisting of the leg, the front face being turned outwards; the anterior spur is developed into a thick, elongate, very curved, acuminate process, and being apparently soldered to the tibia gives rise to the appearance of a hooked tibia; the tarsus is inserted on the inner (now the lower) edge of the tibia just under a large prominence. In other members of the Noterides modifications similar to this may be traced, the most constant feature being the large curved anterior (or lower) spur; the structure of the primitive Noteride tibia still exists in Pronoterus, where we find a short very broad triangular tibia, with a rather small strongly curved spur at its inner angle. A very highly modified front tibia is found in the male of Eretes, where it is formed so as to allow of a maximum of rotatory motion over the tarsus when this is firmly fixed.

The anterior tarsi of the Dytiscidæ belong to three quite distinct types; in one of these they are five-jointed, the joints being more or less cylindrical and armed beneath with spines, between which the surface is shining and polished; the four basal joints differing little *inter se* in length, the fifth more elongate; this structure is however greatly obscured in the males as these in many species have the three basal joints dilated, sometimes enormously dilated, and clothed beneath with peculiar hairs or cups; the number of joints is however always distinctly five: the Laccophilini, Amphizoa, Colymbetides, Dytiscini, Hydatioides, and Cybistrini possess tarsi of this structure, which is in fact, except as regards the extreme development in the males, that which exists in the Carabidæ. The second type of structure of the front tarsi is likewise a pentamerous or five-jointed one, and the tarsi are spinose beneath, but they have the basal joint very much larger than the others, and greatly compressed laterally, that is to say the joint is very deep from its upper surface to the sole, this latter being narrow; this form of tarsus is peculiar to the Noterides; the male tarsi though often a good deal larger than those of the female, are never highly modified, and they have only a very few cups on their under surface. The third form of tarsus exhibits only four joints, and of these the basal three are very different from the terminal one, being more or less broad and flat so as to present beneath a flat sole, which is without spines but bears a dense spongy pubescence, the third joint is more or less deeply emarginate or bilobed, while the fourth or terminal joint is slender and cylindrical; the male feet are not greatly different from those of the female, although frequently a good deal broader. This form of tarsus is found in the Hydroporides and Vatellini, and is not only in respect of the number of joints a tetramerous tarsus, but is essentially as regards both the form and clothing of the joints similar to what exists in the Tetramerous or Phytophagous (as opposed to the Carnivorous) Coleoptera.

The modifications shown in the structure and development of the male tarsi in

the Dytiscidæ with five-jointed front feet are very interesting; in some of the Agabini the male front feet differ but little from those of the female, being always however something larger and more powerful owing to an increase in the bulk of the three basal joints, which moreover bear beneath a peculiar pubescence, having a sugary or glandular appearance owing to the extremities of the hairs being peculiarly formed. In the Colymbetini there is usually a superior development of the male front feet to what we find in the Agabini; the basal joints being more dilated and some at any rate of the hairs on their under surface furnished with hairs bearing paper-like expansions or cups, sometimes arranged in transverse series (Colymbetes). It is however in the Dytiscini, Hydaticides, and Cybistrini, that we find a truly wonderful development of the male tarsi; in these groups, the three basal joints are not only enormously dilated, but are also accurately co-adapted with one another, so as to form a large circular (or transversely elliptical in *Cybister*) disc or plate, the under surface of which bears larger or smaller stalked cups or palettes, and sometimes also fine pubescence, while the edges of the plate are regularly fringed with spines or densely placed fringing hairs. The highest development is found in *Dytiscus*, *Acilius*, *Cybister* and *Megadytes*, where there are present on the under surface both fine hairs and very highly developed palettes. These remarkably constructed feet are powerful organs of adhesion to smooth surfaces and I believe also are highly developed sensitive organs.

The claws of the front feet vary much, they are usually little developed in the Hydroporides, and are very delicate in *Hyphydrus*; in the Macro-Dytiscidæ on the other hand the front claws are always large, and are frequently remarkably constructed in the males, especially in the tribe Colymbetides.

Deformity of the dilated tarsi of the males seems to be of frequent occurrence, I have observed it in several species of such different genera as *Deronectes*, *Agabus*, and *Dytiscus*.

The MIDDLE LEGS are usually similar to, or differ comparatively slightly from the front ones, but their coxæ are generally shorter and less conical, and the peculiar developments in the male sex are much less extraordinary. The coxæ are usually deeply embedded in their cavities, and are then always nearly globose, and this is invariably the case when they are well separated from one another; when however they are nearly contiguous they become more or less elongate and conical, and project from their cavities, as is especially the case in the *Vatellini* and *Sternopriscus*. The trochanters and femora are very similar to those of the front legs, but are not the seat of such great modifications in the male sex. The tibiæ too are usually similar to the front ones, but often are slightly more slender and elongate; their outer edge is always set with long ciliæ, and the front face in the Macro-Dytiscidæ is nearly always roughened by bearing longer or shorter spines, the apex is always furnished with two spurs placed near one another at the inner margin: the extremity of the tibia is truncate nearly at right angles to its axis, and the edges of the truncature

are set with spines of variable length, but which are absent from the hinder part of the truncature. The tarsi also agree usually in structure with those of the front feet, except that they are less modified in the males; the number of joints is the same as on the front feet; where the middle tarsi are dilated (in the male sex of the Macro-Dytiscidæ), the dilatation does not go to such a great extent, so that the three basal joints do not assume a disc-like form, but are always elongate; they may be furnished beneath with a peculiar clothing of hairs or cups, but these are less developed than on the front feet: the claws are frequently elongate; in the males of some species of *Cybister* there is a peculiar patch of hair on the under surface of the basal joint in the males, and in *Homœodytes* a similar peculiarity is found on the third joint. The remarkable Australian genus *Sternopriscus* differs from other Dytiscidæ inasmuch as the males have the middle legs very much more modified than the front ones are.

HIND OR SWIMMING LEGS.—The posterior pair of legs in the Dytiscidæ are used only for aquatic locomotion, and are profoundly modified in accordance with their unusual function: no part of the structure of these water-beetles however varies so much as do the swimming legs; the difference between their feeble, and nearly useless condition in *Hydrovatus* and *Methles*, and their powerful and complex development in *Cybister* and *Megadytes* and their allies, being enormous; in fact so great is the variety in the development and details of structure of these parts, that a very large proportion of the species of the family could be distinguished from other species by the swimming leg alone. An examination of this organ, and a comparison of it with the leg of a Carabid are sufficient to make it evident that the latter might possibly be modified so as to form the swimming leg of a Dytiscid; while the study of the details of structure of the part in this latter family reveals so many cases in which remnants of a Carabideous structure still exist as to make us believe that the swimming leg of the Dytiscidæ may have previously been a leg for running like that of the Carabidæ. The metamorphosis consists in an increase in the transverse dimensions of the pieces, and in a compression or flattening of them, so that one aspect of the limb presents a large surface, while another is reduced to a mere edge: at the same time there is a large growth of elongate ciliæ or swimming hairs, which are very readily spread out to form a very large surface to be opposed to the water, and just as easily depressed so as to offer no resistance whatever to the return of the leg to a position for making a fresh stroke. The most powerful swimming leg exists in the *Cybirtrini*, the feeblest in *Hydrovatini*, and *Suphisini*, *Pelobius* and *Amphizoa*, and *Celina* and *Methles*.

The coxa has already been described in speaking of the under part of the body (page 234). The trochanter is never very large, and is usually, closely applied to the base of the femur, so that the two almost appear to form one piece; it does not vary greatly in size, and is not the seat of any remarkable developments, but is large and more globose and inflated in the *Vatellini*, while in the larger Dytiscidæ

its apex becomes even very acute (*Cybister*). The femur is short, rarely so long as to project at the sides beyond the edge of the wing-case, but it does so in *Vatellini*, *Amphizoa* and those species of *Agabus* at the commencement of the genus, and even in some of the species of *Deronectes*: it is more or less compressed or flattened so that it is elongate from front to hind edge, very short in the vertical direction, but in the lower forms it is much nearer to cylindrical in shape; at the base its hind portion is cut away to admit the trochanter, to which the femur is attached only by a small piece at its base; although frequently (especially in the *Hydroporides* and *Cybistrini*) the trochanter is very closely applied to the excavation in the femur, yet in other cases (*Dytiscus*) the fitting between the two is very imperfect. The front of the femur forms a sharp edge in the highly evolved forms, but is blunter in the lower ones, where the femur is less blade-like, (*Pelobius*, *Amphizoa*, and *Hydrovatini*, &c.); its upper face is flat, smooth, but with a few wrinkles, and in *Pelobius* with an obsolete series of distant punctures placed parallel with its hind margin, in *Hydaticus* with a closely placed series of setigerous punctures, and in *Eretes* with a band of densely placed fine ciliæ; quite in front it usually bears a series of very short setæ or spines, which usually become longer on the basal portion; from base to apex the femur is slightly curved, so that in this direction the upper face is a little hollowed, which permits it to be extended in the forward direction along the curved surface of the breast, with which it comes in close contact at the point of its greatest flexion; the lower or free surface, is smooth in the higher forms, more or less roughened in the lower forms; just where it is rounded off in front at the knee, there are frequently some coarse punctures bearing short thick spines (*Dytiscus*); sometimes a series of distant punctures each bearing a seta is placed along the lower face of the femur parallel with its hind margin (*Noterides*); and the hind margin itself bears in the *Noterides* a regular group of elongate setæ, placed at the knee, and which attain a very remarkable development in *Hydrocanthus*; in the *Colymbetini* and *Dytiscini* there is usually some punctures forming an indefinite group, at the outer extremity of the femur, and in *Agabus* there is a group of setæ arranged in a short row near the hind margin at the outer extremity, which vary much in their development according to the species. The posterior face of the femur is more or less hollowed for the reception of the tibia when this latter is flexed; this hollow does not extend to the base, (where indeed the hind face of the femur is almost an edge), but is confined to a greater or smaller area at the extremity; this hollow causes the upper and lower faces of the femur to terminate each as an edge, or lamina, of which the lower one is larger and projects farther back than the upper; the angle at the knee of the upper plate is always rounded, that on the lower plate frequently rounded, but in the higher forms more or less acute: in the lower forms of the family where the swimming legs are of inferior structure, these laminae are scarcely to be detected: in the higher *Noterides*, the lower lamina is excessively developed.

The hind tibia is in the Noterides alone so long as or a little longer than the femur, but is sometimes much shorter (*Cybister*); this part varies extremely in its development; in the feeble swimmers (*Hydrovatini*, &c.) it is elongate, many times longer than broad, and increases very slightly in diameter from the knee to the extremity, a transverse section being nearly cylindric; in the higher forms, the tibia is much broader, and though when dissected off it is found to be always narrow at the knee, yet it attains its great breadth almost immediately below this, so that in *Cybister*, the articular cavity is situated on an extremely short neck placed at the anterior and outer extremity of the tibia; the fact that the greatest breadth of the tibia is gained immediately at the knee is characteristic of the *Cybirini*, and the higher *Hydaticides*; in the *Dytiscini* and *Colymbetides*, this abrupt spreading out of the tibia immediately at the knee does not occur, but the tibia increases in breadth by a gentle curve on its inner edge behind the knee, and gains speedily its greatest width near to the base, thence continues nearly parallel sided to the extremity, or indeed slightly diminishes in width towards the apex owing to a slight curving inwards of its outer margin. In *Bidessus* and *Sternopriscus*, the tibia is of peculiar form, being a little crooked owing to its being bent a little outwards some distance below the knee, and a slight bending outwards of the tibia likewise exists in many *Hydroporides*, especially in *Cœlambus*. Usually three faces are well defined on the tibia, viz. an upper, a lower, and an inner one, but in *Cybister* where the metamorphosis of the tibia is extreme, the inner face has entirely disappeared at the base, and is only tolerably well defined at the apex, so that the tibia in such case forms a flattened upper face, and a curved or slightly arched lower face; and in *Hydrocanthus* the tibiæ are so flattened that they form a plate whose two faces are only very slightly arched; the lower face of the tibia shows a varied sculpture, being sometimes polished and with only a series of punctures placed near its outer edge (*Noterides*), sometimes dull and with a dense series of setæ running its whole length parallel with the outer edge (*Vatellini* and many *Hydroporini*) sometimes densely punctate (*Deronectes*, group 1); but more usually the interior portion of the face is smooth and polished, while the exterior portion has large punctures bearing spines, (*Cybister* and many *Colymbetides*), while in other cases these large punctures have to a great extent disappeared but leave a marginal series along the outer margin; the outer and inner edges of the lower face of the tibia are armed with a series of spines.

The upper face of the tibia bears, quite at the outer edge, elongate fine ciliae or swimming hairs, which however are almost absent in *Hydrovatus* and *Methles*; its surface is, like the lower one, either polished or dull, but bears some large punctures furnished with spines, which assume a very remarkable development in the higher forms; the usual arrangement of these spine-bearing punctures is that there is a longitudinal series parallel with the outer margin, while the rest of the face external to this series may be quite smooth (*Ilybius*) or bearing numerous large, irregularly

placed punctures armed with short acuminate spines (*Hyderodes*); in *Dytiseus* the surface is smooth with an irregular double row of large punctures arranged along its middle and each bearing a rather elongate spine, with a peculiar flattened and bifid extremity; in *Hydaticus* there is a single series of such spines along the middle, and in *Thermonectes* this series becomes oblique in direction and the punctures approximated; this is also the case in *Aeilus* where moreover the peculiar spines become very elongate, and in *Eretes* this peculiar oblique series is much more developed and placed near the apex of the tibia; in *Cybister* these peculiar long spines with bifid extremities form a dense tuft placed at the hinder outer angle of the upper face of the tibia, the rest of the surface towards the base bearing also scattered short spines; the series of developments exhibited by these spines, and their culmination in the highest forms indicate that they have some functional importance, though it is difficult to imagine what this may be. The inner edge of the upper face bears a series of spines, and the outer edge is fringed with dense elongate swimming hairs. The inner face of the hind tibia is without sculpture, and its inferior margin bears elongate swimming hairs, which however are sometimes very scanty and are never so largely developed as the swimming hairs on the outer side of the tibia; as before remarked, in *Cybister* this inner aspect of the tibia is only indefinitely distinguished from the upper face, while in the *Noterides* it is nearly absent, owing to the compression or flattening of the limb. The apex of the tibia is fringed densely with spines of variable lengths, and degrees of regularity, and bears two spurs which are always largely developed, and are placed on the inner side one at the upper, one at the lower angle: in proportion as the swimming legs become largely developed so do these spurs become remarkable, so that in *Cybister* they are about so long as the tibia itself: they become bifid at the extremity in *Laccophilus*, and the *Thermonectini*; in the *Cybistrini* the lower of these spurs becomes broad and flattened, while the upper one is canaliculate along its lower aspect, and in *Megadytes* is frequently bifid or even trifid at the apex; it is probable that the dilated lower spur in *Cybistrini* gives support and strength to the tarsus, and it is rendered additionally useful for this purpose, by being itself supported by a prolongation backwards of the lower face of the tibia immediately below this spur.

The tarsus, like the other parts of the swimming leg, is the seat of great variation in its development; in the higher species it has undergone a great change by which it is well adapted to serve its purpose as a means of locomotion in water, but in the lower forms, *Hydrovatus*, *Celina* and *Methles*, and more especially in the last two, little or nothing can be pointed out to distinguish it from the tarsus of the *Carabidæ*. It is invariably five jointed and does not, as do the other feet, ever show any diminution of the number of its joints. In the higher forms, it has undergone a process of lateral compression so that it is flattened and presents only two faces, the joints are accurately coadapted in form and rigidly fixed together, even the claws become straight and rigid; and at the same time it is

so articulated that it undergoes a process of semirotation when moved through the water, as the result of which when acting as a propeller it presents a broad face to the water, but when it is passive or is moved through the water for the purpose of attaining a position from which to commence another stroke it presents an edge; in other words, what rowers call feathering the oar is performed by the tarsus of the Dytiscidæ in a most perfect manner. Both the true upper, and the true lower, surfaces of the tarsus are mere edges, and the former bears elongate swimming hairs, which are depressed when the limb is at rest or moving forwards, but are spread out when the foot is acting as a propeller: the latter or lower edge being closely set with spines. In *Pelobius*, however, the sole of the tarsus still exists as it does in the *Carabidæ*; that is to say the lower face of the foot bears two series of spines and between these series a considerable space intervenes. It is an interesting fact that in many of the higher Dytiscidæ there are remnants of this structure still to be seen in the highly changed tarsus; the sole it would seem, disappears, at any rate in some cases, not by any diminution or degeneration but by a process of growth of the tarsus and concomitant modification of form by means of which the sole becomes part of the inner face; in other words the inner face of the tarsus in the higher Dytiscidæ is homologous with both the inner and lower faces of the tarsus of *Carabidæ*. In the *Carabidæ* the tarsus has two sides curving into one another so that an arch forms the upper portion of the tarsus, and a sole, this latter being bounded on each side by a series of spines. In *Pelobius* the two sides of the *Carabid* tarsus and the sole still exist, as in the *Carabidæ*, but form a triangle, of which the outer face is the longest side, and the true inner face of the tarsus is quite narrow, not so broad in fact as the sole, which is still marked off by a series of spines extending the whole length of the foot; in *Dytiscus Sturmi* (*Agabus* No. 737) where the tarsus is thoroughly Dytiscideous in form, there may be seen on the inner face of the basal joint a series of three or four spine bearing punctures, placed at a distance from the edge and evidently representing a remnant of the series of spines which serves as the inner boundary of the sole in *Pelobius* and the *Carabidæ*; in *Scutopterus* there is a similar series of punctures on the first and second joints; and in the interesting Australian genus *Hyderodes*, this series of spine-bearing punctures actually still exists along the whole length of the four basal joints of the tarsus, on its inner face. Besides these spines which exist occasionally, there are on the inner side of the tarsus, other spines more constantly present; these consist of three or four spines placed on the hind margin of each joint, near the lower edge, and of some others similarly placed close to the upper margin; in *Cybister* the lower of these series of spines is reduced to a pair placed on each of the second, third and fourth joints; in *Laccophilus* this series is entirely absent, and the upper series consists of a pair of suberect spines, on the first, second and third joints, one of which being much longer than the other, projects beyond the lower margin so that its

extremity is conspicuous even when the tarsus is looked at from the outside ; quite close to the lower edge there are frequently placed some swimming hairs, which, however, are sometimes present only in the male (most Cybistrini, *Agabus*), &c. ; in the Hydatioides, *Laccophilus* and a few species of *Cybister* they are present in both sexes, but are never quite so developed as those on the opposite edge of the tarsus. The outer face of the tarsus is that which is usually turned upwards ; its outer margin (forming the true lower edge of the tarsus) is densely set with more or less elongate stout spines, and these are continued for a little way round the corner of each joint along its hind margin. In the Hydatioides the hind portions of each joint are fringed with densely set, adpressed cilia which lap over the face of the following joint, and which exist also on the inner face of the tarsus ; and in *Eretes* the outer and inner faces of the tarsal joints bear shallow punctures, each of which is filled with a transparent, adpressed cilia or scale : except for these peculiarities the outer face is bare and polished. The joints of the hind tarsus are, in the higher forms such as *Cybister* and the Hydatioides, shaped so that they shall form together a compact piece to press against the water ; each joint is about the same width at the base as the extremity of that preceding it, and the hind margins are the most prominent part of the joint so that the base of each joint is received into the concave extremity of that preceding it : and thus both edges of the tarsus show a continuous or little broken outline ; it is the rule however that the outer (or lower) edge of the tarsus is (as is the case in the *Carabidæ*) much more broken and interrupted in its outline than is the opposite edge ; and in the genus *Methles* the tarsal joints are as loosely articulated and the tarsus as discontinuous in outline as in the *Carabidæ*. In *Laccophilus* the tarsal joints are peculiarly shaped, inasmuch as the lower part of each joint is more elongate than the upper part, and so projects backwards over the following joint, so that when the foot is looked at from the outside the joints have a peculiar lobed appearance ; a somewhat similar formation is found in the genus *Ilybius*, and in the group *Colymbetini* there is frequently a greater or less prolongation backwards of the hind margin of the lower part of each joint ; by this structure the tarsus is strengthened so as to offer a greater resistance when used as a propeller.

The claws of the hind tarsus are very variable in their condition ; in the lower forms they are two in number, equal in size, curved, small and moveable, and the under surface of the apex of the last tarsal joint has a distinct triangular excision for the accommodation of each claw. In proportion to the change and development of the tarsus so do the claws become altered, till in *Cybister* we find the foot terminated by a single, stout, straight, acuminate, fixed spine which has lost all resemblance to a claw, and for whose accommodation there is a large triangular excision in the material of the under (inner) face of the hind margin of the last tarsal joint. Between these extremes of development there exist numerous transition

forms, and considerable variations in the details. Looking at these stages we find that as the tarsus becomes compressed laterally the two claws necessarily become approximated, and as the sole of the tarsus changes its direction to become a part of the inner face of the tarsus, so does one of the claws get drawn above the other, till ultimately the two claws instead of being placed side by side are situated one over the other, the inner claw becoming the upper one; this inner claw which thus changes its position, at the same time enlarges, and becomes straighter, so that the two claws may be very unequal in size, it being always the upper or inner one that is the larger; this condition may be seen in the Hydaticides: the lower claw is frequently more curved than the upper one, or in other words retains to a greater extent its primitive form; and frequently there is a considerable difference in this respect in the sexes of one species (*Ilybius*, many species). The most changed claws are found in *Hyphydrus*, *Laccophilus* and *Cybister*, in all of which the lower claw has disappeared, and the upper one is straight (or nearly so) and immobile. In the genus *Megadytes* the two claws are present in very different degrees of development in the sexes of the same species; and it has been supposed that the two claws are not really two but are a divided or split single claw, and this statement has been repeated by some of the best entomologists; there is, however, no ground for the assertion, which is based on the supposition that the single claw of the allied genus *Cybister* really consists of the two claws consolidated into one; a careful examination, however, of a series of species shows that this is not the case, but that in *Cybister*, where there is only one claw present, this is because the second claw is undeveloped or atrophied. On the single claw of *Cybister* there exists a longitudinal channel, looking something like a consolidated suture, and this has been cited as a proof that this single claw is a united double one; as, however, where there are two claws present (in *Megadytes*), each of them presents this channel very distinctly, it is quite clear that it is no indication of the claw possessing it being a double one, for if so *Megadytes* has really four claws.

The relative length of the joints of the hind tarsus is rather constant in the family, the rule being that the basal joint is distinctly longer than the second and that the third and fourth are each a little shorter than its predecessor, the fifth being again more elongate, so as to equal or surpass in length the basal joint, but in *Hyphydrus* the terminal joint is shorter than usual. In the *Noterides*, however, these proportions do not hold good, and the basal joint of the tarsus is nearly or quite as long as the four following joints together.

It is worthy of remark that in the *Noterides* the tarsus does not, as in the other Dytiscidæ, develop, *pari passu*, with the other parts of the swimming leg, but evidently is of less functional importance, so that in *Hydrocanthus* we find that whereas the femur and tibia are more highly metamorphosed than in any other Dytiscidæ, the tarsus on the contrary remains small, and can be of comparatively little use as a propeller. In *Pelobius* the legs are, as regards their structure, but

little adapted for swimming organs, but both the inner and outer margins of the tibiæ and tarsi are abundantly provided with swimming hairs. In *Amphizoa* the hind legs are remarkable, inasmuch as they are completely destitute of ciliæ or setæ, and are elongate and slender, and not at all modified for swimming.

Although the swimming legs of the Dytiscidæ in the higher forms are so remarkable and characteristic, yet there is not one of their many peculiarities sufficiently constant to serve as a character by which the family may be distinguished from the Carabidæ: it is in fact only in the coxa that any peculiarity of structure can be pointed out as capable of serving as a test-mark for the family. It is true if *Amphizoa* were excluded from the Dytiscidæ, that we might define the family as possessing posterior tibiæ provided with elongate ciliæ; but then many species of *Scarites* in the Carabidæ have the same parts quite as densely ciliate as have the Dytiscidæ; while if we try and seek for a character in any of the changes of form and size of the various parts of the leg below the coxa, we find these to be so extremely variable as to be incapable of exact definition; and if we descend to the feebler forms of swimming leg, and compare the leg of a *Methles* in the Dytiscidæ with that of a *Trachypachys*, or of other Carabidæ, we find it impossible to discover any difference of importance in the shape and form of the various parts.

The phrase "pedes natatorii" or "legs natatorial" commonly used as the definition of the family, is valueless for the purpose of a truly scientific taxonomy, although useful in conveying a vague general impression, as to one of the most marked peculiarities of the family as a whole.

III.—THE MORPHOLOGICAL SPECIFIC CHARACTERS.

THE FAMILY DYTISCIDÆ.*

The Dytiscidæ are beetles, having the antennæ eleven jointed, glabrous, and shining, entirely destitute of exserted setæ or sensitive pubescence, and inserted on the inflexed margin of the side of the epicranium, very close to the eye, and quite close to the upper portion of the base of the mandible.

The maxillæ provided with two elongate free lobes, the inner acuminate and curved at the extremity, ciliate or spinose along a portion of its inner margin, the outer slender, curved and palpiform, divided into two pieces by a transverse suture in all the species except those of the genus *Amphizoa*.

The prosternum forming in the middle, behind, a process which projects horizontally backwards, behind the front legs, towards the metasternum.

The hind coxæ of large size, intimately soldered with, and appearing part of the

* The abbreviated systematic characters in this part of the work are intended merely to serve as a guide in the search for particular species, and do not of themselves give a correct idea of the classification adopted. The definition of the family should form a part of the fifth synthesis, but is placed here for the convenience of those who have no knowledge as to what constitutes a member of the family.

metasternum, and actually forming a considerable portion of the part of the skeleton placed between the middle and hind legs, extending at the sides so as always to reach the margin of the wing-case when this is closed : the inner portions of the two coxæ, connected accurately together along the mesial line of the body by a straight suture of considerable length, so that the middle of the base of the abdomen (or hind body) is largely separated from the true extremity of the metasternum.

The posterior legs modified for swimming, though in an extremely variable degree, by the ciliation of the tibiæ and tarsi with elongate, depressable, swimming hairs, and by a compression of the femora, tibiæ and tarsi, by which these parts become less cylindric, but broader and flatter.

Posterior tarsi always five-jointed ; the anterior and middle ones either four, or five-jointed. The family as known to me comprises nearly twelve hundred species, arranged in two series, viz. :—

SERIES I.—*Dytisci Fragmentati*.

Metathoracic episternum not reaching the middle coxal cavity ; (*vide* below).

SERIES II.—*Dytisci Complicati* (*vide* p. 317).

Metathoracic episternum reaching to the middle coxal cavity.

IV. 1.—*Dytisci Fragmentati*.

The episternum of the metathorax does not penetrate so far towards the middle of the body as to reach the middle coxal cavity, but is separated therefrom by a process of the mesothoracic epimeron which articulates with the side wing of the metasternum.

Four divisions of very different values, and very distinct *inter se* can be distinguished as follows.

Greatest anterior extension of the hind coxa is near the middle (longitudinally) of the body.	$\left\{ \begin{array}{l} \text{Metasternum quite straight in the} \\ \text{middle behind, and with a dis-} \\ \text{tinct transverse suture marking} \\ \text{off a supplementary piece.} \end{array} \right.$	<i>PELOBIUS</i> (<i>vide</i> p. 259).
		$\left\{ \begin{array}{l} \text{Metasternum more or less pointed} \\ \text{in the middle behind, and not} \\ \text{marked by a transverse suture.} \end{array} \right.$
Greatest anterior extension of the hind coxa is nearer to the epipleura than to the mesial line of the body.	$\left\{ \begin{array}{l} \text{Prosternal process not reaching the} \\ \text{metasternum.} \end{array} \right.$	<i>VATELLINI</i> (<i>vide</i> p. 282).
		$\left\{ \begin{array}{l} \text{Prosternal process reaching the me-} \\ \text{tasternum.} \end{array} \right.$

* In this group the metathoracic episternum very nearly reaches the middle coxa, while in the other components of the series it is widely separated therefrom.

I. 1.—Genus *PELOBIUS*.

Posterior coxæ separated from the metasternum by a suture which extends directly outwards, not at all forwards; metasternum in the middle behind with a piece marked off by a distinct suture; swimming legs slender, but with long ciliæ, their tarsi elongate and slender; prosternal process, elongate, bluntly acuminate at the tip.

This genus comprises only three species, one of them European, the others Australian; the European species, has the scutellum quite exposed, but in those from Australia this part is nearly covered by a prolongation of the base of the prothorax.

1. *Dytiscus tardus*, Herbst. *Hydrachna tarda*, M.C.*—Convexus, sine pubescentia fere opacus, ferrugineus, capite utrinque, prothoraceque antè et postè nigricantibus, elytris fuscis, marginibus irregulariter late dilutioribus, corpore subtus ex parte nigro, antennis pedibusque testaceis: prothorace basi et apice elytrisque punctato-rugulosis; corpore subtus dense subtilissime punctato. Long. 10, lat. 6 m.m.

The male has the three basal joints of the front and middle tarsi a good deal dilated, and furnished on the under side with tomentum, the dilated joints are a good deal compressed at the sides.

Central and Southern Europe, Corsica and Algeria; common in isolated spots. Not found in Scotland, Denmark, Finland or Scandinavia. 235. †

2. *Pelobius australasiæ*, Clark. *Hydrachna Australasiæ*, M.C.—Convexus, sine pubescentia, sat nitidus, niger, thorace, elytris, antennis pedibusque ferrugineis; prothorace dense subtiliter, æqualiter punctato, elytris dense subtiliterque punctato-rugulosis; corpore subtus fortiter punctato. Long. 10, lat. 6 m.m.

In the male the basal joints of the front and middle tarsi are slightly dilated and are furnished beneath with tomentum.

Australia, (Melbourne). 236.

The two Australians differ from *D. tardus*, by the small scutellum and obsolete frontal suture.

* The name followed by the letters M.C. is that under which the species is recorded in the Munich Catalogue of Coleoptera (Catalogus Coleopterorum, autoribus Dr. Gemminger et B. de Harold, Tom. II. Monachii, 1868). Such specific names as are not recorded in the Munich Catalogue will be accompanied by a reference to the actual work in which the original description appeared. Both these references are absent in the case of species here named and characterised for the first time.

† The number placed in this position is that which I have used for labelling specimens and collections submitted to me for determination during the progress of the work. It may therefore be quite disregarded except by those who have from me specimens bearing these numbers.

3. *Pelobius niger*, Clark. *Hydrachna nigra*, M.C.—Convexus, sine pubescentia, sat nitidus niger, antennis pedibusque ferrugineis, prothorace dense fortiter punctato; elytris crebre punctatis, basi rugosis; corpore subtus fortiter punctato. Long. 9, lat. $5\frac{1}{2}$ m.m.

I have seen only females of this species.

Australia, (Queensland). 237.

III. 1.—Tribe NOTERIDES.

Scutellum quite invisible; internal lamina of posterior coxa very differentiated from the exterior lamina, the two separated by a nearly longitudinally straight demarcation which extends the whole length of the coxa; the anterior border of the hind coxa gains its nearest approach to the middle coxa before it has extended in the lateral direction half way towards the epipleura: Front and middle tarsi conspicuously five-jointed. Anterior tibia frequently with a hook or curved spur at the extremity.

(NOTE.—In *Notomicrus* the anterior border of the hind coxa cannot be made out, the suture between it and the metasternum being quite obliterated, but the peculiar form of the internal lamina cannot be mistaken.)

NOTERIDES.	No curved spur on front tibiae.	{	Coxo-metasternal suture obliterated; hind coxal cavities little separated; no coxal line or border.	} <i>NOTOMICRUS</i> (<i>vide</i> below).
		{	Hind coxal cavities much separated; coxal line and border present, although fine.	} <i>HYDROCOPTUS</i> (<i>vide</i> p. 261).
	A more or less conspicuous curved spur or hook on the apex of front tibiae.	{	Prosternal process rounded behind; hind femora without angular ciliae.	} <i>NOTERINI</i> (<i>vide</i> p. 263).
		{	Prosternal process truncate behind; hind femora with angular ciliae; hind coxal cavities separate.	} <i>SUPHISINI</i> (<i>vide</i> p. 267).
{		Prosternal process truncate behind; hind femora with angular ciliae; hind coxal cavities contiguous.	} <i>HYDROCANTHINI</i> (<i>vide</i> p. 268).	

I. 2.—Genus *NOTOMICRUS*.

Anterior tibia destitute of a curved spur, and with indefinite outer apical angle; posterior coxal cavities but little separated, coxal notch scarcely visible.

The extremely minute species are found in Australia and South America.

4. *Notomicrus laevigatus*, n. sp.—Ovalis, angustulus, subdepressus, per-nitidus, laevigatus, impunctatus, testaceus, pectore abdominisque basi fuscis; tarsis posterioribus filiformibus, tibiis longioribus. Long. $1\frac{1}{2}$, lat. $\frac{2}{3}$ m.m.

I see no sexual differences in the few specimens I have seen of this minute beetle.

Australia, (Rockhampton, Brisbane). 468.

5. *Notomicrus suturalis*, n. sp.—Ovalis, angustulus, pernitidus, lævigatus, livide testaceus, pectore aldominisque basi fuscis; elytris serie suturali punctorum subobsoleta; tarsis posterioribus filiformibus, tibiis longioribus. Long. $1\frac{3}{8}$, lat. $\frac{7}{8}$. m.m.

This insect is very like the preceding one but has an indistinct series of punctures along the suture of the elytra.

Australia, (Rockhampton). 469.

6. *Notomicrus brevicornis*, n. sp.—Ovalis, subdepressus, pernitidus, lævigatus impunctatus, capite, elytrorum basi, pectore abdomineque obscurioribus; tarsis posterioribus debilibus. Long. $1\frac{1}{8}$, lat. $\frac{3}{4}$ m.m.

I have seen only five individuals of this minute insect, and see no sexual differences among them; it is the smallest of the Dytiscidæ, and is indeed amongst the most minute of the Coleoptera as it attains only the size of the larger Trichopterygidæ.

Brazil, (Boa Sorta, Novr. 1850, Dr. Sahlberg). 470.

7. *Notomicrus traili*, n. sp.—Ovalis, angustulus, subdepressus, pernitidus, testaceus, elytris præsertim ad basin obscurioribus, capite pectoreque fuscis; antèrius lævigatus, elytris apicem versus dense, omnium subtilissime, vix perspicue punctulatis; tarsis posterioribus elongatis, filiformibus. Long. $1\frac{1}{2}$ m.m., lat. $\frac{3}{4}$ m.m.

This species resembles extremely *Notomicrus lævigatus* (No. 4) in size, form, and appearance, but it is readily distinguished from it by the fact that the apical half of the elytra is covered by a close excessively fine punctuation, instead of being polished and shining. The antennæ are rather elongate and slender. I have seen but two individuals, they have the anterior tarsi quite slender, but I can form no opinion as to their sex.

South America, (Rio Tapajos, above Itaituba, 13. 3. 1874, Dr. Trail). 1169.

I. 3.—Genus *HYDROCOPTUS*.

Anterior tibiæ destitute of a curved spur, with sharply defined, rectangular, outer apical angle; posterior coxal cavities very distinctly separated, coxal notch broad.

The five species* occur in the tropics of the Old World.

8. *Hydrocoptus subfasciatus*, n. sp.—Oblongo-ovalis, transversim sat convexus, subnitidus, testaceus, elytris fusco-testaceis, fascia subbasali interrupta maculaque

* In addition to these the following also belongs to the genus, viz:—*Hydrocoptus rufulus*, Motsch. (No. 1,334, huj. op.); very possibly identical with No. 9; Burmah.

ante-apicali pallidioribus, seriebus 5 vel 6 punctorum impressorum minus regularibus; corpore subtus impunctato; antennis brevibus, simplicibus, articulis haud transversis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

I can see no sexual differences among the few individuals at my disposal; the pale marks on the elytra are ill-defined, and sometimes scarcely to be distinguished.

Australia, (Rockhampton). 464.

9. *Hydroporus rubescens*, Clk. M.C.—Oblongo-ovalis, transversim sat convexus, nitidus, testaceus, elytris seriebus subregularibus punctorum impressorum minorum; corpore subtus impunctato; antennis brevibus, articulis 4—10 leviter transversis. Long. 2, lat. 1 m.m.

I see no sexual differences among the small series I have examined:

It is possibly the insect Motschulsky intended to name *Hydrocoptus rufulus*, *Etudes Ent.* 1859 p. 44.

Siam, (Bangkok, Castlenau); Java (fide Clark). 465.

10. *Hydrocoptus vittatus*, n. sp.—Oblongo-ovalis, transversim minus convexus, nitidus, testaceus; elytris fuscis, vitta indeterminata marginali aliaque juxta-suturali abbreviata pallidis, seriebus obsoletissimis punctorum impressorum; corpore subtus impunctato; antennis brevibus, articulis 4—10 leviter transversis. Long. 2, lat. 1 m.m.

Though apparently very closely allied to *Hydroporus rubescens* (No. 9), this species is very easily distinguished by the colour of the elytra.

Northern India, (Boyd); Sarawak, (Marquis Doria). 466.

The individual from Sarawak differs slightly from the type from Northern India: it has the punctures of the elytra scarcely so fine, and the antennæ not quite so short.

11. *Hydrocoptus seriatus*, n. sp.—Oblongo-ovalis, transversim sat convexus, pernitidus, testaceus, elytris castaneis, seriebus punctorum impressorum conspicuis; corpore subtus impunctato; antennis brevibus, articulis haud transversis. Long. $2\frac{1}{2}$ m.m.

The larger size and the much more conspicuous series of punctures on the elytra readily distinguish this from the preceding species *Hydrocoptus vittatus* (No. 10); it is much smaller than *Hydrocoptus bivittis* and has the series of punctures more regular and distinct.

Madagascar, (Wehneke). 608.

12. *Hydrocoptus bivittis*, Motsch. *Hydroporus bivittis*, M.C.—Oblongo-ovalis,

transversim sat convexus, nitidus, rufo-testaceus, thorace anterior et posterior vage infuscato; clytris nigro-fuscis, vage rufo-signatis, seriebus punctorum abbreviatis; corpore subtus nitido, processibus coxalibus sparsim punctatis; antennis brevibus, articulis haud transversis. Long. 3, lat. 1½ m.m.

The yellow marks of the elytra consist of the outer margin, an abbreviate vitta near the suture, an indistinct small mark between it and the shoulder, and another indistinct subapical one. The series of punctures are numerous and distinct, moderately regular, but becoming obsolete before the base and apex. I have seen but a single individual.

Northern India, (coll. Bouvouloir). 467.

II. 1.—Group NOTERINI.

The posterior femur destitute of group of ciliæ at the extremity of the hind margin; anterior tibia with a curved apical spur; prosternal process rounded behind (or obtusely acuminate, not truncate). This group comprises only three genera.

Anterior tibia short, broad, and subtriangular, with well-marked outer apical angle; the curved spur short and inconspicuous. A single South American species.	}	—	{	PRONOTERUS, (vide below.)
Anterior tibia, with indefinite outer angle, and bearing a very distinct curved spur.	}	{	The spur moderately large, hind tibiæ, but little flattened and dilated. European and Mediterranean species.	} NOTERUS, (vide p. 265.)
	}	{	The spur very conspicuous; hind tibiæ markedly flattened and dilated. Madagascar and African species.	} SYNCHORTUS, (vide p. 261.)

I. 4.—Genus PRONOTERUS.

Anterior tibia with acute outer apical angle; the curved spur small. The single species is South American.

13. *Pronoterus punctipennis*, n. sp.—Oblong-ovalis, transversim convexus, nitidus, testaceus; clytris castaneis, serie abbreviata subregulari punctorum majorum, et versus apicem crebrius, sat fortiter, irregulariter punctatis; corpore subtus impunctato, nitido; antennis brevibus. Long. 2½, lat. 1¾ m.m.

I have seen only three individuals; they are males and have the basal joint of the front tarsi much thicker than those following it.

Brazil, (Santa Rita, August and September, 1850, Dr. Sahlberg). 471.

I. 5.—Genus *SYNCHORTUS*.

Anterior tibiæ with indefinite outer apical angle, with elongate curved spur; antennæ slender; hind tibiæ broad and flattened.

The six species* occur in Madagascar and tropical Africa.

14. *Synchortus simplex*, n. sp.—Ovalis, sat convexus, castaneo-testaceus, nitidus, fere lævis, elytris punctis paucis subtilissimis. Long. $2\frac{7}{8}$, lat. $1\frac{5}{8}$ m.m.

The single male individual, which is all I have seen of the species, has the basal joints of the front and middle tarsi dilated, the latter furnished underneath with a very large cupule.

Africa, (Gaboon). 516.

15. *Synchortus aciculatus*, n. sp.—Ovalis, sat convexus, castaneo-testaceus, nitidus, lævis, sed elytris versus apicem et exterius punctis imbricatis sat approximatis. Long. $2\frac{7}{8}$, lat. $1\frac{5}{8}$ m.m.

The only individual I have seen is a female, and differs from *Synchortus simplex* only by the tarsi and the elytral sculpture, so that I believe the two are probably the sexes of one species.

Africa, (Gaboon). 517.

16. *Synchortus sparsus*, n. sp.—Ovalis, sat convexus, castaneo-testaceus, nitidus, lævis, sed elytris apicem versus et exterius punctis parvis sub-asperatis, haud numerosis. Long. $3\frac{1}{3}$, lat. $1\frac{7}{8}$ m.m.

The single female I have seen of this species differs from *Synchortus aciculatus*, by its rather larger size, and the much smaller punctures on the elytra.

Africa, (Gaboon). 518.

17. *Synchortus duplicatus*, n. sp.—Ovalis, sat convexus, castaneus, nitidus, lævis, elytris punctis paucis subtilissimis. Long. $3\frac{1}{2}$, lat. 2 m.m.

I have seen only males of this species, they are extremely similar to *Synchortus simplex* but are twice the size.

Madagascar. 519.

18. *Hydrocanthus asperatus*, Fairm. Ann. Soc. Fr. 1863 p. 199.—Ovalis, sat

*The following also belongs to *Synchortus*:—*Noterus imbricatus*, Klug, (No. 1,498, *luj. op.*), near No. 18; Eastern Africa.

convexus, castaneus, nitidus, lævis, sed elytris punctis magnis, imbricatis, numerosis, basin versus evanescentibus; sutura lævi. Long. $3\frac{1}{2}$, lat. 2 m.m.

I have seen only females, they are perfectly similar to *Synchortus duplicatus* except in the tarsi, and in the sculpture of the elytra, and I have little doubt the two are the sexes of one species.

Madagascar. 520.

19. *Hydrocanthus rugoso-punctatus*, Wehneke, Berl. Zeit. 1876, p. 221.—Ovalis, sat convexus, castaneus, nitidus, elytris punctis magnis, imbricatis numerosis, basin versus haud subtilioribus; sutura lævi. Long. $3\frac{3}{4}$ m.m. lat. 2 m.m.

I have seen a single specimen, it is a female, and distinguished from *Hydrocanthus asperatus* (No. 18), by the fact that the punctures on the basal portion of the elytra are as coarse as those on the apical portion.

Madagascar, (Wehneke). 609.

I. 6.—Genus *NOTERUS*.

Anterior tibia with indefinite outer apical angle, and with rather long curved spur; antennæ more or less incrassate; hind tibiæ rather slender, scarcely flattened.

The six species are found in the European region and Japan.

20. *Dytiscus clavicornis*, de Geer. *Noterus clavicornis*, M.C.—Ovalis, sat convexus, fere angustus, sat nitidus, testaceo-castaneus, elytris punctis magnis, anterioribus subseriatis, ante basin desinentibus. Long 4, lat. $2\frac{1}{8}$ m.m.

Mas, antennis incrassatis, irregularibus, articulis quinto et sexto præsertim majoribus, illo quam hoc (quo valde transverso) duplo longiore; capite subtus prosternoque utrinque nigro-maculatis, hoc medio deplanato.

Fem., antennis fere regularibus, corpore subtus concolore; prosterno medio transversim convexo.

This species varies but little; the elytra and ventral segments are sometimes of more obscure colour.

Europe. From Scandinavia to Portugal. Not common. 521.

21. *Dytiscus capricornis*, Herbst. *Noterus semipunctatus*, M.C.—Ovalis, convexus sat nitidus, castaneus, antice dilutior; elytris punctis magnis, profundis, basin versus desinentibus; prosterno medio carinato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

Mas, antennis incrassatis, irregularibus, articulis 5° et 6° longitudine subæqualibus haud transversis; capite subtus prosternoque latius nigricantibus; femoribus cum

tibiis anterioribus femoribusque intermediis versus apicem nigris, pectore abdomineque fuscis.

Fem., antennis fere regularibus ; corpore subtus concolore.

Europe : including Corsica, Sardinia, and Capria ; an abundant species. 522.

22. *Noterus convexiusculus*, Reiche, M.C.—*Mas*, mari Dytiscie apicornis omnino similis, sed elytris punctis vix magnis, parvioribus, anterieus seriatis et desinentibus. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

I think it probable this will prove to be a variety of *Dytiscus capricornis* (No. 21). I see nothing to distinguish it except the diminished punctuation of the elytra.

Syria. 523.

23. *Noterus ponticus*, n. sp.—Ovalis, latiusculus, sat convexus, nitidus, testaceus, elytris castaneo-testaceis punctis tantum minutis munitis ; prosterno medio subtilius carinato. Long. $4\frac{1}{8}$, lat. $2\frac{1}{2}$ m.m.

Mas, antennis incrassatis, irregularibus, articulis 5° et 6° longitudine subæqualibus haud transversis ; genis prosternoque utrinque nigris ; pedibus anterioribus magis obscuris.

Fem., antennis fere regularibus ; corpore subtus concolore.

This species resembles *Noterus lævis* (No. 25), but is very distinct from it by the male antennæ which are formed as in *Dytiscus capricornis* (No. 21) and by the absence of the pubescent spot on the hind femora ; it is readily distinguished from *Dytiscus capricornis*, by the absence of the large punctures on the elytra, and by the more finely carinate prosternum ; the antennæ of the male although similarly formed to those of *Dytiscus capricornis* are slightly broader.

Mesopotamia. 615.

24. *Noterus japonicus*, Sharp, Tr. Ent. Soc. Lond., 1873, p. 52.—Ovalis, latiusculus, convexus, nitidus, castaneus, antice dilutior ; elytris apicem versus punctis minutis anterieus seriatis. Long. $4\frac{1}{3}$, lat. $2\frac{1}{2}$ m.m.

Mas, antennis paulo incrassatis, articulis 6—10 magnitudinibus subæqualibus ; capite subtus utrinque, prosterno anterieus abdomineque colore obscurioribus, femoribus tibiisque anterioribus nigris ; prosterno medio haud carinato.

Fem., corpore subtus pedibusque ferrugineis concoloribus, prosterno medio sat carinato.

Though very similar to *Noterus lævis* (No. 25) the species is readily distinguished by the absence of the pubescent spot on the hind femora, and by the different characters of the male.

Japan. 525.

25. *Noterus lævis*, Sturm, M.C.—Ovalis, latiusculus, sat convexus, nitidus, castaneus, antice dilutior; elytris apicem versus punctis minutis; prosterno medio carinato; femoribus posterioribus subtus apice macula densa pubescentiæ. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

Mas, antennis breviusculis, irregularibus, articulo quinto maximo, quam sexto valde transverso latiore et duplo longiore, articulis 7—10 longitudine latioribus; corpore subtus femoribusque colore obscuriore; tibiis posterioribus intus densissime ciliatis.

Fem., antennis fere regularibus, corpore subtus ferrugineo, fere concolore.

Southern Europe, and Algeria. 524.

II. 2.—Group SUPHISINI.

Swimming legs very feeble, rather widely separated at their articulation; the femora with elongate ciliæ at the extremity of their hind margin; front coxæ placed very near the front edge of the prosternum, this latter thickened along the middle longitudinally; front tibiæ very twisted, with an extremely large terminal hook.

The group comprises only two genera; they are remarkably globose insects, although distinctly acuminate behind.

Prosternum forming a prominent angle in front of anterior coxæ. A single North American species. } *COLPIUS* (*vide* below.)

Prosternum flexed in a gradual curve in front of anterior coxæ. South American and West Indian species. } *SUPHIS* (*vide* p. 268.)

I. 7.—Genus COLPIUS.

Middle of the prosternum so prominent in front that it forms a conspicuous outstanding rectangle; epipleuræ abruptly inflexed, horizontal through their whole length.

The unique species is North American.

26. *Colpius inflatus*, Leconte, M.C.—Convexus, ovalis, posterius sat acuminatus, sine pubescentia, opacus, niger, antennis pedibusque rufis, supra sanguineo-maculatus, subtus capite thoracisque lateribus rufescentibus; elytris fortiter punctatis; corpore subtus opaco, coxis punctis paucis magnis, abdomine impunctato, margine apicali setoso. Long. $3\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

United States, (Louisiana, Florida, *fide* Crotch). 463.

I. 8.—Genus *SUPHIS*.

Middle of prosternum not prominent in front; epipleuræ although abruptly inflexed, not completely horizontal but only obliquely so (except at the humeral angle).

The three species are found in South America and the Antilles.

27. *Suphis cimicoides*, Aube, M.C.—Valde convexus, ovalis, posterius acuminatus, sine pubescentia, nitidus, ex ferrugineo-sanguineo nigroque vage variegatus, antennis pedibusque rufis; densius fortiterque punctatus; antennis elongatis; corpore subtus nitido, abdomine minus conspicue punctulato. Long. 4 m.m., lat. $2\frac{2}{3}$ m.m.

South America; Cayenne, Antigua, (Brazil fide Aubé). The specimens from Antigua are smaller, and have the antennæ a little shorter than the type from Cayenne. 461.

28. *Suphis subtilis*, n. sp.—Valde convexus, ovalis, posterius acuminatus, sine pubescentia, nitidus, rufo-ferrugineus; supra vage irregulariterque nigro-signatus dense sat subtiliter punctatus; antennis minus elongatis, corpore subtus nitido, abdomine minus conspicue punctulato. Long. $3\frac{2}{3}$, lat. $2\frac{1}{2}$ m.m.

Very closely allied to *S. cimicoides*, but rather smaller, with the antennæ shorter, and the punctuation of the thorax finer.

South America; New Granada, Cumana. 462.

29. *Suphis difformis*, n. sp.—Valde convexus, ovalis, posterius acuminatus, sine pubescentia, nitidus, rufo-ferrugineus, supra irregulariter vageque fusco-signatus; elytris crebrius et evidenter, quam thorace densius punctatis; antennis elongatis; corpore subtus nitido, abdomine inconspicue punctulato. Long. 4, lat. $2\frac{2}{3}$ m.m.

This species is extremely similar to *Suphis cimicoides*, but has the antennæ a little longer, and the punctuation of the thorax is more sparing and not so coarse, especially towards the front and sides.

South America; Bahia; Santa Rita, September 1850, Sahlberg; (Orinoco, Klug, in Dejean's collection). 460.

II. 3.—Group *HYDROCANTHINI*.

Prosternal process broad, and with broad, subtruncate hind-margin; posterior femora with a conspicuous group of cilix at their outer angle.

This group comprises only two genera ; both have a very wide geographical distribution.

Prosternal process very broad behind ; hind tibiae very broad ; size 4-7 m.m. of length.	} <i>HYDROCANTHUS</i> , (<i>vide</i> p. 279.)
Prosternal process moderately broad behind ; hind tibiae rather slender ; size less than 4 m.m. of length.	} <i>CANTHYDRUS</i> , (<i>vide</i> below).

I. 9.—Genus *CANTHYDRUS*.

Prosternal process only moderately broad, not broader than long ; swimming legs rather slender.

The numerous species* inhabit the warmer parts of the Old and New Worlds ; they are but little understood as yet, and very similar to one another.

30. *Canthydrus sculpturatus*, n. sp.—Ovalis, sat convexus, nitidus, ferrugineus, elytris abdomineque fuscis ; illis crebre profunde arguteque punctatis, punctis elongatis, versus apicem densioribus. Long. $2\frac{2}{3}$, lat. $1\frac{2}{3}$ m.m.

The punctuation of the elytra makes this a very easily distinguished species. The only individual I have seen is a female, and has the apical ventral segment almost without impression.

Brazil, (Santa Rita, August, 1850, Dr. Sahlberg). 515.

31. *Canthydrus vicinus*, n. sp.—Ovalis, sat convexus, nitidus, ferrugineus, elytris sat crebre punctatis ; prosterni processu parce punctato. Long. $2\frac{2}{3}$, lat. $1\frac{2}{3}$ m.m.

Extremely similar to *Canthydrus sculpturatus* but not so broad, and with prosternal process and coxal laminae more sparingly punctured. The two individuals before me are male and female. The male has a small indistinct oblong flattening or depression at the base of the apical ventral segment in the middle ; in the female there is a very obscure indication of carination along the middle of the hinder part of this segment. The male specimen has the elytra more closely and coarsely punctured than in the female, but I do not know whether this is sexual or merely an individual variation.

Brazil, (Santa Rita, August, 1850, Sahlberg). 514.

* In addition to those enumerated in the text, the following species should probably be placed in *Canthydrus*. *Hydrocanthus auritus* Regt. (No. 1,324 *huj. op.*) ; Manilla.—*Hydrocanthus lineatus*, Wehncke (No. 1,326), near No. 49 ; Mexico.—*Hydrocanthus rubripes*, Boh. (No. 1,328), ? near No. 45 ; Uruguay.—*Hydrocanthus testaceus*, Boh. (No. 1,330), near No. 70 ; China.—*Suphis puncticollis*, Crotch, (No. 1,506), near No. 48 ; North America.—*Suphis semipunctatus*, Lec. (No. 1,507) ; North America.—Whether *Hydrocanthus nanulus*, Lec. (No. 1,327, North America) belong to the genus, is somewhat doubtful.

32. *Canthydrus ovatus*, n. sp.—Breviter ovalis, sat convexus, nitidus, ferrugineus, elytris obscurioribus, crebre fortiter punctatis. Long. $2\frac{1}{8}$, lat. $1\frac{3}{8}$ m.m.

This species is intermediate between *Suphis gibbulus* (No. 38) and *Canthydrus insularis* (No. 35), it is smaller and shorter than the former, and has the coxal laminae more sparingly punctured; while it is less short and rotund than *Canthydrus insularis*, and has the antennae shorter. I have seen only one female; it has the apical ventral segment impressed on each side so as to appear distinctly carinate along the middle.

Brazil, (Santa Rita, September, 1850, Dr. Sahlberg). 513.

33. *Canthydrus grossus*, n. sp.—Ovalis, posterius acuminatus, convexus, nitidus, testaceus, elytris sordidis, cum thorace sat crebre fortiter punctatis. Long. 4 m.m., lat. $2\frac{3}{8}$ m.m.

In this species the thorax is even more closely and distinctly punctured than are the elytra. The large size readily distinguishes the species from its allies. The only specimen I have seen appears to be a female, and has the apical ventral segment simple.

Brazil, (Pernambuco, Brussels Museum). 512.

34. *Canthydrus rotundatus*, n. sp.—Subrotundus, convexus, testaceus, nitidus, elytris sordidis, obsolete punctatis; prosterni processu profunde canaliculato; coxarum laminiis parce punctatis. Long. $1\frac{7}{8}$ m.m., lat. $1\frac{1}{8}$ m.m.

I have seen but a single individual of this minute species, its very short rotund form, and the diminished punctuation readily distinguish it.

Brazil, (Pernambuco, Brussels Museum). 511.

35. *Canthydrus insularis*, n. sp.—Brevis, rotundato-ovalis, convexus, nitidus, rufo-testaceus; elytris obscurioribus, crebre, fortiter sed haud argute punctatis. Long. 2, lat. $1\frac{1}{2}$ m.m.

The male has the apical ventral segment nearly simple. Though I have seen but a single individual I have no doubt it is distinct from though very closely allied to the preceding, being larger, of more rotund and convex form.

San Domingo, (Coll. Bouvuloir). 510.

36. *Canthydrus punctipennis*, n. sp.—Ovalis, brevis, latiusculus, sat convexus, nitidus, ferrugineus, elytris crebre fortiter punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{3}{8}$ m.m.

The sexual characters appear to be the same as in *Noterus bicolor* (No. 37);

but I think the specimens indicate a distinct species, as besides being pale in colour, they are larger and a good deal broader, and have the hind legs more elongate.

North America, (Carolina). 509.

37. *Noterus bicolor*, Say. *Suphis bicolor*, M.C.—Ovalis, brevis, latiusculus sat convexus, nitidus, ferrugineus; elytris nigricantibus, crebre fortiter punctatis, corpore subtus nigro-rufo. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

This species scarcely differs from *Suphis gibbulus* (No. 38) except by the sexual characters, and that it generally has the elytra and under surface darker in colour. In the male the apical ventral segment is without evident impressions, but in the female it is rather deeply impressed on each side so as to appear somewhat carinate along the middle.

United States, (Carolina). 508.

38. *Suphis gibbulus*, Aubé, Spec. p. 414.—Ovalis, brevis, latiusculus sat convexus, nitidus, ferrugineus, elytris crebre fortiter punctatis. Long. $2\frac{3}{4}$, lat. vix $1\frac{1}{2}$ m.m.

In each sex the apical ventral segment is depressed on its middle portion, so that the sexes are difficult to distinguish, the depression however is a little greater in the male than it is in the female.

North America. 507.

39. *Hydrocanthus tenuicornis*, Chev. M.C.—Ovalis, sat convexus, nitidus, ferrugineus, crebre fortiterque punctatus. Long. $2\frac{3}{4}$ m.m., lat. $1\frac{1}{2}$ m.m.

This species is very close to *Suphis gibbulus* (No. 38), but is more elongate and the punctation of the elytra is deeper. I have seen but one individual, which is a female, and has the apical ventral segment rather deeply impressed on the middle.

Cuba, (Brussels Museum). 506.

40. *Canthydrus subsignatus*, n. sp.—Ovalis, sat convexus, haud curtus, nitidus, castaneus; elytris fusco-castaneis, vage testaceo-signatis, crebre fortiter punctatis; prosterni processu canaliculato; coxarum laminiis parcius punctatis. Long. $2\frac{3}{4}$, lat. $1\frac{5}{8}$ m.m.

The marks on the elytra are ill-defined; the lateral margin is yellow, as are also two spots on the middle of each, and some indistinct marks near the suture.

The only individual I have seen is a female, and it has an oblong depression on the apical ventral segment, which at the extremity is divided by a short plica.

Panama. 527.

41. *Canthydrus dilutus*, n. sp.—Ovalis, sat convexus, posterius acuminatus, testaceus, nitidus, elytris crebre obsolete punctatis. Long. $2\frac{3}{4}$, lat. $1\frac{1}{2}$ m.m.

Though the species is pretty closely allied to *Hydrocanthus tenuicornis* (No. 39), it is of narrower, more elongate, and convex form, and the elytra are much more obsoletely punctured: there does not appear to me to be any difference in the sexes, except in the tarsi.

Brazil; Bahia. 505.

42. *Noterus buqueti*, Lap. *Hydrocanthus buqueti*, M.C.—Ovalis, latus, minus convexus, breviusculus, permitidus, sanguineo-rufus, elytris iridescenti-fuscis, maculis subdistinctis quatuor apiceque rufis; prothoracis margine laterali lato. Long. 3, lat. $1\frac{3}{4}$ m.m.

I have seen but a single individual from Dejean's collection, the species is readily distinguished from the allies by the broad thoracic margin, which is formed as in the genus *Hydrocanthus*. The spots on the elytra are not very distinct; besides the four which form a transverse row across the middle, there are other two near the apex which are scarcely to be distinguished owing to the more dilute colour of the hind part of the elytra. The individual (in M. de Bouvoulour's collection) is I think a female, but shows no apparent peculiarity.

South America, (Cayenne). 504.

43. *Canthydrus remator*, n. sp.—Ovalis, sat convexus, et sat elongatus, nitidus, ferrugineus; elytris vix obscurioribus, fere impunctatis, seriebus punctorum duabus sat distinctis; prosterni processu dense punctato, canaliculato. Long. 3, lat. $1\frac{3}{4}$ m.m.

South America, (Uruguay). 526.

44. *Canthydrus curtus*, n. sp.—Ovalis, latiusculus, minus elongatus, sat convexus, nitidus, rufus; elytris iridescenti-fuscis, serie punctorum sat distincta; prosterni processu canaliculato. Long. 3, lat. $1\frac{5}{8}$ m.m.

This species is shorter, and so comparatively broader than its allies, and the under surface is pale and unicolorous. In each sex the apical abdominal segment

is somewhat flattened or depressed, except at the extreme base; so that the sexes can only be distinguished by the structure of the tarsi.

South America; Amazons. (Pampas Germain). 503.

The individual from the Pampas in M. de Bouvoulour's collection is slightly larger and more convex, and elongate, but if a distinct species it must be a very closely allied one.

45. *Canthydrus brevicornis*, n. sp.—Ovalis, convexus, nitidus, supra nigricans, capite thoracisque lateribus picescentibus, antennis fuscis, basi testaceo; corpore subtus anterieus rufescente, posterius nigricante; elytris obsolete punctatis, seriebusque punctorum subdistinctis; prosterni processu canaliculato. Long. 2 $\frac{1}{2}$, lat. 1 $\frac{1}{2}$ m.m.

Closely allied to *Hydrocanthus nigrinus* (No. 47), but not half the size, and with the penultimate joints of the antennæ much shorter. The only individual I have seen is I think a female, but has only an indistinct impression on each side of the apical ventral segment.

Brazil, (Parana). 502.

46. *Canthydrus rufipes*, n. sp.—Ovalis, sat convexus et elongatus, pernitidus, picco-rufus, elytris nigricantibus, antennis testaceis; corpore subtus anterieus rufo, posterius nigricante; elytris seriebus duabus sub-distinctis punctorum. Long. 3 $\frac{1}{2}$, lat. 2 m.m.

Extremely similar to *Hydrocanthus nigrinus* (No. 47), but rather less convex, a little paler in colour, and the prosternal process without channel. The female has the apical ventral segment impressed on each side.

Cuba; Amazons; (Parana?). 501.

47. *Hydrocanthus nigrinus*, Aubé, M.C.—Ovalis, convexus, sat elongatus, pernitidus, supra niger, capite thoraceque versus latera picescentibus, antennis fuscis, basi testaceo; corpore subtus anterieus rufescente posterius nigricante; elytris serie punctorum distincta, preterea fere impunctatis; prosterni processu canaliculato. Long. 3 $\frac{1}{2}$, lat. 2 m.

The female has a large impression on each side of the apical ventral segment, of which there is no trace in the male.

South America; Bahia, (Antilles and Brazil fide Aubé). 500.

48. *Suphis lineatus*, Horn, Tr. Am. Ent. Soc. 1871, p. 329.—Ovalis, sat convexus, nitidus, rufescens, prothorace medio fusco; elytris sutura vittisque tribus latis (externa interrupta) nigris; elytris crebre sat fortiter punctatis. Long. 3, lat. 1 $\frac{2}{3}$ m.m.

The disposition of the marks on the elytra is quite similar to that existing in *Canthydrus grammicus* (No. 50), but the black marks are broader; the difference in the punctuation of the elytra renders the two very distinct. I have seen only a single individual, which is probably a male, it has the apical ventral segment, flattened or depressed except at the base.

South California, (Cape St. Lucas). 499.

49. *Canthydrus centralis*, n. sp.—Ovalis, sat convexus, pernitidus, testaceus prothorace disco infuscato; elytris nigris, vittis tribus testaceis, subseriatim punctatis. Long. 3, lat. $1\frac{2}{3}$ m.m.

In this species the black colour on the wing-cases predominates the yellow, so that this latter forms three rather narrow longitudinal stripes; these commence at the base, and are there broadest, the internal one becoming gradually more indistinct behind, does not reach the extremity, the second is shorter and extends but little beyond the middle, the third extends to the apex, and in front sends off a branch to the shoulder, which is thus largely yellow; besides these stripes the lateral margin in the middle is yellow. Although the surface is very polished, the subseriate punctuation of the elytra is very distinct, and on careful examination traces may be discovered of an irregular very obsolete punctuation. The sexes show little difference except in the tarsi, each having the greater part of the last ventral segment a little hollowed.

Guatemala, (S. Geronimo, 1879, Champion). 1168.

50. *Canthydrus grammicus*, n. sp.—Ovalis, latiusculus, sat convexus et elongatus, pernitidus, rufo-testaceus; elytris sutura vittisque tribus (externa interrupta) nigris; elytris punctis paucis subseriatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

The sutural vitta extends to the apex, the one next to it nearly to the apex, while the middle one is considerably abbreviate, the outer one does not reach the shoulder, but there is a short humeral stripe which overlaps it. I have seen only four individuals, which are all females, and have the last ventral segment impressed on each side so as to make the middle part appear prominent.

South America; Amazons. 498.

51. *Canthydrus concolor*, n. sp.—Oblongo-ovalis, posterius acuminatus, convexus, nitidus, fulvus, elytris sparsim inconspicue punctatis. Long. $2\frac{7}{8}$, lat. $1\frac{1}{2}$ m.m.

This species resembles the larger individuals of *Hydrocanthus flavus* (No. 70) exactly, but appears to me to have the posterior tarsi, shorter and thicker.

Madagascar. 491.

52. *Hydrocanthus semperi*, Wehncke, Berl. Zeit. 1876, p. 223.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite prothoraceque ad angulos anteriores rufo-testaceis, illo posterius infuscato; antennis testaceis, pedibus obscure rufis. Long. $2\frac{2}{3}$ m.m., lat. $1\frac{1}{2}$ m.m.

This is a small and rather short species, distinguished from *H. luctuosus* (No. 60) and allies by the unspotted elytra.

Philippine islands; Luzon. 614.

53. *Canthydrus arabicus*, n. sp.—Breviter ovalis, convexus, posterius attenuatus, pernitidus, piceus, capite prothoraceque lateribus testaceis; elytris guttula parva pone medium testacea, omnino levigatis; antennis testaceis, pedibus rufis. Long. $3\frac{1}{4}$, lat. $1\frac{3}{4}$ m.m.

This species is very closely allied to *Hydrocanthus guttula* (No. 54), but is rather smaller, and besides the colour differences, is remarkable for being without any punctures on the wing-cases. Immature individuals are entirely yellow.

Arabia, (Hedjaz, Millingen). 1147.

54. *Hydrocanthus guttula*, Aubé, M.C.—Ovalis, convexus, posterius attenuatus, pernitidus, niger, capite anteriori, thoraceque ad angulos anteriores rufo-testaceis; elytris guttula parva pone medium testacea, punctis sparsis sat conspicuis; antennis testaceis; pedibus rufis, posterioribus magis obscuris. Long. 3, lat. $1\frac{1}{2}$ m.m.

This species is broader and more convex than *Hydrocanthus notula* (No. 55), and has the yellow colour at the anterior angle of the thorax much less extended; the punctures on the elytra are more conspicuous.

Madagascar; Mauritius. 490.

55. *Hydrocanthus notula*, Er. M.C.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite anteriori, prothoracisque lateribus rufo-testaceis, elytris guttula parva pone medium testacea; antennis testaceis, pedibus rufis, posterioribus magis obscuris. Long. $3\frac{1}{3}$, lat. $1\frac{2}{3}$ m.m.

The red colour on the head and thorax, is more extended in the male than in the female; there is sometimes a minute yellow dash at the base of the elytra close to the outer margin.

Egypt; Tangier; (Angola fide Erichson). 489.

56. *Canthydrus ornatus*, n. sp.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite, prothoracis lateribus, elytrorum macula humerali aliaque

pone medium rufo-testaceis; pedibus rufis, posterioribus magis obscuris; antennis testaceis. Long. $3\frac{1}{2}$, lat. 2 m.m.

The yellow colour at the sides of the thorax is here very broad; the spot at the shoulder of the elytra is also large, and between it and the suture there are obscure traces of another basal spot, the spot behind the middle is rather small.

Persia. 488. ,

57. *Hydrocanthus morsbaehi*, Wehneke, Berl. Zeit. 1876, p. 222.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite anterieus anguste, prothorace ad angulos anteriores, elytris maculis duabus ad basin, aliaque transversa pone medium rufo-testaceis; antennis testaceis, pedibus rufis, posterioribus obscurioribus. Long. 3 m.m., lat. $1\frac{2}{3}$ m.m.

The yellow colour on the head and at the anterior angle of the thorax is very small in extent, on the other hand the two basal spots on the elytra are rather large, and the post-medial spot is broad, so as to form a transverse mark. I have seen but one individual.

Cochin China, (Wehneke). 613

58. *Canthydrus frontalis*, n. sp.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite anterieus, prothorace ad angulos anteriores, elytris maculis duabus magnis ad basin fasciaque pone medium rufo-testaceis; antennis testaceis, pedibus rufis, posterioribus obscurioribus. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

In this species the limit between the colours on the head is angular: the marks on the elytra are a longitudinal oblong one at the shoulder, a rather large spot between that and the suture, and a transverse spot or short band beyond the middle.

Arabia; Bombay. 487.

59. *Canthydrus sexpunctatus*, n. sp.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite anterieus rufo, prothorace ad angulos anteriores, elytrisque maculis sex testaceis, pedibus rufis, posterioribus obscurioribus: antennis testaceis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

The smaller extent of the yellow colour on the thorax seems to be almost all that distinguishes this species from *Hydrocanthus luctuosus* (No. 60).

India; Tranquebar. 486.

60. *Hydrocanthus luctuosus*, Aubé, M.C.—Ovalis, sat convexus, posterius attenuatus, pernitidus, niger, capite et prothoracis lateribus rufo-testaceis, illo vertice magis

obscuro, elytris guttis duabus basalibus, aliaque post-medium testaceis; pedibus rufis, posterioribus obscuris, antennis testaceis. Long. $3\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

East India, (Bombay fide Aubé). 612.

61. *Canthydrus angularis*, n. sp.—Ovalis, convexus, posterius attenuatus, pernitidus, niger, capite anteriori, prothorace ad angulos anteriores, maculis duabus ad elytrorum basin alteraque pone medium rufis; antennis testaceis, pedibus quatuor anterioribus rufis, posterioribus piceis. Long. $3\frac{2}{3}$, lat. $1\frac{2}{3}$ m.m.

Singapore. 485.

62. *Hydroporus letabilis*, Walk. M. C.—Ovalis, minus latus, posterius attenuatus, sat convexus, pernitidus niger, capite, thorace pedibusque rufo testaceis, antennis testaceis; thorace anteriori et in basi obscure nigro; elytris maculis duabus pone basin aliaque transversim elongata pone medium testaceis. Long. vix 2, lat. $1\frac{1}{2}$ m.m.

East India, (Ceylon fide Walker). 484.

63. *Hydrocanthus weisei*, Wehneke, Berl. Zeit. 1876, p. 222.—Ovalis, posterius attenuatus, sat convexus, pernitidus, testaceus, prothorace versus basin infuscato, elytris nigricantibus, fascia interrupta pone medium, vitta longitudinali ab humero ad fasciam postmedialem descendente, maculaque magna basali testaceis; pectore fusco, abdomine nigro. Long. $2\frac{1}{2}$ m.m., lat. vix $1\frac{1}{2}$ m.m.

Closely allied to *Hydrocanthus politus* (No. 69) and much resembles the dark varieties of that species, but it is smaller and narrower, and has the apex of the elytra dark.

Cochin China, (Wehneke). 611.

64. *Hydrocanthus quadrivittatus*, Boh. M. C.—Ovalis, convexus, breviusculus, posterius acuminatus, nitidus, levis, rufo-testaceus, elytris obscurioribus, vitta laterali obliqua aliaque abbreviata prope suturam testaceis; abdominis lateribus leviter infuscatis. Long. 3, lat. $1\frac{2}{3}$ m.m.

The stripes on the elytra readily distinguish this species; they are not sharply defined; the exterior one starts from the humeral angle, and then leaves the outer margin and extends along the middle of the wing-case reaching the apex; the inner mark is shorter and runs parallel with the suture, but does not extend much beyond the middle.

Cape Good Hope, (Caffraria fide Boheman). 610.

65. *Canthydrus proximus*, n. sp.—Ovalis, sat latus, posterius attenuatus, convexus, pernitidus, niger, capite thoraceque minus luteo rufis, hoc macula magna anteriori basi que transversim nigris, elytris maculis duabus pone basin, aliaque pone medium transversis rufis; antennis testaceis, pedibus quatuor anterioribus rufis, posterioribus piceis. Long. 3, lat. $1\frac{2}{3}$ m.m.

This species is very closely allied to *Canthydrus nitidulus*, but is not so broad and is more obscurely coloured.

Siam, (Bangkok). 483.

66. *Canthydrus nitidulus*, n. sp.—Ovalis, robustus, posterius attenuatus, convexus, pernitidus, capite thoraceque rufo-testaceis, hoc basi maculaque in medio anteriori nigris; elytris fere impunctatis, nigris, maculis duabus pone basin, aliaque transversa recta pone medium testaceis; subtus abdomine, pectoris prosternique medio nigricantibus, lateribus rufis; antennis testaceis, pedibus rufis, tarsis tibiisque posterioribus piceis. Long. $3\frac{1}{3}$, lat. $1\frac{3}{4}$ m.m.

Northern China, (Kiu Kiang, G. Lewis); Formosa. 482.

67. *Canthydrus flammulatus*, n. sp.—Ovalis, posterius attenuatus, convexus, pernitidus, rufo-testaceus, prothorace basi medio elytris que nigricantibus, his fere impunctatis, apice plus minusve dilutioribus, ad basin macula laterali longitudinali aliaque versus suturam irregulari, et fascia transversa mediali angulata ad suturam latius interrupta testaceis; abdomine plus minusve nigricante: tarsis posterioribus piceis. Long. $2\frac{5}{8}$, lat. $1\frac{1}{2}$ m.m.

Closely allied to *Hydrocanthus haagi* (No. 68), but larger and more elongate, and with slight differences in the colour and markings.

Siam, (Bangkok); Celebes, (Macassar, Beccari). 481.

68. *Hydrocanthus haagi*, Wehneke, Berl. Zeit. 1876, p. 222.—Ovalis, brevis, posterius attenuatus, convexus, pernitidus, rufo-testaceus, prothorace basi medio elytris que nigris, his impunctatis apice late rufescentibus, macula laterali longitudinali, aliaque transversa versus suturam ad basin, et fascia transversa mediali valde undulata ad suturam angustius interrupta testaceis. Long. 2, lat. $1\frac{1}{2}$ m.m.

This species is pale beneath; its small size, and the much waved transverse fascia on the middle of the elytra distinguish it amongst its allies.

Siam, (Bangkok). 480.

69. *Hydrocanthus politus*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 51.—Ovalis, posterius

attenuatus, convexus, pernitidus, læte rufo-testaceus, lævis, elytris nigris, maculis duabus magis ad basin, fascia mediali interrupta apiceque testaceis; abdomine utrinque infuscato; prosterni pectorisque medio et laminis coxarum dense punctatis. Long. $2\frac{7}{8}$, lat. $1\frac{5}{8}$ m.m.

In the markings of the elytra, the size of the spots varies, so that the yellow colour sometimes predominates over the black.

Japan; China. 479.

70. *Hydrocanthus flavus*, Motsch. M.C.—Oblongo-ovalis, posterius acuminatus, sat convexus, pernitidus, fulvo-testaceus, elytris fere impunctatis, prosterni pectorisque medio et laminis coxarum crebrius punctatis. Long $2\frac{1}{2}$, lat. $1\frac{3}{8}$ m.m.

The small size and pale unvariegate unicolorous surface are the chief characters of this species.

China: Siam, (Bangkok); Formosa: (East India fide Motschoulsky). 478.

The specimens from Formosa are larger, and have the sides of the ventral segments infuscate, but I do not think it advisable to consider them a distinct species without further evidence.

I. 10.—Genus *HYDROCANTHIUS*.

Prosternal process extremely broad, broader than long; swimming legs very stout. Species are found in most of the warmer parts of the world, but not in Europe.*

71. *Hydrocanthus australasie*, Wehncke, Berl. Zeit. 1876, p. 223.—Oblongo-ovalis, posterius acuminatus, transversim sat convexus, minus latus, pernitidus, niger, antennis rufis, pedibus corporeque subtus piceis, elytris seriebus punctorum obsoletis, pone humeris leviter sinuatis; spatio inter coxas anteriores sat lato; prosterni pectorisque medio et laminis coxarum crebrius punctatis. Long. $5\frac{1}{2}$, lat. $2\frac{7}{8}$ m.m.

The only difference between the sexes is the two or three cups on the under side of the front tarsi in the male.

Northern Australia, (Rockhampton). 476.

72. *Hydrocanthus indicus*, Wehncke, Berl. Zeit. 1876, p. 223.—Oblongo-ovalis, posterius acuminatus, transversim sat convexus, minus latus, pernitidus, castaneus, elytris vix perspicue punctatis; spatio inter coxas anteriores sat lato; prosterni pectorisque medio et laminis coxarum crebre punctatis. Long 5, lat. $2\frac{2}{3}$ m.m.

* In addition to those enumerated in the text, the two following species may be referred, although with doubt, to the genus. *Hydrocanthus fasciatus*, Steidl. (No. 1,325 huj. op.). *Hydrocanthus socius*, Sahl. (No. 1,329); both from South America.

Closely allied to *Hydrocanthus australasie*, but not so elongate, and of a different colour.

Siam, (Bangkok); (Cochin China fide Wehncke). 477.

73. *Hydrocanthus oblongus*, n. sp.—Oblongo-ovalis, sat convexus, permitidus, castaneo-ferrugineus, elytris subiridescentibus, fere impunctatis. Long. 4, lat. 2 m.m.

In the male the prosternal process is deeply hollowed out, and is nearly impunctate; and the apical ventral segment has an oblong dull patch in the middle at the apex; in the female the prosternal process is flat and is punctured in a variable manner; and the apical ventral segment is quite smooth and shining.

North America. 492.

74. *Hydrocanthus iricolor*, Say. M.C.—Ovalis, sat latus, permitidus, castaneo-ferrugineus, elytris subiridescentibus, seriebus tribus fere irregularibus et subdistinctis punctorum; antennis minus brevibus. Long. $4\frac{7}{8}$, lat. $2\frac{1}{2}$ m.m.

Larger than *Hydrocanthus oblongus*, especially broader, and with the antennæ more developed, and the elytral series of punctures not altogether effaced.

North America, (Massachusetts). 493.

75. *Hydrocanthus texanus*, n. sp.—Ovalis, convexus, permitidus, ferrugineus, elytris nigro-iridescentibus; corpore subtus posterior plus minusve nigricante. Long. $4\frac{1}{4}$, lat. $2\frac{1}{4}$ m.m.

This species is comparatively more convex than *Hydrocanthus oblongus*, and *H. iricolor*, and has the elytra blackish; in respect of the antennæ and elytral punctuation, and of the size it is intermediate between the two.

North America, (Texas). 494.

76. *Noterus lævigatus*, Brullé. *Hydrocanthus lævigatus*, M.C.—Ovalis, permitidus castaneo-ferrugineus, elytris paulo obscurioribus indistincte pallido-reticulatis, seriebus punctorum subtilissimis. Long. 5, lat. $2\frac{1}{2}$ m.m.

This species is extremely similar to *Hydrocanthus iricolor*, but the elytra instead of being concolorous are variegated by irregular pale marks forming a sort of coarse reticulation, this character is not however very conspicuous till the elytra are opened so as to show the light through them.

South America; Bahía, Orinoco. 495.

77. *Hydrocanthus atripennis*, Say. M.C.—Ovalis, sat latus, valde convexus,

pernitidus, capite thoraceque rufis; elytris iridescenti-nigricantibus, seriebus punctorum distinctis, lateribus pone humeros profundius excavatis; corpore subtus rufo-obscuro, capite thoraceque dilutioribus, prosterni processu latissimo. Long. $4\frac{2}{3}$, lat. $2\frac{2}{3}$ m.m.

Very similar to *Hydrocanthus texanus*, but larger and much more convex, and with the thorax more dilated so that the elytra are more excavate at the sides, and the prosternal process is broader. In the male the prosternal process is closely and finely punctured and a little hollowed in the middle; while in the female it is flat, shining and impunctate.

I have not seen any specimen of this species from Mexico, and there is thus some doubt whether it is really the *H. atripennis*, Say, which was described from Mexican individuals.

Brazil, (Santa Rita, September, 1850; Boa Sorta, November, 1850, Sahlberg); (Mexico fide Say). 496.

78. *Hydrocanthus debilis*, n. sp.—Ovalis, sat convexus, pernitidus, castaneo-testaceus, elytris indistincte undulatis fusco-variegatis, fere omnino impunctatis. Long. $3\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m.

The small size readily distinguishes the species from its allies as yet known to me: the elytra appear at first to be concolorous, but when opened are seen to be variegate by very undulated fuscous marks. The male has the prosternal process densely and finely punctured, and a little impressed, while in the female it is flat, and is coarsely and not densely punctured.

South America; Bahia; Amazon's Valley. 497.

79. *Hydrocanthus funebris*, Fairm. Ann. Soc. Fr. 1869, p. 187.—Ovalis, posterius acuminatus, sat latus, pernitidus, niger, pedibus piceis, antennis rufis; elytris seriebus tribus obscuris punctorum, lateribus sat sinuatis, spatio inter coxas anteriores sat lato; prosterni pectorisque medio et laminis coxarum sat crebre punctatis. Long. $6\frac{1}{4}$, lat. $3\frac{1}{2}$ m.m.

There is but little difference between the sexes of this species; the male has two or three cups on the under side of the second and third joints of the front tarsi.

Madagascar. 475.

80. *Hydrocanthus advena*, n. sp.—Minus latus, convexus, pernitidus, piceus, antennis rufis; elytris pone humeris vix sinuatis, sublevigatis; spatio inter coxas anteriores lato, haud elevato; prosterno impunctato; coxarum posticarum parte elevata crebre punctata. Long. $5\frac{1}{3}$ m.m., lat. $2\frac{1}{2}$ m.m.

Basseterre (? Guadeloupe). The only individual I have seen is in the collection of the Musée Royal at Brussels, and is labelled "Basseterre" I am not at all sure what locality is thus intended. 474.

81. *Noterus grandis*, Lap. *Hydrocanthus grandis*, M.C.—Minus latus, convexus, pernitidus, piceus, capite thoraceque quam elytris dilutioribus, antennis rufis; elytris pone humeros sinuatis, sublevigatis; spatio inter coxas anteriores minus lato, subelevato; prosterno medio, pectoris coxarumque parte elevata crebre punctatis. Long. 7, lat. $3\frac{1}{2}$ m.m.

In the male the apical ventral segment is very little if at all compressed towards the apex.

Africa, (Senegal, Gaboon). 473.

82. *Hydrocanthus deyrollei*, n. sp.—Crassus, robustus, latiusculus, sat nitidus, niger, antennis rufis, pedibus piceis, elytris seriebus duabus punctorum sat distinctis, et versus latera punctis sparsis, lateribus pone humeros, vix sinuatis; coxis anterioribus late separatis; prosterno, pectore medio laminisque coxarum impunctatis. Long. 8 m.m. (vix), lat. $4\frac{1}{2}$ m.m.

The male has the hinder part of the apical ventral segment much compressed so as to form a ridge terminating in a point.

Africa, (Gaboon, Brussels Museum; found I believe by H. Deyrolle). 472.

H. 4.—Group VATELLINI.

Prosternal process not reaching the metasternum, but terminating in front of and between the middle coxæ; front and middle tarsi four jointed, frequently very elongate; outline of body discontinuous at junction of thorax and elytra. Swimming legs slender.

This group represents in the Dytisei Fragmentati series the Hydroporides of the second series. The three genera are South American, and very rare in collections, except *Derovatellus*.

Ventral sutures very deep,	VATELLUS, (vide p. 285)
Ventral sutures normal,	{ Mesosternum very largely visible; } <i>MACROVATELLUS</i> ,
	{ size moderate (6–8 m.m. long). } (vide below).
Ventral sutures normal,	{ Mesosternum but little visible; } <i>DEROVATELLUS</i> ,
	{ size small (1 m.m. long). } (vide p. 286).

I. 11.—Genus *MACROVATELLUS*.

Mesosternum largely exposed between the prothorax and metasternum. Outline of thorax and elytra very discontinuous.

The Macrovatelli are moderately large insects (6—8 m.m. long).

The species* are very similar to one another and extremely rare in collections.

* *Vatellus grandis*, Buq. (No. 1,511, luj. op.), from Cayenne is probably another species of the genus.

83. *Macrovatellus lateralis*, n. sp.—Oblongo-ovalis, fere sine pubescentia, opacus, densius punctatus, fuscus, pedibus antennisque lute rufo-testaceis, capite, thoracis lateribus, elytrorumque signaturis marginalibus ferrugineis; thorace elytris angustiore, lateribus haud sinuatis, angulis posterioribus fere rectis, fortiter et crebrius sed haud profunde punctato; elytris punctatis, scabriusculis; coxis posterioribus fortiter, sed subobsolete punctatis, abdomine obsolete punctato. Long. $6\frac{1}{2}$, lat. $3\frac{1}{2}$ m.m.

The male has the front and middle tarsi broader than the female, the second joint of the front ones being scarcely so long as its greatest width; the middle trochanters and the basal portion of the femora are set with a ridge of dense yellow pubescence. In the female when the sole of the front tarsus is looked at, it is seen that the length of the third joint is quite twice as great as its breadth.

South America, (Uruguay). 438.

84. *Macrovatellus rudis*, n. sp.—Oblongo-ovalis, fere sine pubescentia, opacus, densius punctatus, piceus, pedibus antennisque obscure rufis, capite ferrugineo, prothorace elytrisque lateribus vage et obsolete ferrugineo-signatis; thorace elytris multo angustiore, lateribus haud sinuatis, angulis posterioribus fere rectis, fortiter et crebrius sed haud profunde punctato; elytris dense punctatis, scabriusculis; coxis posterioribus fortiter, sed subobsolete punctatis; abdomine obsolete punctato. Long. $6\frac{1}{2}$, lat. $3\frac{1}{2}$ m.m.

This species is distinguished from *Macrovatellus lateralis* only by the rather more obscure colour, slightly broader elytra, and by the joints of the front and middle tarsi being just a little broader in proportion to their length: the distinctions between their structure in the two sexes being the same as in *M. lateralis*.

South America. 439.

85. *Macrovatellus sahlbergi*, n. sp.—♂ Oblongo-ovalis, fere sine pubescentia, dense fortiter profundeque punctatus, piceus, capite antennisque minus dilute ferrugineis, elytris ad latera signaturis minus distinctis rufescentibus; prothorace fortiter transverso, pone medium leviter angustato, ante basin evidenter transversim depresso, lateribus obsolete explanatis, opaco, crebre punctato; elytris subnitidis, dense fortiter profundeque punctatis; coxis posterioribus ruguloso-punctatis, abdomine indistincte punctato. Long. $6\frac{1}{2}$, lat. $3\frac{3}{8}$ m.

In the male the front and middle tarsi are moderately broad, the third joint however being of the same width as the basal joint; the trochanters and the basal portion of the femora of the middle legs bear a ridge of dense yellow pubescence. The species resembles *M. rudis* greatly, but is readily distinguished by its broader and more transverse thorax, and the more shining, and more coarsely and distinctly punctured elytra. I have seen two males.

South America. Found at Petropolis in March, 1850, by Dr. F. Sahlberg, and sent me by his son, Dr. J. Sahlberg. 440.

86. *Macrovatellus marginalis*, n. sp.—♀ Oblongo-ovalis, fere sine pubescentia, densius punctatus, opacus, piceus, antennis pedibusque rufis, capite ferrugineo, elytris ad latera rufo-signatis; prothorace quam his multo angustiore, lateribus subsinuatis, angulis posterioribus acute rectis, ante basin sat distincte depresso, crebre punctato; elytris dense minus argute punctatis, scabriusculis; corpore subtus obsolete punctato. Long. $6\frac{1}{3}$, lat. $3\frac{1}{4}$ m.m.

I have seen only two females of this species, they have the front tarsi long and slender, and when looked at beneath it is seen that the third joint is a little narrower than the first, and is more than twice as long as broad. At the side of the apical ventral segment there is to be seen only a narrow linear depression close to the edge of the elytron; this character will distinguish the species from the three preceding species, for in them this depression is broader and more conspicuous and not linear.

South America: Santa Rita, August, 1850, Dr. F. Sahlberg. 441.

87. *Macrovatellus mexicanus*, n. sp.—♂ Oblongo-ovalis, fere sine pubescentia, densius punctatus, opacus, piceus, antennis pedibusque minus late rufis, capite rufo, elytris ad latera obsolete rufo-signatis; prothorace brevi, elytris multo angustiore, lateribus sinuatis, angulis posterioribus acute rectis, ante basin sat distincte depresso, crebre obsolete punctato; elytris dense punctatis, scabriusculis; coxis posterioribus, subobsolete ruguloso-punctatis; abdomine crebrius subtiliter scabro. Long. $5\frac{1}{2}$, lat. 3 m.m.

The male has the front and middle tarsi moderately long and not very broad, and the middle trochanters and basal portions of the femora with a ridge of short not very conspicuous pubescence. I have seen only a single individual; the species is allied to *Macrovatellus marginalis*, in the form of the thorax, and the linear impression at the side of the last ventral segment; but it is considerably smaller, and the roughness or punctuation of the ventral segments is much more conspicuous.

Mexico. 442.

88. *Vatellus haagi*, Wehncke Stet. Zeit. 1876, p. 357.—Oblongo-ovalis, minus elongatus, fere opacus, fusco-rufus, elytris ad latera obsolete rufo-signatis, antennis pedibusque rufis; capite anterieus fere impunctato; prothorace valde transverso, lateribus vix sinuatis, angulis posterioribus obtuse rectis, parce punctato, ante basin fortius transversim depresso; elytris sat dense punctatis, scabriusculis; coxis posterioribus subobsolete punctatis; abdomine obsolete punctato. Long. 5 m.m., lat. $2\frac{1}{2}$ m.m.

This species is allied to *M. marginalis*, and *M. mexicanus*, but is considerably smaller, and has the prothorax shorter and more sparingly punctured. I have seen

but one individual which is a female; and has the structure of the last ventral segment much as in the same sex of *M. marginalis*, the front and middle tarsi on the other hand are more slender.

Brazil, (Wehncke). 606.

89. *Macrovatellus ventralis*, n. sp.—Oblongo-ovalis, parce pubescens, vix opacus, crebre punctatus, fuscus, marginibus minus distincte rufescentibus, antennis pedibusque rufo-obscuris; capite crebre æqualiter punctato; prothorace valde transverso, lateribus sinuatis, angulis posterioribus acutis, parce punctato, ante basin obsolete transversim depresso; elytris elongatis, deplanatis, minus fortiter et dense punctatis, parcius pubescentibus; coxis posterioribus sat crebre fortiter punctatis. Long. $6\frac{1}{2}$ m.m., lat. $3\frac{1}{3}$ m.m.

The elongate and flattened elytra, the more obscure colour, the less dense and less scabrous punctuation of the elytra, and the different punctuation of the head characterize this species; the punctures on the head show no diminution on the front part. The individual described has lost its tarsi, but is, I think, a male; the front femora in the middle are subtuberculate, and near to the prominent part are densely ciliate (these characters exist to a slight extent in the other species but are more distinct in the present one); the apical ventral segment is remarkably short.

Brazil, (Wehncke). 607.

I. 12.—Genus *VATELLUS*.

Ventral sutures extremely deep; anterior tarsi extremely elongate and slender. The only species known is very rare in collections.

90. *Hydroporus tarsatus*, Lap. *Vatellus tarsatus* M.C.—Oblongo-ovalis, subtiliter sed evidenter pubescens, dense fortiterque punctatus, opacus, niger, antennis pedibusque piceis, femoribus dilutioribus, prothorace transverso, elytris multo angustiore, lateribus sinuatis, angulis posterioribus acutis, sat fortiter punctato; elytris densius fortiterque punctatis, scabris; coxis posterioribus fortiter profundeque punctatis; abdomine sat fortiter punctato, suturis profundis; tarsis anterioribus, elongatis, angustis, articulo 3^o quam 2^o vix angustiore. Long. 5, lat. $2\frac{2}{3}$ m.m.

The tarsi differ but little in the sexes, but they are not quite so slender in the male as in the female; the hind trochanters in the male are peculiarly globular and swollen.

Cayenne. 443.

I. 13.—Genus *DEROVATELLUS*.

Mesosternum not much exposed between the prothorax and metasternum : ventral sutures ordinary : size less than 4 m.m.

Only one species is known ; it has occasionally been found in some numbers in the New World.

91. *Vatellus lentus*, Wehncke Stet. Zeit. 1876, p. 357.—Oblongo-ovalis, subtiliter sed evidenter pubescens, fortiter punctatus, subnitidus, rufescens, capite, thorace, pedibus antennisque rufo-testaceis, elytris plus minusve nigricantibus ; capite parvo, oculis magnis ; prothorace transverso, elytris angustiore, lateribus subsinuatis, fortiter punctato ; elytris crebrius fortiter punctatis ; coxis posterioribus fortiter punctatis ; tarsis anterioribus elongatis, gracilibus, unguiculis minutis. Long. 3½, lat. 2 m.m.

In the male, the two basal joints of the front and middle tarsi are a good deal dilated, so that the third joint appears very slender in comparison to them ; in the female the three basal joints are all very slender and very compressed laterally. The species varies a little, more especially in the colour of the elytra, which are sometimes black, and vary between that colour and obscure reddish.

South America, and the Antilles ; Santa Rita, August, 1850, Sahlberg ; Santa Cruz, 10 to 17, 10, 1872, Van Volkem ; Porto Rico fide Wehncke. 444.

II. 5.—Group *LACCOPHILINI*.

Scutellum quite concealed ; front and middle tarsi conspicuously five-jointed ; posterior tarsi with the hind margins of their joints lobed externally ; prosternal process acute behind ; wings of metasternum very slender, arcuate ; size of the individual small.

Only two genera are included in the Laccophilini, and one of these (*Neptosternus*) has yet but a single species, while the other (*Laccophilus*) has very numerous species. They may be very readily distinguished.

Prosternal process simply acuminate ; hind angles of thorax rectangular or obtuse.	} <i>LACCOPHILUS</i> , (vide p. 287).
Prosternal process acutely tridentate ; hind angles of thorax elongate, acute.	
	} <i>NEPTOSTERNUS</i> , (vide p. 317).

I. 14.—Genus *LACCOPHILUS*.

Prosternal process with unispinose extremity; spurs of hind tibiæ emarginate at their apex. Head very short.

The species* forming this aggregate are numerous and of extreme difficulty to study and discriminate. The most useful and natural method of arrangement I can suggest at present is one based on the length of the prosternal process, and on the presence or absence of a coxal file; and in order to further facilitate reference I have combined with this arrangement the fact whether the species are found in the New or in the Old World. The species seem to inhabit more especially the warmer parts of the world, and as I feel sure that not one-fourth of those existing are known to us, I do not think it worth while at present to try and effect a more detailed or truly natural classification of the species of the aggregate. The coxal file when present consists of a series of very fine ridges, placed on a segment of a circle, commencing near the middle of the body just where the coxal lines start from the extremity of the metasternum, and from this point they extend outwards and backwards so as to form a curved series of parallel furrows. The prosternal process has the extremity very slender, so that in the species where it is elongate it is not unfrequently broken off, but even in such a case its length can be estimated by that of the groove for its reception on the anterior portion of the metasternum.

* In addition to those enumerated in the text, the following also belong to the genus:—

- Hydroporus inefficiens*, Walk. (No. 1,382 *huj. op.*); Ceylon.
Laccophilus adspersus, Boh. (No. 1,474); Caffraria.
Laccophilus baeri, Regt. (No. 1,475); Manilla.
Laccophilus cayennensis, Aubé (No. 1,476); South America.
Laccophilus decoratus, Boh. (No. 1,477); Manilla.
Laccophilus flavescens, Motsch. (No. 1,478); Ceylon.
Laccophilus hydaticoides, Regt. (No. 1,479); Manilla.
Laccophilus lineatus, Aubé (No. 1,480); Mauritius.
Laccophilus mexicanus, Aubé (No. 1,481), ? near No. 100; Mexico.
Laccophilus orientalis, Aubé (No. 1,482), ? near No. 161; Java.
Laccophilus ornatus, Aubé (No. 1,483), ? near No. 118; South America.
Laccophilus pæcilus, Klug (No. 1,484); Egypt.
Laccophilus proteus, Regt. (No. 1,485); Manilla.
Laccophilus pumilio, Lec. (No. 1,486); North America.
Laccophilus quadrisignatus, Aubé (No. 1,487); South America.
Laccophilus rivulosus, Klug (No. 1,488), ? near No. 148; Madagascar.
Laccophilus strœhmi, Th. (No. 1,489), ? No. 128 var.; Finland.
Laccophilus transversalis, Regt. (No. 1,490); Manilla.
Laccophilus transversus, Motsch. (No. 1,491); Burmah.
Laccophilus umbrinus, Motsch. (No. 1,492); Egypt.
Laccophilus uniformis, Motsch. (No. 1,493); India.
Laccophilus vermiculosus, Gerst. (No. 1,494); East Africa.
Laccophilus yvictæ, Le Guill. (No. 1,495); Chili.

GROUP 1.—Prosternal process short ; male with a coxal file : species found in New World, Nos. 92 to 109.

A. Species inhabiting the northern half of the New World. Nos. 92 to 104.

B. Species inhabiting the southern half of New World. Nos. 105 to 109.

N.B.—The coxal file is sometimes very fine and easily overlooked ; in some species it exists in the female as well as in the male, but then it is finer than in the latter sex. Certain species, of which the male is unknown, and at present placed in Group 2, may perhaps have to be transferred to this group.

GROUP 2.—Prosternal process short ; no coxal file ; species found in New World. Nos. 110 to 127.

N.B.—Of some species included here the male is unknown, and may possibly prove to possess a coxal file, and thus belong to Group 1.

L. gentilis is only imperfectly known and as it appears to have a longer prosternal process than the allies, should perhaps be placed in Group 4.

GROUP 3.—Prosternal process short, ♂ with coxal file ; species inhabiting Old World. No. 128.

GROUP 4.—Prosternal process short ; no coxal file : species inhabiting Old World. Nos. 129 to 135.

GROUP 5.—Prosternal process with elongate extremity ; no coxal file : species inhabiting the New World. Nos. 136 and 137.

GROUP 6.—Prosternal process with elongate extremity ; no coxal file ; species inhabiting the Old World ; the wing-cases without markings or with markings, but in the latter case the marks are never formed by undulating longitudinal lines. Nos. 138 to 145.

GROUP 7.—Prosternal process with elongate extremity ; no coxal file ; species inhabiting the Old World, and with markings on the wing-cases consisting of more or less undulating longitudinal dark lines ; these lines may be more or less interrupted transversely so as to leave pale fasciæ, or may extend the whole length ; in certain cases where these dark lines become very thick they are amalgamated or coalesce and then their undulating nature can scarcely be detected. No. 155 (*Dytiscus variegatus*) is the extreme of this case. Nos. 146 to 174.

GROUP I. A.

92. *Dytiscus maculosus*, Germ. *Laccophilus maculosus* M.C.—Ovalis, latiusculus, nitidus, testaceus, elytris fere impunctatis, pallidis, sed conspicue nigro-ornatis; coxis posterioribus plus minusve infuscatis. Long. $5\frac{1}{2}$, lat. $3\frac{1}{4}$ m.m.

The markings of the elytra are more distinct in this species than in the allies; their ground colour is pale yellow, but they are made dark by numerous minute dots, these dots are absent from some places which thus form yellow spots, while at the margins of these yellow spots the dark dots are condensed so as to form black marks; the pale marks form a fascia at the base which is, however, much interrupted and rendered very irregular by longitudinal prolongations of the dark marks; at the side of each elytron are four very conspicuous pale marks, the second from the base being largest, and the fourth is apical.

In the male the four front tarsi are a good deal incrassate, and are furnished beneath with hairs bearing cupules at their extremities; the hind coxa bears a curved series of fine lines or ridges commencing at the extremity of the metasternum: in the female there are also traces of this file, but they can only be detected in this sex by a careful examination with a good glass.

North America; Lake Superior, Massachusetts, Hermit Lake, Pennsylvania, Georgia. (! South America; Ega, Amazons). 528.

The specimens supposed to have been found at Ega by Mr. Bates are a good deal narrower than those from North America, but I am unable to find any other difference: and I believe they are really from North America.

93. *Laccophilus decipiens*, Lec. M.C.—Ovalis, latus, minus depressus, nitidus, testaceus, elytris fere impunctatis, æqualiter fusco-irroratis, maculis paucioribus minus distinctis. Long. $5\frac{1}{4}$, lat. $3\frac{1}{2}$ m.m.

The species is closely allied to *Dytiscus maculosus* (No. 92) but is rather larger, broader and more convex, and is readily distinguished by the less variegate elytra, from which the basal marks are entirely absent, and the marginal and sutural ones are much less conspicuous. The sexual differences are very similar in the two species.

North America: California, Utah; (Amer. Russ. teste Mannerheim). 529.

94. *Laccophilus proximus*, Say. M.C.—Ovalis, latiusculus, nitidus, testaceus, elytris fere impunctatis fuscis, signaturis pallidis minus distinctis. Long. $5\frac{1}{2}$, lat. 3 m.m.

In the three individuals I have examined I can find no distinction from *Dytiscus maculosus* (No. 92) except the darker colour and more indistinct markings of the

elytra, which however are so similar in the two that I am inclined to think them one species.

North America; Nebraska, Sept., 1874; (Iowa, Texas, Florida, Illinois, Canada, fide Crotch). 530.

95. *Laccophilus fuscus*, n. sp.—Ovalis, minus latus et depressus, nitidus, testaceus, elytris fere impunctatis, fusco-irroratis, maculis paucioribus minus distinctis; vertice capitis prothoracisque disco obscurioribus; coxis posterioribus fuscis. Long. 5½, lat. 3 m.m.

Though I have seen only a single female of this species I think it distinct; it is very much narrower than *Laccophilus decipiens*, and appears intermediate between it and *L. atristernalis* Crotch.

North America; Nevada. 531.

96. *Laccophilus pictus*, Cast. M.C.—Ovalis, latiusculus, minus depressus, sat nitidus, rufo-testaceus, capite thoraceque testaceis, illo vertice, hoc basi in medio nigris; elytris fere impunctatis, nigris, maculis irregularibus numerosis testaceis. Long. 5, lat. 3 m.m.

In the male of this species the marks forming the coxal file are not quite so deep and distinct as they are in *Dytiscus maculosus* (No. 92): in the female the external edge of the elytra is dilated at a little distance before the apex, but this is also seen in some individuals of the same sex of *Dytiscus maculosus*.

Mexico; Guatemala, (San Geronimo, Champion). 532.

97. *Laccophilus insignis*, n. sp.—Ovalis, minus depressus, sat nitidus, rufo-testaceus, capite thoraceque testaceis, illo vertice hoc basi in medio nigris; elytris fere impunctatis, nigris, fasciis duabus transversis maxime irregularibus, maculisque versus apicem testaceis. Long. 5½, lat. 3¼ m.m.

Closely allied to *Laccophilus pictus*, but larger and of more elongate form, and with the yellow marks on the elytra more extensive, so that a very irregular basal and a medial fascia is formed by them. The tarsi of the male are thicker, and the marks forming the coxal file in the same sex are coarser and more conspicuous.

North America, Texas; (Lower California fide Crotch). 533.

98. *Laccophilus fasciatus*, Aubé, M.C.—Ovalis, depressiusculus, sat nitidus, testaceus, elytris impunctatis, minus distincte fusco-irroratis, maculis lateralibus et apice testaceis, fascia lata ante apicem nigra; prothorace basi in medio breviter lobato; pectore saepe infuscato. Long. vix 5, lat. 2¾ m.m.

The markings in this species are similar in their general character to those of *Dytiscus maculosus* (No. 92), but are more indistinct, and there is a large dark mark before the extremity while the apex is entirely pale and unspotted: in the male there can be generally distinguished obscure basal marks, somewhat as in *D. maculosus*, in the female these are even more indistinct. The sexual characters are much those of *D. maculosus*; the coxal file in the male is rather coarse, and is quite distinguishable in the female.

North America; Philadelphia; (Georgia, Indian Territory, California, file Crotch). 534.

99. *Laccophilus apicalis*, Sharp, Ent. Mo. Mag. x, p. 53.—Ovalis, sat convexus et nitidus, testaceus, elytris nigro-suffusis, versus apicem late nigris, apice pallido, lateribus basique testacco-signatis; pectore utrinque parum obscuriore. Long. vix 5, lat. vix 3 m.m.

This species is very closely allied to *Laccophilus fasciatus*, but is broader and more convex, and the dark colouration of the elytra has a greater extension; the base of the thorax is more produced in the middle: the male characters are much the same in the two species, the tarsi being much incrassate and the coxal file coarse; in the female I am scarcely able to see any traces of the file.

Central America; Nicaragua, Chontales; Guatemala, S. Geronimo, Champion. 535.

100. *Laccophilus salvini*, n. sp.—Ovalis, sat convexus et nitidus, testaceus, elytris nigro-suffusis, versus apicem nigris, apice pallido, lateribus basique testaceo-signatis; pectore abdomineque nigricantibus. Long. $4\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

Closely allied to *Laccophilus fasciatus*, rather narrower and more convex, and with the under surface darker; the front portions of the elytra are darker, so that the transverse black band is less distinctly defined in front; the thorax in the middle of the base forms a slightly more acute angle. The male has the coxal file much finer than it is in the same sex of *L. fasciatus*; in the female it appears to be entirely absent.

The species is quite distinct from *L. apicalis*, by the darker colour, by the smaller size, by the finer coxal file; none of the individuals have any trace of pale longitudinal marks on the basal part of the wing-cases, and the apical pale spot is smaller than in *L. apicalis*. A variety occurs in which the hind legs are pitchy in colour.

Guatemala. (Found by Osbert Salvin, Esq., at an elevation of 5,000 feet; Guatemala city, Duenas, and S. Geronimo, Champion). 536.

101. *Laccophilus americanus*, Aubé, Spec. p. 422.—Ovalis, sat latus, minus convexus, nitidus, testaceus, elytris impunctatis, fusco-irroratis, maculis irregularibus ad margines magis conspicuis testaceis. Long. $4\frac{1}{4}$, lat. $2\frac{1}{2}$ m.m.

This species is very closely allied to *Dytiscus maculosus* (No. 92), but is much smaller, and the markings of the elytra are much less distinct. It is a variable species in size, and the individuals from the United States are generally smaller than those from the Antilles. The sexual characters are much the same as in *Dytiscus maculosus*; the coxal file is rather coarse in the male, excessively fine in the female.

North America and the Antilles; Alabama, Louisiana, Texas, Mexico; Antigua, Cuba. 537.

102. *Laccophilus confusus*, n. sp.—Ovalis, brevisculus, parum convexus, nitidus, testaceus, elytris adpersim infuscatis, margine laterali anterieus apice signaturisque minutis testaceis. Long. 4, lat. $2\frac{1}{4}$ m.m.

This insect is much smaller than the preceding ones (*L. americanus*, &c.), to which it is allied; the infuscate dots, though denser behind and ceasing abruptly before the apex, do not form a distinct band, the yellow marks formed by the absence of the dots from several places are of the same nature as in the allied species, and are principally distinct near the base.

The male has the front and middle tarsi much incrassate, and the coxal file although distinct is quite fine; the female I have not seen.

Although very similar to *L. americanus* the species is distinct by the much smaller size and finer coxal file in the male.

Mexico. 1171.

103. *Laccophilus terminalis*, n. sp.—Ovalis, minus latus, sat convexus, nitidus, testaceus, elytris impunctatis, intricater nigro-signatis, signaturis pone medium fasciam transversam sat distinctam formantibus. Long. $4\frac{3}{4}$, lat. $2\frac{2}{3}$ m.m.

This species is larger than *Laccophilus americanus*, and of more elongate form, the yellow portions of the elytra are more extensive being especially broad at the sides anterior to the dark band. It is quite as difficult to distinguish from *Laccophilus fasciatus* (No. 98), but it is narrower in front, more convex, with the black marks on the anterior portions of the elytra more developed, and the transverse posterior fascia less complete. The sexual differences seem the same as in the allied species.

North America; Texas, Belfrage. 538.

104. *Laccophilus atristernalis*, Crotch, Tr. Am. Ent. Soc. IV., p. 400.—Ovalis, sat convexus, nitidus, testaceus, elytris impunctatis, fere æqualiter fusco-irroratis, pectore abdomineque nigricantibus. Long. 5 m.m. lat. 3 m.m.

The elytra in this species appear at first sight nearly unicolorous, this is caused by their being densely irrorated with brownish dots; the margins and apex are however paler, and there may be distinguished at the sides two extensions of the unspotted marks, forming indistinct lateral spots.

It is very variable in size. The sexual characters seem quite the same as in the allied species. I think it probable this will prove to be the *Laccophilus mexicanus*, Aubé, (Spec. p. 420).

California and Mexico. 539.

Group 1. B.

105. *Laccophilus chilensis*, n. sp.—Ovalis, minus convexus, latiusculus, subnitidus, testaceus, supra plus minusve vage fusco-suffusus, abdomine pectoreque nigricantibus. Long. 5, lat. 3 m.m.

This is a rather large species, of sordid colour, owing to the upper surface being more or less suffused with fuscous, though not in a manner to give rise to any distinct pattern. I have seen only females, they have a very fine coxal file; which will no doubt prove to be more conspicuous in the male. The species seems closely allied to *Laccophilus atristernalis*, but is smaller and more depressed; no doubt a sufficient series would enable better marks of distinction to be detected.

Chili. 619.

106. *Laccophilus tarsalis*, n. sp.—Ovalis, sat latus, subdepressus, nitidus, testaceus, prothorace anterior et posterior in medio, elytris, abdomine pectoreque fuscis; elytris fere impunctatis, signaturis testaceis. Long. 4, lat. 2½ m.m.

The elytra are irrorated with fuscous dots, which leave a pale humeral mark and some slender longitudinal marks between it and the suture, the lateral margin is very narrowly pale and on the middle has a pale spot, the apex also is dilute, and there are moreover some slender longitudinal pale marks, forming the rudiments of a transverse fascia, some distance before the apex. The only individual I have seen is a male, it has the front and middle tarsi a good deal incrassate, and has a very distinct but short coxal file formed by deep impressions, about twelve in number. The apical ventral segment has its outline entire and uninterrupted.

South America; Parana. 546.

107. *Laccophilus suffusus*, n. sp.—Ovalis, haud elongatus, subdepressus, pernitidus, testaceus, elytris fere impunctatis, castaneo-testaceis, signaturis irregularibus (quarum fascia basali conspicua) apiceque pallidis. Long. 3½, lat. 2 m.m.

The colour seems to be variable in this species; the pale brown tint with which the elytra are suffused extends over their greater part, but leaves numerous irregular, pale, variable marks; there is a more or less interrupted, basal, pale fascia, sometimes broken up into separate marks, and behind the middle there is a transverse fascia of longitudinal pale marks which are sometimes quite inconspicuous: the dark colour extends quite to the sides, but leaves the apex pale;

the hind coxæ are infusate to a variable extent. The male has a conspicuous coxal file of unusually coarse impressions. There is no sinuation of the apical ventral segment in either sex.

South America ; Bahia. 542.

108. *Laccophilus badeni*, (Wehneke), n. sp.—Ovalis, latiusculus, sat convexus, minus nitidus, fusco-testaceus, pectore nigricante, elytris fuscis, prothorace lateribus elytrisque signaturis (quarum fascia subbasali flammulata conspicua) testaceis. Long. 4 $\frac{3}{4}$, lat. 3 m.m.

There is in this species, near the base of the elytra, a conspicuous yellow band which in two or three places is more or less completely divided by prolongations of the dark colour, and with the band is connected a very slender longitudinal pale stripe near the suture ; there is also a pale mark at the side near the middle, and several irregular pale marks forming a transverse interrupted fascia in front of the apex, and the apex itself is pale. The elytra have rather a dull silky appearance. The male shows an excessively fine coxal file (it is as difficult to see as that of the female *Dytiscus maculosus*) ; its apical ventral segment is not sinuate at the sides ; the front and middle tarsi are distinctly thickened. In the female the epipleuræ are not inflexed near the apex, but become broader at some distance before the apex, and then rather abruptly narrow, so that when looked at from the side, the edge of the wing-case appears sinuate near the apex.

Brazil, (fide Wehneke). 552.

109. *Laccophilus nigricans*, n. sp.—Ovalis, angustulus, sat convexus, nigricans, antennis, pedibus, capite anteriori, et prothoracis lateribus testaceis ; elytris fere impunctatis, lateribus anteriori dilutionibus, ad humeros testaceis. Long. 3 $\frac{1}{2}$, lat. 2 m.m.

The small size and dark colour of this species readily distinguish it. The only individual I have seen is a male, it has the front and middle tarsi a good deal incrassate ; there is a fine, indistinct coxal file ; the apical ventral segment is not at all sinuate at the sides.

South America ; Parana. 553.

GROUP 2.

110. *Laccophilus quadrilineatus*, Horn. Tr. Am. Ent. Soc. 1871, p. 330.—Ovalis, elongatus, sat convexus, nitidus, testaceus, elytris lævigatis, late irregulariter fusco-signatis, signaturis antice in lineas divisas ; prothorace basi medio acutius producto. Long. 6 m.m., lat. 3 m.m.

In this species the marks of the elytra consist of some longitudinal linear marks,

which are separate at the base but on the middle are coalesced, the sides are broadly yellow but beyond the middle a dark patch reaches the lateral margin, the apex is quite pale. In the male the front and middle tarsi are much thickened: there is no trace of a coxal file in either sex.

North America, Texas; (Colorado fide Crotel). 540.

111. *Laccophilus bifasciatus*, Chev. M.C.—Ovalis, latiusculus, subdepressus, glaberrimus, pernitidus, testaceus, pectore, abdomine, prothorace medio elytris que piceis, his fascia basali lata, altera pone medium apiceque pallidis. Long. 4, lat. $2\frac{1}{2}$ m.m.

I have examined six specimens of this species; the sexes are very difficult to distinguish, the male having the tarsi almost as slender as they are in the female, the last ventral segment is however not so elongate in the former sex as it is in the latter.

Cuba; St. Domingo. 541.

112. *Laccophilus simplex*, n. sp.—Ovalis, nitidus, rufo-testaceus, capite thoraceque dilutioribus, elytris vix obscurioribus, impunctatis. Long. $3\frac{2}{3}$, lat. 2 m.m.

There is no coxal file in the male of this species, and the apical ventral segment is also similar, and without sinuation or truncation in either sex; the male can only be distinguished from the female, by the slightly incrassate front and middle tarsi.

Brazil, (Santa Rita, August, 1850, Sahlberg). 543.

113. *Laccophilus remator*, n. sp.—Ovalis, minus latus et convexus, nitidus, rufo-testaceus; elytris fere concoloribus, creberrime subtilissime punctatis. Long. 4, lat. 2 m.m.

This is a species very destitute of any salient points; the elytra are without markings, and scarcely differ in colour from the other parts; the punctuation on the front parts of the elytra can scarcely be distinguished as definite punctures. The only individual I have seen is a female, and has the apical ventral segment quite simply rounded. The species much resembles *L. simplex*, but is narrower in front, and has the elytra much less smooth.

South America; Bahia. 554.

114. *Laccophilus traili*, n. sp.—Ovalis, sat convexus, nitidus, testaceus, elytris paulo obscurioribus, impunctatis, stria suturali sub-obsolete. Long. $3\frac{3}{4}$, lat. 2 m.m.

The male is without coxal file, but the last abdominal segment is deeply and broadly excised, while in the female it is excised on each side, the middle part forming a somewhat plicate projecting lobe.

Although excessively similar to *L. simplex*, this species is very distinct from it by the sexual structure of the last abdominal segment. It possesses also on the elytra an obscure sutural stria, formed by nearly or quite coalescent impressed punctures; the under surface is perfectly smooth, even the basal abdominal segments possess no visible scratches.

South America; Amazons, Montealagre, 1-13, 11. 1873, Professor Trail. 1121.

115. *Laccophilus venustus*, Chev. M.C.—Ovalis, fere angustus, subdepressus, pernitidus, lævigatus, testaceus, prothorace anterior in medio triangulariter infuscato, elytris fusco-nebulosis, fascia maculari subbasali signaturisque parvis testaceis. Long. $3\frac{3}{4}$ m.m., lat. 2 m.m.

In this species the elytra are suffused with dark colour in an unequal or spotty manner, and there is a conspicuous pale fascia composed of united spots near the base, there is also a pale mark at the sides and a very broken fascia of pale marks before the apex. The only individual I have seen is the type from Chevrolat's collection; it is a female and appears to be very closely allied to *L. suffusus* (No. 107), but is narrower, and the colouration is a little different.

Cuba, (Coll. Brussels Mus.); (Mexico?). 560.

116. *Laccophilus subsignatus*, n. sp.—Ovalis, sat latus, minus convexus, pernitidus, rufo-testaceus, prothorace basi medio elytris que fuscis, his fascia subbasali aliaque ante-apicali et apice testaceis; corpore subtus plus minusve infuscato. Long. $3\frac{3}{4}$, lat. $2\frac{1}{8}$ m.m.

The markings of the elytra in this species are rather vague and indistinct; besides the two irregular fasciæ the lateral margin is paler. The sexes are very difficult to distinguish, there being scarcely any incrassation of the male tarsi, and the ventral segment is simply curved at the sides, and similar in the two sexes. The species bears a very great resemblance to *L. suffusus* (No. 107) so that I was long before I discriminated them; the present species is however rather larger, has the prosternal process much longer, and the male has no coxal file.

South America, and the Antilles; Venezuela. Guadeloupe. 571.

117. *Laccophilus notatus*, Boh. M.C.—Ovalis, sat latus et convexus, nitidus, testaceus, prothorace anterior in medio et posterior elytris que fuscis, his fere impunctatis, fascia subbasali conspicua maculisque ad latera testaceis. Long. 4, lat. $2\frac{1}{2}$ m.m.

In this species the elytra are suffused with dark colour, but there is a very distinct yellow band near the base formed by united (or nearly united) transverse spots, there is a yellow spot close to the side about the middle, and generally another lateral mark extending more towards the suture between this and the apex. The species however is either a very variable one, or the specimens before me from several localities represent more than one species. There is a very slight oblique sinuosity in each sex, on either side of the middle of the last ventral segment; the male has the front and middle tarsi rather thick: the female has an excessively fine groove on the under edge of the epipleura before the apex. There is no trace of coxal file in either sex.

South America; Monte Video, Uruguay, Parana. 547.

118. *Laccophilus fumatus*, n. sp.—Ovalis, fere angustus, subdepressus, pernitidus, testaceus, elytris fuscis, impunctatis, fascia flammulata subbasali, macula laterali apiceque testaceis. Long. $4\frac{1}{4}$, lat. vix $2\frac{1}{2}$ m.m.

In this species the thorax in the middle of the front and at the base is a little darker. The elytra owing to very diffused irrorations appear brownish; they have a very distinct yellow band near the base, a yellow mark on the middle of the side margin, another small one on the middle of the suture, and some very minute indistinct pale marks elsewhere, the apex also being pale: the under surface is quite pale. The only individual I have seen is a female, and has the apical ventral segment rather long in the middle, and its outline uninterrupted by any sinuation. There is not the least trace of any coxal file.

Brazil. 548.

119. *Laccophilus fractus*, n. sp.—Ovalis, latiusculus, sat convexus, minus nitidus, rufescens, capite thoraceque dilutioribus, hoc anterius et posterius in medio, elytrisque fuscis, his impunctatis, signaturis longitudinalibus testaceis. Long. $4\frac{1}{4}$, lat. vix 3 m.m.

The yellow marks of the elytra consist of a humeral spot and some longitudinal marks internal to it disposed so as to form an interrupted band, of a longitudinal mark near the suture, of some longitudinal marks behind the middle forming an obscure fascia, and of an obscure spot near the lateral margin about the middle, the apex also is paler. The only specimen I have seen is a female; it has the epipleura quite simple: the last ventral segment is long, and has no sinuation at the sides. The coxæ are infusate in this individual.

South America; Santa Rita, August, 1850, Sahlberg. 549.

120. *Laccophilus vagepictus*, n. sp.—Ovalis, subdepressus, minus nitidus, rufescens,

thorace anterior in medio et posterior magis obscuro, elytris fuscis signaturis longitudinalibus testaceis. Long. 4½, lat. 2½ m.m.

The marks of the elytra are rather indefinite, they consist of some longitudinal marks forming an ill-defined pale broad band, descending in an oblique manner from the shoulder towards the suture; the apex is pale but in front of it the colour is darker than elsewhere; there is also a pale mark near the side about the middle: the upper surface is rather dull, but the elytra show scarcely any traces of punctuation. The only individual I have seen is a female; the epipleura bears a groove on its under edge, which commences broadly and abruptly, and so causes the margin of the elytron when viewed from one side to appear a little dilated at a spot some distance before the extremity. The apical ventral segment is rather long, and without any sinuation of its outline.

South America; Santa Rita, August, 1850, Sahlberg. 550.

121. *Laccophilus rotundatus*, n. sp.—Ovalis, convexiusculus, minus nitidus, subsericeus, testaceus, prothorace in medio, pectore, abdomine clytris que fuscis, his fascia subbasali signaturisque post medium testaceis. Long. 4, lat. 2½ m.m.

Near the base of the elytra there is a rather narrow, somewhat irregular, pale band, indistinctly interrupted at the suture; there is also a pale mark at the side near the middle, and several large, coalescent, pale marks, forming a broad, flammulate mark behind the middle, and the apex itself is also pale. In the male, I can see no trace of a coxal file; the front and middle tarsi are distinctly incrassate. The female differs in the simple tarsi; but very little in the structure of the epipleura. The species is very similar to *L. suffusus* (No. 107), but is much smaller.

Brazil. 618.

122. *Laccophilus bicolor*, (Cast.) Aubé, M.C.—Ovalis, sat latus, subdepressus, minus nitidus, rufescens, elytris fascia lata transversa fusca. Long. 4, lat. 2½ m.m.

The elytra in this species are quite pale at the base and apex, and are broadly darker across the middle; in the dark band there is an obscure pale spot near the margin; I find in the individual examined only very indistinct signs of the second subapical band mentioned by Aubé in his description. The only individual I have seen is a female, and has the epipleura nearly simple, and the apical ventral segment rather long, and without any sinuation.

South America; (Cayenne, Coll. Bouvuloir). 551.

123. *Laccophilus undatus*, Aubé, M.C.—Ovalis, sat convexus, minus latus, nitidus, rufo-testaceus, clytris dense subtiliter punctulatis fusco-testaceoque variegatis; antennarum apice infuscato. Long. 4, lat. 2 m.m.

The marks of the elytra in this species are distinct and complicated, but vary somewhat; the basal portion of the elytra is pale, but has a dark spot near the shoulder and another near the suture, the pale basal portion is very irregular in form, and the dark spots in it are more or less connected by prolongations with the medial dark marks, at the middle of the side the dark part is encroached on by a pale spot, and there is a very irregular more or less interrupted pale fascia beyond the middle, and the apex itself is pale. The margins of the dark portions are darker than their centres, the colour there being more dilute. The male has the front and middle tarsi rather distinctly incrassate, but has no coxal file. In each sex the apical segment is without sinuation at the sides.

North America, Pennsylvania; Amazon Valley: but there is doubt whether this latter locality be correct. 555.

124. *Laccophilus obesus*, n. sp.—Ovalis, latiusculus, sat convexus, pernitidus, supra creberrime sub-obsolete punctulatus, castaneus, capite thoraceque rufo-testaceis, hoc antarius medio obscuriore, elytris signaturis apiceque pallidis. Long. 4, lat. $2\frac{5}{8}$ m.m.

The pale marks of the elytra consist of some large basal spots which form a transverse fascia, of a spot on the middle of the lateral margin, of a larger transverse mark between this and the apex, and the apex also is pale. The only individual I have seen is no doubt a male, though it possesses only very slight external distinctions, its front tarsi, and the apical ventral segment being nearly simple, though there is an excessively slight sinuation on each side of the middle of the latter. In the collection of the Brussels Museum there exists however a female from Minas Geraes which is either a variety of this species or a very closely allied one; it has the apical ventral segment more elongate and without the least sinuation, and the epipleural fold shows a depression for some distance before the apex.

South America, Cayenne. 544.

125. *Laccophilus latipes*, n. sp.—Ovalis, sat convexus, pernitidus, supra obsoletissime punctulatus, piceus, antennis, pedibus anterioribus, capite, prothoracis lateribus elytrisque signaturis conspicuis apiceque testaceis. Long. 4, lat. $2\frac{5}{8}$ m.m.

The species is closely allied to the preceding, but is darker in colour, with the upper surface less visibly punctulate, and the markings of the elytra (which are however quite the same in their distribution) very conspicuous. The pale colour at the sides of the thorax extends in a very indistinct manner across the middle. I have seen only two individuals, which are males, and show quite the same characters as *L. obesus*.

South America, Parana. 545.

126. *Laccophilus quadrivittatus*, Aubé., M.C.—Ovalis, minus latus, subdepressus, permitidus, lævigatus, rufo-testaceus, thorace anterior in medio et posterior, elytris-que summa basi infuscatis, his fascia lata mediali nigro-fusca. Long. $3\frac{1}{2}$, lat. vix 2 m.m.

In this species, the broad yellow apical portion of the elytra is more or less infuscated across its middle portion, so as to give the appearance of a subapical yellow fascia; the male has the tarsi but little thickened; in this sex the apical ventral segment is rather more truncate than in the female, and appears slightly sinuate-truncate on each side. The species is a very smooth and shining one, and the oblique striæ or scratches on the ventral segments are not conspicuous.

Antilles, Porto Rico. 556.

127. *Laccophilus gentilis*, Lec., M.C.—Ovalis, angustulus, subdepressus, nitidus, rufo-testaceus, prothorace anterior in medio et posterior obscuriore, elytris subtiliter punctulatis, fuscis, vage rufo-signatis. Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

In this species the markings are ill defined; there is on the elytra a more or less complete sub-basal pale band, and a spot on the middle of the side, and another subapical one, the apex also being pale. The sculpture of the elytra though very fine is distinct, and the scratches on the ventral segments are rather conspicuous. The male has the front and middle tarsi rather thicker than in the female. There is but slight sexual difference in the form of the apical ventral segment.

A female specimen (from Cuba?) in the collection of the Brussels Museum, is rather larger and shows some other slight differences, so that it may prove to be another species.

North America, Louisiana. 557.

GROUP 3.

128. *Dytiscus interruptus*, Panz. *Laccophilus minutus*, M.C.—Ovalis, sat latus, minus convexus, permitidus, lævigatus, testaceus, elytris plus minusve infuscatis, cum signaturis testaceis plus minusve indistinctis; prothorace basi in medio brevius producto. Long. $4\frac{1}{2}$, lat. $2\frac{5}{8}$ m.m.

In the male the front and middle tarsi are only very slightly incrassate; the apical ventral segment is rather more truncate in the male than it is in the female and is very slightly sinuate on each side. There is a coxal file, composed of rather numerous striæ, which are separated by wide but only very slightly elevated spaces. This file is about equally as distinct in the female as it is in the male. The species varies in colour, and when the infuscation of the elytra is very slight the yellow marks are of course less evident. The darker specimens come from Corsica, Sardinia,

and the Canary Islands, (*L. inflatus*, Woll.) The species also varies in breadth and size; the larger and broader individuals are found only in the more southern parts of its area of existence, and were considered a distinct species by Aubé, (*L. testaceus*).

Europe (Corsica and Sardinia), Algeria, Canary Islands; extends in the north as far as Lapland. 561.

GROUP 4.

129. *Laccophilus lewisius*, Sharp, Tr. Ent. Soc. Lond., 1873, p. 52.—Ovalis, sat latus, minus convexus, nitidus, prothorace anterior in medio et in basi brevissime nigricante, elytris longitudinaliter fusco signatis, signaturis præsertim posterioribus confluentibus, ad basin, ad latera et ad apicem areis esignatis; antennis palpisque apicibus angustius fuscis; prothorace basi in medio breviter producto. Long. $4\frac{1}{4}$, lat. $2\frac{3}{4}$ m.m.

In this species the reticulation of the upper surface is quite distinct; the male has the front and middle tarsi much incrassate, and the last ventral segment more truncate than in the female. The markings of the elytra give this very distinct species a resemblance to *Dytiscus maculosus*, Germ. (No. 92), but *Laccophilus lewisius* is smaller and has no trace of a coxal file.

Japan. 616.

130. *Dytiscus obscurus*, Panz. *Laccophilus hyalinus*, M. C.—Ovalis, sat angustus, minus convexus, nitidus, testaceus, antennis palpisque apicibus infuscatis; elytris aliquando fusco-variegatis; prothorace basi in medio minus breviter producto. Long. 4, lat $2\frac{5}{8}$ m.m.

The male has the front and middle tarsi much incrassate. There is no trace of a coxal file in either sex. The species varies as to colour; the elytra sometimes being infuscate in such a way as to leave a rather complicated set of pale marks. The species may always be at once distinguished from *Dytiscus interruptus* (No. 128), by the absence of the coxal file, and by the thicker male tarsi, as well as by its narrower form, more acute angle at the base of the thorax in the middle, and the infuscate apices of antennæ and palpi. The apical ventral segment of the male is not truncate, and its form differs only very slightly from that of the female.

Europe, (Corsica and Sardinia), Algeria and Syria; extends as far as Lapland in the north. 562.

131. *Laccophilus difficilis*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 53.—Ovalis, sat latus, minus convexus, nitidus, testaceus, antennis palpisque apicibus infuscatis; prothorace basi in medio minus breviter producto. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi much incrassate. The species differs from the preceding, by its form, which is broader in the middle, and so appears more

narrowed in front and behind ; the reticulation of the elytra is even more indistinct, but there are some very fine punctures visible, especially near the suture towards the extremity : the infuscation and variegation of the elytra is excessively reduced, and is only to be perceived by expanding them. Notwithstanding its near approach to *Dysticus obscurus*, (No. 130), I feel pretty sure that this is a distinct species.

Japan ; China. 563.

132. *Laccophilus kobensis*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 53.—Ovalis, minus elongatus, sat convexus, nitidus, testaceus, antennis palpisque apicibus angustissime infuscatis, elytris sat distincte fusco-variegatis ; prothorace basi in medio minus breviter producto. Long. $3\frac{3}{4}$, lat. $2\frac{1}{4}$ m.m.

The male has the front and middle tarsi much incrassate. The species is extremely closely allied to the two preceding, but the smaller size and shorter form make it easy to be distinguished from them.

Japan. 564.

33. *Laccophilus sordidus*, n. sp.—Ovalis, convexus, sordide testaceus, fere unicolor, antennis testaceis ; prothorace basi in medio elongato, acuto ; elytris subtiliter sed evidenter reticulatis, stria suturali punctorum. Long. 5, lat. vix. 3 m.m.

The male has the front and middle tarsi distinctly a little incrassate ; the last ventral segment is simple and entire in each sex, slightly longer in the male than in the female.

The two individuals before me are in bad condition, and perhaps darker in colour than is natural ; there is no trace of any markings, and the species should be readily identified by its moderately large size and obscure colour, by the simple structure of the last segment in each sex, the very acutely angled base of the thorax, and by the reticulation of the elytra, and the obscure series of impressed punctures along the suture.

Arabia, (El Hedjaz, Dr. Millingen). 1173.

134. *Laccophilus elegans*, n. sp.—Ovalis, parum elongatus, subdepressus, nitidissimus, testaceus, elytris nigricantibus, signaturis magnis testaceis. Long. 4, lat. $2\frac{1}{3}$ m.m.

The yellow marks on the wing cases are in this species large and definite, there is a large irregular transverse yellow band very close to the base, a yellow spot on the lateral margin about the middle, another large irregular transverse band in front of the apex, and the apex itself is also pale. The species bears much resemblance to *Laccophilus bifasciatus* (No. 111), from the Antilles ; it is remarkable

from the fact that the prosternal process is flatter and less compressed laterally than is usual. The only individual I have seen is a female: it has the terminal abdominal segment entire and simple.

Andaman Islands. 1172.

135. *Laccophilus unifasciatus*, (Wehncke), n. sp.—Ovalis, subdepressus, nitidus, testaceus, elytris castaneis, fascia sub-basali, maculaque ad latera testaceis; prothorace basi in medio evidenter producto. Long. 3, lat. $1\frac{1}{4}$ m.m.

This is one of the smallest species of the genus, and is easily recognized by the dark elytra, with a narrow fascia near the base. In the male the hind margin of the apical ventral segment is rather obscurely truncate, and projects a very little in the middle; in the female it is without sinuation or peculiarity of form: the male tarsi are but little incrassate.

Australia, (Rockhampton). 567.

GROUP 5.

136. *Laccophilus latifrons*, n. sp.—Ovalis, minus latus et convexus, pernitidus, testaceus, elytris fusco-suffusis, testaceo-variegatis, fascia flammulata basali conspicua. Long. 4, lat. $2\frac{1}{2}$ m.m.

In this species there is on the elytra a yellow fascia near the base, reaching from the side margin to the suture, there is a yellow spot on the side about the middle, a very irregular interrupted pale fascia behind the middle, and the apex itself is rather pale, but is infuscate yellow: the dark colour is irregular, being formed by extremely bent and almost diffused lines, so that the spaces separating them are very indistinct. The male is more elongate than the female, has the front and middle tarsi a little incrassate; and the apical ventral segment is truncate and distinctly produced in the middle so as to appear sinuate on each side. The female has the epipleura dilated some distance before the apex, the dilatation being so disposed as to form a plica or compressed fold. The apical ventral segment is so deeply sinuate on each side of the middle at the apex, as to appear trilobed, the middle lobe being however much longer than the lateral ones.

South America; Santa Rita, Augt. 1850, Sahlberg. 558.

137. *Laccophilus ovatus*, n. sp.—Ovalis, minus latus et convexus, pernitidus, testaceus, elytris fusco-suffusis, minus distincte testaceo-signatis. Long. 3½, lat. 2 m.m.

The infuscation of the elytra is formed by very indistinct and waved lines, which indeed have almost the appearance of irrorations; the pale spots left unencroached on are small and indistinct, and also variable. The male has the front and middle

tarsi a little incrassate, the apical ventral segment is truncate, but distinctly produced in the middle and thus slightly sinuate on each side. In the female the epipleuræ are simple, and the last ventral segment has a much produced middle lobe, and the portion on each side of this is nearly truncate.

Brazil. 559.

GROUP 6.

138. *Laccophilus pellucidus*, n. sp.—Latus, parum convexus, testaceus, unicolor nitidior, subtilius reticulatus; prosterno basi in medio perparum elongato. Long. $5\frac{3}{4}$, lat. $3\frac{1}{2}$, m.m.

This species is as long as *L. luridus*, but is quite different in form being very much broader in front and comparatively little convex. The base of the thorax in the middle is very little acuminate; the hind tarsi are very broad. The male tarsi are not much incrassate, but their clothing beneath is more largely developed than usual, the palettes of the under surface being quite conspicuous, and placed on elongate hairs, and form four transverse series; the apical ventral segment is much abbreviate, the hind margin rather deeply sinuate on each side, and very broadly rounded in the middle. The female I have not seen.

South Africa; Bedford district, Caffraria. 1175.

139. *Laccophilus luridus*, Schaum, M.C.—Late ovalis, apice latius rotundatus, sat nitidus, testaceus, elytris vix obscurioribus, immaculatis. Long. $5\frac{1}{2}$, lat. $3\frac{1}{3}$ m.m.

The male has the front and middle tarsi a good deal incrassate; the apical ventral segment is truncate, but a little produced in the middle and sinuate on each side; in the female the central lobe of this segment is elongate, and its hind margin is very slightly reflexed. The broad form, large size, and almost completely immaculate elytra, make this species distinguishable at a glance.

Egypt. 565.

140. *Laccophilus immundus*, n. sp.—Ovalis, elongatus, sat angustus, minus nitidus, fusco-rufus, supra coriaceus, et in elytris subtilissime punctulatus. Long. $4\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m.

I have seen but a single female of this very distinct species, the sculpture of it resembles that of *Laccophilus undatus*, (No. 123) the prosternal process is however elongate in the present species: the apical ventral segment is truncate and but little produced in the middle.

Cape of Good Hope, (Capetown) from Castlenau's collection; I do not feel quite sure that the label of the locality of this species is correct. 595.

141. *Laccophilus sublineatus*, n. sp.—Ovalis, convexus, subtilius reticulatus, nitidus, ferrugineus, fere unicolor, elytris dorso lineis fuscis, abbreviatis, rectis, ægre discernendis, stria suturali punctorum sat conspicua; prothorace basi in medio perparum elongato. Long. 4, lat. $2\frac{1}{4}$ m.m.

The convex form and obscure colour give this some resemblance to *Laccophilus luridus*, but it is not half the size, and the base of the thorax is less prolonged in the middle than it is in that species; the lines of darker colour on the elytra are so obscure that they are more easily overlooked than detected. I do not know the male; the female has the apical ventral segment obliquely sinuate on each side the middle, the middle of the hind margin being obtusely pointed.

Arabia, (El Hedjaz); Mesopotamia: found by Dr. Millingen. 1174.

142. *Laccophilus pictipennis*, n. sp.—Ovalis, sat latus et convexus, nitidus, rufo-testaceus, prothorace antèrius in medio elytrisq;ue fuscis, his argute testacco-maculatis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The yellow marks on the elytra are large and distinct in this species, and consist of a large humeral mark extending inwards and nearly joining a sutural spot, a mark on the side about the middle, and a very waved sub-apical band of nearly united spots, there is also a yellow mark at the apex, but the suture and extreme apex are fuscous; there is also a longitudinal vitta extending backwards from the anterior sutural spot. The species is just about the size of *Dytiscus interruptus*, (No. 128), but is more rounded at the sides, and the markings of the elytra are much more conspicuous. In the male there is scarcely any incrassation of the tarsi, but the apical ventral segment is largely truncate, and is emarginate on each side, the two emarginations being not quite similar, the one on the right side being rather deeper than the one on the left side. In the female the apical ventral segment is not truncate, and is scarcely sinuate on each side.

Arabia and Abyssinia, (El Hedjaz, Dr. Millingen). 566.

143. *Laccophilus discretus*, n. sp.—Rotundato-ovalis, convexus, nitidus, fusco-ferrugineus, elytris obsolete testacco-maculatis, antennis testaceis, pedibus rufis; elytris stria suturali plus minusve conspicua. Long. $4\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m.

This species is of an infusate reddish hue, with obsolete yellow marks on the elytra, these consist of an interrupted irregular basal band, very large at the shoulder, and of a second interrupted irregular band behind the middle, the apex itself is also more or less indistinctly pale, there is generally also a very indistinct narrow longitudinal stripe near the suture and connecting the two transverse bands. The sutural impressed stria seems always to be present though sometimes very indistinct; it appears as if formed by numerous approximate punctures. The male has the last ventral segment much truncate, and very slightly emarginate

on each side of the middle, the emargination however is very slight especially on the left side. In the female the apical segment is much less truncate, but still it is a little abbreviated, and is scarcely sinuate on each side.

Arabia. (El Hedjaz, Dr. Millingen). 1170.

144. *Laccophilus wehnekei*, n. sp.—Robustus, ovalis, latus, sat convexus, nitidus, testaceus, elytris vage castaneo-saturatis, sed basi late pallidis. Long. $4\frac{1}{2}$, lat. vix 3 m.m.

In this species, the elytra are suffused with a darker colour in such a way as not to give rise to any well defined mark; a stripe along the suture is dark, the large dark cloud scarcely mixes with the sutural stripe, and leaves a broad space at the base quite pale, and though the limits of this cloud are very ill defined it does not extend either to the sides or apex. I am acquainted only with the female; the apical ventral segment is elongate in the middle so that it is very oblique on each side, and has no sinuation, it is a good deal compressed longitudinally in the middle towards the apex.

Africa; Zanzibar. 620.

145. *Laccophilus siamensis*, n. sp.—Ovalis, subdepressus, pernitidus, testaceus, elytris castaneis, ad latera et ad apicem fasciaque subbasali lata testaceis; prothorace basi in medio minus producto. Long. $3\frac{3}{4}$, lat. 2 m.m.

In this species the elytra are dark across the middle, and the dark colour invades in an irregular manner the apical yellow portion, so as to give rise to some appearance of a subapical pale fascia; the broad pale fascia near the base is very distinct. The male has the front and middle tarsi but little incrassate: the hind margin of the apical ventral segment is truncate, and a good deal sinuate on each side, the sinuation being most abrupt near the outer angles; in the female the central lobe is very elongate, and the lateral angles are also distinctly projecting.

Siam (Bangkok). 568

GROUP 7.

146. *Laccophilus grammicus*, n. sp.—Ovalis, sat convexus, nitidus, testaceus, prothorace basi in medio, elytrisque sutura et lineis latis ad basin abbreviatis et ultra medium plus minusve interruptis, nigris. Long. 4, lat. $2\frac{1}{4}$ m.m.

The elytra are marked with thick straight black lines, the edges of which, however, are irregular, so as to form more or less distinct transverse connections between the lines; the suture is black from beginning to end, the second line from the suture is longer than the other, and reaches nearly or quite to the base; the

lines are interrupted beyond the middle (except the one next the suture), and where they reappear beyond the interruption, are more irregular and mixed together, and do not extend quite to the apex. The male has the front and middle tarsi a little incrassate; the apical ventral segment is abbreviate, and its hind margin nearly straight, being scarcely produced in the middle and not at all at the sides. In the female it is a good deal longer in the middle than it is at the sides, so as to form a sort of indistinct middle lobe, but the lateral parts are not at all produced.

Abyssinia. 569.

147. *Laccophilus brevicollis*, n. sp.—Ovalis, sat convexus, nitidus, testaceus, prothorace anterior et posterior in medio, elytris que sutura et lineis latis haud undulatis fere confluentibus, ante basin et ultra medium plus minusve interruptis, nigris. Long. 4, lat. $2\frac{1}{3}$ m.m.

This species is very similar to *Laccophilus grammicus*, but is smaller and the dark marks on the thorax and elytra have a greater extension. The male is unknown to me; the female has the apical ventral segment elongate in the middle, but not forming a lobe, the sides forming very nearly a simple curve.

Cape of Good Hope. 570.

148. *Laccophilus lateralis*, n. sp.—Ovalis, sat convexus, minus nitidus, rufo-testaceus, prothorace anterior et posterior infuscato, elytris nigro-suffusis, lateribus signaturisque paululum conspicuis testaceis; abdomine pectoreque nigro-suffusis. Long. 4, lat. $2\frac{1}{3}$ m.m.

In this species the dark marks of the elytra are confluent so as to render the wing-cases nearly entirely dark except at the sides; in some specimens there are traces of longitudinal pale marks. The male has the front and middle tarsi much incrassate, and the apical ventral segment truncate but distinctly sinuate on each side, the lateral angles projecting almost farther backwards than the middle part; in the female the hind margin of the last ventral segment forms a slender, but rather elongate lobe in the middle, and the lateral angles are about similar to those of the male.

Madagascar. 572.

149. *Laccophilus luctuosus*, n. sp.—Ovalis, convexus, nitidus, testaceus, prothorace anterior et posterior in medio infuscato, elytris fuscis, fascia sub-basali ad suturam anguste interrupta testacea; pectore nigricante, abdomine fusco. Long. $3\frac{1}{2}$, lat. 2 m.m.

A small and comparatively convex species; the fuscous colour with which the

elytra are suffused leaves, besides the fascia near the base, some small obscure variable marks behind the middle pale, and the dark colour scarcely reaches the epipleuræ. The male has the front and middle tarsi but little incrassate; and has the apical ventral segment subtruncate, with a slight acuminate projection in the middle; in the female this projection is more acute and longer, and the hind margin is rather oblique on each side, and close to the side is rather deeply sinuate. I have seen but one pair of the species, in rather bad condition.

Madagascar. 617.

150. *Laccophilus cyclopiis*, n. sp.—Ovalis, sat latus et convexus, nitidus, testaceus, elytris lineis haud interruptis sed ad latera disintegratis nigris. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In this species the lines of the elytra are straight lines with irregular edges, and are not interrupted so as to give rise to any appearance of transverse pale bands; the lines towards the sides are, however, more or less broken up into irregular irrorations. The yellow interstices are irregular being greatly broken up by the black marks especially near the extremity. In the male the front and middle tarsi are distinctly incrassate; and the apical ventral segment is truncate, and but slightly sinuate on each side; in the female it is deeply sinuate on each side, so that the middle part forms a very broad lobe. The species seems to be very variable in the dark lines of the elytra which are sometimes very black and approximate, though always distinctly separated, while in other cases they are so diluted as to appear merely lines of irrorations.

Southern Africa, (Graham's Town, Cape Town, Caffraria, N'Gami). 573.

151. *Laccophilus complicatus*, n. sp.—Ovalis, sat latus et convexus, nitidus, testaceus, elytris lineis undulatis, haud interruptis nigris. Long. $4\frac{1}{2}$, lat. vix $2\frac{1}{2}$ m.m.

In this species there is a small infuscation of the anterior and posterior margins of the thorax in the middle; the lines of the elytra are very waved, and are evenly distributed, those near the suture not approaching in their character to straight lines; by this it is easily distinguished from the closely allied *Laccophilus cyclopiis*, the ventral segments are more or less infusate. In the male the front and middle tarsi are much incrassate, and the apical ventral segment is truncate but the middle part is evidently produced, so that the hind margin is distinctly oblique on each side; in the female the middle part is more produced so that it forms a broad short lobe.

Madagascar. 574.

152. *Laccophilus posticus*, Aubé. M.C.—Ovalis, sat latus et convexus, nitidus, rufo-testaceus, prothorace anterior et posterior in medio infuscato, elytris lineis undulatis, haud interruptis, confluentibus, nigris; abdomine pectoreque nigricantibus. Long. 4, lat. $2\frac{1}{2}$ m.m.

This species is closely allied to *Laccophilus complicatus*, but is much smaller, and has the black marks on the elytra more confluent, and the breast darker. The male has the front and middle tarsi much incrassate; the structure of the last ventral segment so far as I can see in the very imperfect examples at my disposal is pretty similar in each sex to what it is in *Laccophilus complicatus*.

Madagascar. 575.

153. *Laccophilus irroratus*, Aubé. M.C. --Ovalis, sat latus, subdepressus, pernitidus, rufo-testaceus, prothorace anterior et posterior longius infuscato, elytris lineis undulatis nigris; abdomine pectoreque nigricantibus. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In this species the infuscation of the thorax is extensive so that the marks on the front margin nearly or quite connect. The black marks of the elytra are very waved, and cover it pretty equally, except that at the base they are more or less abbreviated, so as to give rise to a more or less distinct appearance of a pale fascia there. In the male the front and middle tarsi are but little incrassate, and the last ventral segment is truncate, but a little produced in the middle: in the female this segment has the middle part very broad, but it is sinuate on each side, although the side angles are not produced.

Mauritius. 576.

154. *Laccophilus medialis*, n. sp.—Ovalis, subdepressus, pernitidus, testaceus, elytris in medio fascia lata fusca et ad apicem parcius fusco-irroratis. Long. $3\frac{1}{2}$, lat. 2 m.m.

In this species the dark marks of the elytra are so much abbreviated that there is a very broad pale fascia occupying the base, and only very slightly divided at the suture; the apical portion of the elytra is broadly pale, but the dark marks again appear near the extremity in the form of some irregular irrorations. I have seen only the female, in which the sides of the last ventral segment have the appearance of being simply curved, owing to the middle part being very prominent, and sub-compressed laterally.

Siam, (Bangkok). 577.

155. *Dytiscus variegatus*, Germ. *Laccophilus variegatus*, M.C.—Ovalis, angustulus, minus convexus, nitidus, rufo-testaceus, prothorace anterior et posterior in

medio infuscato, elytris nigro-suffusis, lateribus, fascia obliqua basali alteraque ultra medium ad suturam interruptis, testaceis; antennis extrorsum infuscatis. Long. 4, lat. $2\frac{1}{2}$ m.m.

The marks of the elytra vary somewhat in this species, the pale marks on them being sometimes much reduced; when the undulated dark marks are very confluent it is only by opening the elytra that the undulated yellow spaces separating them can be traced. The male has the front and middle tarsi a good deal incrassate, and the last ventral segment is much produced in the middle; and in the female the form of this part differs comparatively little from the other sex.

Europe: Corsica. Not common, and in the North altogether wanting; extends to the South of England. 578.

156. *Laccophilus flexuosus*, Aubé. M.C.—Ovalis, minus latus et convexus, nitidus, testaceus, prothorace anterieus et posterius in medio brevissime infuscato; elytris lineis flexuosis duplicatis minus confluentibus, ad basin et ultra medium plus minusve interruptis nigris. Long. 4, lat. $2\frac{1}{2}$ m.m.

This species is closely allied to *Dytiscus variegatus*, Germ. (No. 155), but is a little larger, and the dark colours of the upper surface are less extensive so that the lines on the elytra are more distinctly separated: these marks are however variable, being sometimes so much reduced that the elytra appear pale; generally there are pale marks left at the base and before the apex similar to those of *Dytiscus variegatus*, but in some specimens the dark lines are very little interrupted, and then the pale spots alluded to are correspondingly reduced: the under surface is nearly always pale, but occasionally the breast and ventral segments are infuscate. The male has the front and middle tarsi a good deal incrassate, and the apical ventral segment is but little produced in the middle. In the female this segment is produced in the middle, and oblique, and a little sinuate on each side: but in this sex the sexual characters are instable, sometimes the form of this segment is different on the two sides, the sinuation being then very deep on the right side, while the left remains as usual; the structure of the epipleuræ of the elytra is subject to much variation in this sex, for in some individuals the inflexed portion of the wingcase becomes broader before the apex, and is then deeply impressed, while in other individuals, it does not depart from the form that exists in the male. The variation of the epipleuræ appears to occur throughout all the area in which the species is found; but the females with the peculiar unsymmetrical last ventral segment, I have only found to occur in the western part of the area of distribution.

Widely distributed in Asia, from Mesopotamia to Japan: Persia, Northern India, Sumatra, Hong Kong, Formosa. 579.

157. *Laccophilus ponticus*, n. sp.—Ovalis, sat latus, minus convexus, pernitidus, rufo-testaceus, prothorace anterieus in medio dilute infuscato, elytris lineis undulatis nigris, ad basin maculatim interruptis. Long. 4, lat. $2\frac{1}{4}$ m.m.

The specimens of this species at my disposal are in bad condition, and their colour therefore rather indistinct: the prothorax is only indistinctly infuscate on the front margin, and at the base there seems to be a small spot on each side of the middle. The lines on the elytra are thick lines extremely waved, not interrupted beyond the middle, but more or less broken near the base so as to cause there some spots. The male has the front and middle tarsi a good deal incrassate: and the apical ventral segment truncate but much produced and acuminate in the middle, so as to appear rather deeply sinuate on each side; in the female the middle part of the segment is still longer, and the lateral oblique sinuations are not very distinct.

Mesopotamia. 580.

158. *Laccophilus obtusus*, n. sp.—Ovalis, minus convexus, angustus, nitidus, testaceus, elytris lineis flexuosis ante basin desinentibus, ultra medium interruptis et versus apicem irregularibus fuscis. Long. $3\frac{3}{8}$, lat. 2 m.m.

The thorax is immaculate; the elytra are marked with flexuous lines, which leave the basal part untouched, though near the shoulder and the suture they reach close to the base; these lines in their front portions consist of pairs, but towards the apex are irregular and become more like irrorations, before the apex they are interrupted by a pale space extending from the sides but not reaching the suture. The male has the front and middle tarsi much incrassate, and the apical ventral segment a good deal produced in the middle and sinuate on each side: in the female the middle portion of the segment is still more elongate.

Singapore. 581.

159. *Laccophilus derasus*, n. sp.—Ovalis, minus convexus, haud elongatus, vix angustus, nitidus, testaceus, elytris lineis flexuosis sat vagis, ante basin late desinentibus, ultra medium interruptis, fuscis. Long. $3\frac{1}{4}$, lat. vix 2 m.m.

This species is broader in front than *Laccophilus obtusus*. It has the prothorax immaculate; the elytra marked with dark waved lines, which become dilute anteriorly and are altogether wanting on the basal portion, they also scarcely extend to the apex, and are interrupted beyond the middle by a pale space extending from the sides. I have seen only the female, which has the apical ventral segment forming a broad lobe in the middle and sinuate on each side much as in *L. obtusus*.

Siam, Bangkok. 582.

160. *Laccophilus parvulus*, Aubé. M.C.—Ovalis, minus convexus, nitidus, testaceus, elytris disco lineis undulatis valde abbreviatis suturaque fuscis, abdomine obscuro. Long. $3\frac{1}{2}$, lat. 2 m.m.

This is a small species, comparatively little narrowed in front, and with the dark marks on the elytra reduced to some (about five) very short flexuous lines on the middle, so that they leave a considerable space at the base, and all the apical half immaculate, the suture however is dark for the greater part of its length; and in some specimens these marks take a much greater development, so that there may be a subapical patch of small marks, and also some small irregular marks close to the base, the central batch of marks still remaining more or less distinct from the smaller basal and apical ones. In the male the front and middle tarsi are moderately incrassate and the apical ventral segment is a good deal produced in the middle and sinuate on each side; in the female the apical portion of the segments forms a broader and more prominent lobe in the middle than it does in the male, and is a little more distinctly sinuate close to the outer angle.

I am by no means sure that this is really the species described by Aubé as *L. parvulus*.

Sumatra. 621.

161. *Laccophilus dispersus*, n. sp.—Ovalis, sat latus, brevis, nitidus, testaceus; elytris lineis flexuosis ante basin late desinentibus, ultra medium interruptis fuscis. Long. 3, lat. $1\frac{2}{3}$ m.m.

This species is again closely allied to *L. deraus*, but is considerably smaller and less elongate; the marks on the elytra are well defined, but similar to those of *L. deraus*. I have seen but a single male; it has the front and middle tarsi distinctly incrassate, and the apical ventral segment is a good deal produced in the middle, and sinuate on each side.

Siam, Bangkok. 583.

162. *Laccophilus undulifer*, Motsch. M.C.—Ovalis, minus convexus, nitidus, testaceus, elytris lineis duplicatis undulatis, minus abbreviatis fuscis, lateribus immaculatis; corpore subtus leviter infuscato. Long. $3\frac{1}{3}$ m.m. lat. $1\frac{2}{3}$ m.m.

In this species the lines of the elytra consist of distinct pairs, and nearly attain the base and the apex, the sutural one being however more abbreviate in front than the others; these lines are quite wanting at the sides. I have seen only one individual in very bad condition; it is a female, and has the apical ventral segment forming a very broad and very short projection in the middle, so as to be slightly sinuate on each side, but the outer angles do not appear to be projecting.

Madras, (Wehncke). 622.

163. *Laccophilus clarki*, (Wehncke), n. sp.—Ovalis, minus convexus, angustus, nitidus, testaceus, prothorace anteriorius et posteriorius in medio nigricante, elytris lineis undulatis fere integris. Long. $3\frac{1}{2}$, lat. vix 2 m.m.

This is a small narrow species, with the dark marks on the elytra largely developed and distinct; they consist of thick lines waved at their edges, and only separated by very narrow yellow marks, and are indeed here and there quite confluent; near the base and beyond the middle in some places the black marks are somewhat reduced however so as to give rise to a slight appearance of a pale spot or two near the base and of a pale fascia beyond the middle; the under surface is more or less infuscate. The male has the front and middle tarsi a good deal incrassate, and the apical ventral segment somewhat produced in the middle and sinuate on each side; in the female the hind part of the segment forms a broad much produced lobe, and the extreme sides are slightly prominent, so that close to the sides the hind margin appears deeply sinuate.

Australia; Rockhampton, Gayndah, Moreton Bay. 584.

164. *Laccophilus quadrimaculatus*, (Wehncke) n. sp.—Ovalis, convexus, nitidus, testaceus, niger, capite, thorace, antennis pedibusque quatuor anterioribus testaceis, thorace basi breviter nigro; elytris in medio macula parva laterali, aliaque post medium majore rufis, apice piceo, pedibus posterioribus piceis. Long. $3\frac{1}{4}$, m.m., lat $1\frac{2}{3}$ m.m.

I have seen only a single female of this easily distinguished species, the apical ventral segment is prolonged so as to be very oblique on each side.

Australia (Wehncke). 623.

165. *Laccophilus lituratus*, n. sp.—Ovalis, sat latus, subdepressus, nitidus, testaceus, elytris fuscis, fascia sub-basali conspicua, maculisque duabus ad latera, testaceis. Long. 3, lat. $1\frac{3}{4}$ m.m.

The elytra are in this species fuscous without trace of irroration or flexuous lines, there is a very conspicuous pallid fascia near their base, a pale spot at the side about the middle, and a pale spot beyond this which extends further inwards towards the suture. The male I do not know; the female has the last ventral segment elongate, not at all truncate, and the outline of its hind part at the side a simple curve.

Siam. 592.

166. *Laccophilus pulicarius*, n. sp.—Ovalis, sat latus et convexus, nitidus, testaceus, abdomine elytris que nigricantibus, his facis duabus transversis, apice que testaceis. Long. (elytrorum) 2 m.m.

This is the smallest species of the genus. The elytra are dark without trace of irroration or flexuous lines, and show a band near the base, and another a little beyond the middle yellowish, this latter being pretty widely interrupted at the suture, the apex is also pale, and there is a small pale spot on the lateral margin between the two fasciæ.

I do not know the male; and of the female I have seen but one individual (which has lost its head), this has the last ventral segment truncate, and with a very slight projection in the middle of the hind margin; on each side of this it is distinctly oblique, but there is no sinuation. Though the species has some resemblance of colour to *L. quadrimaculatus*, it is much smaller, and the apical ventral segment in the female is of a different shape.

Bangkok. 593.

167. *Laccophilus cingulatus*, n. sp.—Ovalis, subdepressus, sat latus, permitidus, testaceus, prothorace anterior et posterior in medio, abdomine pectoreque infuscatis; clytris fuscis, fascia sub-basali fere integra pallida, colore fusco lineis valde flexuosis angustissimis diviso. Long. $3\frac{1}{4}$, lat. $1\frac{3}{4}$ m.m.

The dark marks of the elytra in this species are so extended as to make the elytra appear entirely dark, the irregular pale marks which separate the dark lines being very reduced; on the other hand the pale fascia near the base is remarkably definite and conspicuous. The male has the front and middle tarsi but little incrassate, the apical ventral segment is a little produced in the middle so as to be oblique, but not sinuate on each side.

Australia. 585.

168. *Laccophilus basalis*, Motsch. M. C.—Ovalis, subdepressus, permitidus, testaceus, clytris fusco-suffusis, colore fusco lineis valde flexuosis diviso, et ante apicem plus minusve interrupto et desinente, fascia sub-basali fere integra pallida. Long 3, lat. $1\frac{1}{2}$ m.m.

This species bears a great resemblance to *L. cingulatus*, but the thorax is without dark marks, and the underside is pale, and the dark marks of the elytra are not so entire on the apical portion, for besides the very conspicuous pale band near the base, there is an interruption of the dark colour before the apex so as to form a very broken pale band, and the dark colour does not extend quite to the apex. The male has the front and middle tarsi but little incrassate, and the apical ventral segment is a little produced in the middle so as to be oblique but not sinuate on each side; the female appears to me to have the apical segment entire, and simply curved at the sides so as to be without sinuation, but the only individual I have seen of this sex is in such bad condition that I cannot speak

very positively as to its structure. I am by no means sure that this is really the species Motschoulsky intended to describe as *L. basalis*.

Malacca. 586

169. *Laccophilus chinensis*, Boh., M.C.—Ovalis, subdepressus, sat latus, pernitidus, rufo-testaceus, elytris fere æqualiter fusco-irroratis, fascia sub-basali conspicua pallida. Long. $3\frac{1}{2}$, lat. 2 m.m.

In this species the fuscous marks on the elytra can scarcely be traced as being flexuous lines, but appear to be small sinuous dark marks, separated by yellow ones of about the same size: the sides, however, and a conspicuous fascia near the base are yellow. The male has the front and middle tarsi but little dilated; its apical ventral segment has the hind margin a good deal oblique on each side, but very little sinuate; in the female it is still less truncate on each side, but yet scarcely sinuous.

China. 587.

170. *Laccophilus restrictus*, n. sp.—Ovalis, subdepressus, nitidus, testaceo-rufus, elytris fere æqualiter fusco-irroratis; prothorace valde transverso. Long. $3\frac{3}{4}$, lat. 2 m.m.

The sexes in this species are not very easy to distinguish: the male has the front and middle tarsi but little incrassate, and the apical ventral segment has the hind margin acuminate in the middle and very oblique at the sides; in the female the middle part is scarcely longer than in the male, but it forms a broader lobe rounded at the extremity, and the hind margin close to the sides is more deeply sinuate. This species has the outline less narrowed in front than is usual in the genus.

Egypt. 588.

171. *Laccophilus solutus*, n. sp.—Ovalis, subdepressus, nitidus, testaceo-rufus, elytris lineis tenuissimis, flexuosis et disintegratis, fuscis. Long. 4, lat. $2\frac{1}{2}$ m.m.

The dark marks on the elytra are fine, linear, and very irregular, and more or less broken up into short pieces, they leave the sides untouched, and become obsolete at the extremity. In the male the front and middle tarsi are moderately incrassate; the apical ventral segment is produced in the middle and sinuate at each side of the hind margin, so as to form a small prominent middle lobe: in the female the hind margin is broadly rounded, being not much produced in the middle.

China. 589.

172. *Laccophilus cognatus*, n. sp.—Ovalis, parum convexus, nitidus, testaceo-rufus, elytris lineis flexuosis fuscis integris, sed valde irregularibus. Long. 4, lat. $2\frac{1}{4}$ m.m.

This species is similar in colour to *L. solutus*, but is different in form, the head being narrower; the marks on the elytra are very distinct, excessively irregular, and cover the whole surface except the lateral margin. The male has the front and middle tarsi moderately incrassate: the apical ventral segment is much sinuate on each side at the hind margin so that the middle forms a prominent lobe: the female I have not seen.

India, (Nagpore, coll. A. Murray). 1176.

173. *Laccophilus religatus*, n. sp.—Ovalis, subdepressus, nitidus, testaceo-rufus, elytris lineis sat latis, undulatis, fere integris, fuscis. Long. 4, lat. $2\frac{1}{4}$ m.m.

The lines on the elytra in this species are distinguishable as distinct waved lines, or rather as moderately thick lines with waved edges, these undulations of the margins being in some places so great as almost to form connections between the different lines. The male has the front and middle tarsi a good deal incrassate: it has the last ventral segment truncate, and not produced in the middle; in the only specimen I have seen there is a rather deep emargination or notch on the right side of the hind margin, but there is only very little trace of such a notch on the left side.

Australia. 590.

174. *Laccophilus addendus*, n. sp.—Ovalis, minus convexus, nitidus, testaceus, prothorace anterieus et posterius in medio sub-infusato, elytris fusco-irroratis, irrorationibus ad basin inaequaliter desinentibus. Long. 4, lat. $2\frac{1}{4}$ m.m.

The marks on the elytra are in this species so broken up as to have the appearance of irrorations, some of these irrorations extend in an irregular linear manner to the base, while others of them are abbreviated, there is thus formed an indefinite, broken pale fascia at the base. In the female the hind margin of the apical ventral segment forms in the middle a broad, short, rounded lobe, and is sinuate on each side so that the lateral angles are distinctly prominent.

In M. de Bonvouloir's collection is a larger male individual, with the irrorations of the elytra smaller and more numerous, which may perhaps be a variety of this species, it has the front and middle tarsi much incrassate: and the hind margin of the apical ventral segment is a good deal prolonged in the middle and sinuate on each side.

Madagascar. 591.

I. 15.—Genus *NEPTOSTERNUS*.

Prosternal process tridentate; spurs of hind tibiæ acuminate at apex. Head rather short; hind angles of prothorax very acute.

The unique species inhabits Madagascar and East Africa.

175. *Neptosternus ornatus*, n. sp.—Oblongo-ovalis, sat latus, subdepressus, nitidus, lævigatus, rufus, elytris fuscis, maculis decem rufis; prothorace angulis posterioribus retrorsum spectantibus, per-acutis. Long. $3\frac{1}{2}$, lat. 2 m.m.

The peculiar hind angles of the thorax of this species will prevent its being confounded with any other known to me. I have examined about twelve individuals, in all of which the front tarsi are slender, and I do not see any sexual distinction.

Madagascar: Zanzibar. 594.

IV. 2.—SERIES **Dytisci Complicati.**

Dytiscidæ having the metathoracic episternum extending so far towards the middle of the body as to reach the middle coxal cavity; internal laminae of hind coxæ closely coadapted by a straight suture.

The members of this extensive and complex series may be thus tabulated:—

Hind coxæ separated from metasternum by a directly transverse suture; mentum reaching as far forward as front of the labrum.	}	<i>AMPHIZOA.</i> (<i>Vide</i> p. 318.)
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In all the following aggregates the hind coxæ are separated from metasternum by a suture directed forwards as it proceeds outwards, and the mentum does not extend so far forward as the labrum:—

Prosternum deflected between the front coxæ so that the prosternal process is placed on a quite different plane of direction from that of the prosternum; this not incrassate along middle; front tarsi usually 4-jointed.	{ Prosternal process } much deflected } from direction } of prosternum. } Front tarsi } usually with } only 4 joints. }	— —	HYDROPORIDES. (<i>Vide</i> p. 319.)
Prosternum not deflected between the front coxæ; this not incrassate along middle; front tarsi usually 4-jointed.	{ Prosternal process } but little de- } flected from } plane of direc- } tion of pro- } sternum; front } tarsi 5-jointed, } scutellum not } visible. }	— —	METHILES. (<i>Vide</i> p. 489.)

Prosternal process on same plane of direction as the prosternum: front tarsi 5-jointed.	Inferior spur of hind tibia not, or but little, broader than the other.	Hind margins of joints of posterior tarsi not set with flattened and adpressed cilia.	Stigmata of last two dorsalsegments not, or but little, broader than the preceding ones; outline of eye notched by the free margin of front of head.	COLYMBETIDES. (Vide p. 490.)
			Stigmata of last two dorsal segments enlarged, each on the penultimate segment being about one-fourth of total breadth of the segment: circular outline of eye uninterrupted.	DYTISCINI. (Vide p. 632.)
		Hind margins of joints of posterior tarsi provided externally with flattened adpressed cilia.	—	HYDATICIDES. (Vide p. 647.)
	Inferior spur of hind tibia dilated, much broader than the other.	—	—	CYBISTRINI. (Vide p. 700.)

I. 16.—Genus *AMPHIZOA*.

Antennæ with the seven or eight basal joints more or less distinctly punctate, the others glabrous and shining. Hind coxæ connected to the metasternum by a nearly straight transverse suture; metasternum marked in the middle behind by an indistinct transverse suture.

The three rare species are found in the western parts of North America.

176. *Amphizoa insolens*, Leconte, M.C. Tom. I.—Nigro-picea, sine pubescentia, opaca, rugulosa; thorace elytris multo angustiore, lateribus serrulatis, pone medium sinuatis, angulis posterioribus acutis, medio longitudinaliter canaliculato; elytris punctato-rugulosis, sat distincte striatis; prosterni processu brevi, lato. Long. $11\frac{1}{2}$, lat 6 m.m.

North America (California). 232.

177. *Amphizoa josephi*, Matthews, Cist. Ent. I, p. 119.—Nigricans, sine pubescentia, opaca, subdepressa; thorace elytris multo angustiore, lateribus

serrulatis, pone medium subsinuatis, angulis posterioribus subrectis, medio longitudinaliter canaliculato; elytris punctato-rugulosis, sat distincte striatis; prosterni processu sat elongato. Long. $12\frac{3}{4}$, lat. 6 m.m.

I have seen only a single individual of this species, which is closely allied to *A. insolens*, but has the hind angles of the thorax less acute; the elytra are more elongate and less convex, and the prosternal process is more elongate and parallel sided. The legs are longer than in *A. insolens*, and though the tarsi are broken off from the individual, except the two basal joints of the posterior ones, these are much longer than in *A. insolens*.

North America; (Vancouver's Land.) 233.

178. *Amphizoa lecontei*, Matthews, Cist. Ent. I. p. 121.—Ruto-nigra vel picea, sine pubescentia; opaca, obsolete rugulosa; thorace elytris multo angustiore, lateribus obsolete serratis, pone medium haud sinuatis, angulis posterioribus subobtusis, basi recte truncato, medio longitudinaliter canaliculato; elytris ampliatas, minus fortiter rugulosis, minus distincte striatis, longitudinaliter subcostatis, epipleuris latis; prosterni processu anterieus elongato. Long. $12\frac{3}{4}$ lat $7\frac{1}{2}$ m.m.

This species is readily distinguished by the broad elytra, which are longitudinally subcostate, and have their inflexed part much broader, and by the fact that the edges of the prosternal process are continued forwards beyond the front coxæ towards the front edge of the thorax, which however they do not nearly reach.

North America; (Vancouver's Land.) 234.

III. 2.—Tribe HYDROPORIDES.

Prosternum deflected between the front coxæ, so that the prosternal process has a different plane of direction from that of the prosternum. Front tarsi usually four-jointed (five-jointed in *Sternopriscus*, *Necterosoma* and *Celina*). Scutellum usually quite concealed (but exposed in *Celina*).

This is the most extensive tribe of the Dytiscidæ.

Posterior coxal
cavities widely
separated; each
with elongate
coxal excision,
and extrarimal
lobe.

— — — —

HYDROVATINI.
(*Vide* p. 320.)

Posterior coxal cavities destitute of coxal excision, and extra-rimal lobe.	Scutellum invisible.	Ventral segment soldered to border of posterior coxæ.	—	BIDESSINI. (<i>Vide</i> p. 336.)	
		Hind coxal cavities separated, not all protected by the adpressed coxal processes.	—	HYDRINI. (<i>Vide</i> p. 370.)	
		First ventral segment free, not soldered to the coxæ.	Hind coxal cavities nearly or quite contiguous, being prolonged inwards above the coxal processes, and so protected by the latter.	Mesosternum placed nearly on the same plane as the metasternum and therefore much exposed between this and the prothorax; its epimeron very narrow, sublinear, and indistinct.	STERNOPRISCUS. (<i>Vide</i> p. 384.)
		—	—	Mesosternum placed at an angle with the metasternum and thus much concealed; its epimeron triangular and distinct.	HYDROPORINI. (<i>Vide</i> p. 389.)
		Scutellum exposed.	—	—	CELINA. (<i>Vide</i> p. 487.)

II. 6.—Group HYDROVATINI.

Prosternal process almost triangular, its posterior margin forming the base of the triangle, hind coxal cavities not contiguous, with broad coxal processes incised behind by a distinct coxal excision, external to which is a free, prominent, portion of the process (=extra-rimal lobe.)

There are only two genera included in this family; they may be readily distinguished as below, one is an autogenus, the other is rich in species.

Coxal excision longer in the longitudinal than in the transverse direction; labrum visibly exerted. Numerous species.	} } }	HYDROVATUS. (<i>Vide</i> p. 321.)
Coxal excision shorter in the longitudinal than in the transverse direction; only the fringes of the labrum visible. A single species.	} } }	QUEDA. (<i>Vide</i> p. 336.)

I. 17.—Genus *HYDROVATUS*.

Coxal excision longer in the longitudinal than in the transverse direction; labrum visibly exerted; length not exceeding 5 m.m. Numerous species, of short convex form, from various parts of the world.*

179. *Hydrovatus clypealis*, Sharp, Pet. Nouv. II, p. 61.—Brevissimus, minus dense et distincte punctatus, livide ferrugineus, coxis fortiter minus crebre punctatis. Long. $2\frac{1}{3}$ – $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

Mas, nitidus, clypeo medio leviter producto et truncato, utrinque obsolete sinuato; antennis crassis.

Fem., subopaca, clypeo rotundato, antennis sat crassis.

Antennæ short, joints 4–10 differing but little from one another, in the male transverse, in the female about as long as broad. In the male the basal joints of the front and middle tarsi are much dilated.

This species is closely allied to *Hyphydrus cuspidatus*, but is rather smaller, and is readily distinguished by the difference of the antennæ and the sexual characters, by its less distinct punctuation on the upper surface, and the much less closely and regularly punctured coxæ.

Europe. South of England, (Portsmouth), France, (Rouen, Bourgogne, Landes), Algeria, Corsica, (Porto Vecchio, Revelière), Sardinia. 1.

180. *Hyphydrus cuspidatus*, Kunze, *Oryzoptilus cuspidatus*, M.C.—Brevis, latus, rufescens, prothorace basi medio elytrisque obscurioribus, his fascia interrupta subbasali sat distincta alteraque obsolete pone medium rufescentibus, versus suturam sat crebre et fortiter lateribus obsolete punctatis; coxis posterioribus fortiter crebre punctatis. Long. $2\frac{3}{4}$ –3, lat. $1\frac{2}{5}$ m.m.

The male of this species has the basal joint of the front and middle tarsi dilated,

* To this genus the following species, unknown to me, should probably be assigned:—

Hydroporus carbonarius, Clk. (No. 1,349 huj. op.); Java. *Hydroporus orientalis*, Clk. (No. 1,411), near No. 200; China. *Hydroporus portmanni*, Clk. (No. 1,418); Mexico. *Hydroporus pudicus*, Clk. (No. 1,422), near No. 192; Java. *Hydrovatus ferrugatus*, Regt. (No. 1,450); Manilla. *Hydrovatus hornii*, Crotch (No. 1,451), near No. 221; Texas. *Hydrovatus maculatus*, Motsch. (No. 1,452); India. *Hydrovatus obscurus*, Motsch. (No. 1,453), near No. 193; Ceylon. *Hydrovatus punctipennis*, Motsch. (No. 1,454); India. *Hydrovatus rufescens*, Motsch. (No. 1,455); India. *Hydrovatus seminarius*, Motsch. (No. 1,456); India. *Hydrovatus subrotundatus*, Motsch. (No. 1,457); India.

that of the middle foot more distinctly than that of the front one. The female is generally dull and not at all shining, while the male is shining, but individuals of the female occur similar in sculpture to the male.

This species varies in colour, the spots on the elytra being sometimes distinct, while in other specimens they can scarcely be seen, and the upper surface becomes sometimes of a nearly unicolorous castaneous shade. It is possible that further specimens may show I have included more than one species under this name.

A single female from Abyssinia, in the collection of the Genoa Museum, differs little from the European specimens, but I think a knowledge of the male would most likely show it to be a distinct species.

Europe. (France, Belgium, Corsica, Sardinia, Germany, Dalmatia, Italy.) 2.

181. *Hydrovatus flammulatus*, n. sp.—Brevis, latior. rufo-testaceus, prothorace basi in medio elytrisq[ue] fuscis, his fortiter punctatis, margine externo fasciisque flammulatis parum discretis, testaceis, coxis posterioribus fortiter crebreque punctatis. Long. 3 m.m., lat. $1\frac{3}{4}$ m.m.

The species is very similar to *Hyphydrus cuspidatus*, but is considerably broader, and the elytra are more coarsely punctured. The only individual I have seen has the upper surface shining, and is probably a male; its antennæ are more slender and a little longer, than in the corresponding sex of *H. cuspidatus*. The anterior tarsi do not appear to be dilated.

South Africa, (Eastcourt, 27. 3. 1875). 1123.

182. *Hydrovatus maculatus*, n. sp.—Brevis, latus, nitidus, rufo-testaceus, prothorace basi in medio elytrisq[ue] fuscis, his signaturis testaceis magnis parum discretis; versus suturam sat crebre lateribus obsolete punctatis; coxis posterioribus fortiter crebreque punctatis. Long. $2\frac{3}{4}$, lat. vix. 2 m.m.

This species is excessively similar to such broadest specimens of *Hyphydrus cuspidatus*, (No. 180) as have the yellow spots on the elytra large and conspicuous; it is however broader, and the male has the antennæ slender. The four individuals before me are exactly similar to one another, all have the surface shining, and the basal joints of the front and middle tarsi appear to be without dilatation.

Mesopotamia, (Dr. Millingen). 1124.

183. *Hydrovatus simplex*, n. sp.—Brevissimus, sat latus, convexus, castaneus vel piceus, sat nitidus; elytris versus suturam sat crebre et fortiter, lateribus obsolete punctatis; coxis posterioribus fortiter crebreque punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

The male differs from the female by the basal joint of the middle tarsus being a little dilated; the first joint of the front tarsus is also very slightly dilated.

This species is extremely similar to the small dark varieties of *Hyphydrus cuspidatus* (No. 180), but is rather narrower, and the front tarsi in both the sexes are more slender, and the basal joints of the front and middle tarsi are less dilated in the male; the female seems to be nearly as shining as the male. The spotting of the elytra is more indistinct than in *Hyphydrus cuspidatus*.

Europe. Corsica, M. Damry. Elmas, Sardinia, 9. 5. 73, Gestro. Malaga. 152.

184. *Hydrovatus longicornis*, n. sp.—Brevissimus, sed posterius conspicue attenuatus et acuminatus, ferrugineus, elytris crebre fortiter punctatis; clypeo vix perspicue emarginato. Long. $2\frac{1}{2}$ m.m., lat. $1\frac{3}{4}$ m.m.

Mas, antennis perelongatis, articulis 5-7 latoribus, clypeo utrinque sinuato.

Fem., antennis sat elongatis, tenuibus, simplicibus.

The species has no trace of spots on the elytra; the male will be readily distinguished by its very long antennæ, with the middle joints dilated. In the female the antennæ are very much shorter than in the male, but still they are elongate, each joint being longer than broad.

About the size of *Hydrovatus clypealis* (No. 179), but very distinct by the form of the front of the head as well as by the elongate antennæ; the coxæ are wider than in *H. clypealis* and are more sparingly punctured, and their intrarimal portions are more depressed, so that a greater approximation of the base of the trochanters is possible; the legs are longer and more slender than in *H. clypealis*, but the general structure of the undersurface except in these points is very similar.

Egypt, (Dr. C. Millingen). 3

185. *Hydrovatus pictulus*, n. sp.—Latus, brevissimus, convexus, nitidus, ferrugineus, supra fuscus, elytris evidenter rufo-signatis; thorace crebre, elytris sparsim punctatis. Long. $2\frac{1}{2}$, lat. 2 m.m.

Scarcely longer than *Hyphydrus cuspidatus* (No. 180), but a good deal broader, and so with the sides more curved, and easily distinguished from the other species by the very distinct red markings on the elytra. The antennæ are very short, and rather stout, the joints being rather compressed, and transverse. The margin of the clypeus is quite distinct and is most evident in the middle, this part being rather produced and truncate. The under side is very similar to *H. cuspidatus* but the coxæ are not quite so closely punctured.

Madagascar, (coll. Bonvouloir, and Brussels Museum, under the name of *Hydroporus fasciatus* Chev.) 4.

186. *Hydroporus pustulatus*, Melsh., *Oxygnathus cuspidatus*, M.C.—Brevissimus, latus, convexus, alutaceus, fere opacus, ferrugineus, supra rufo-testaceus, prothorace

basi medio elytrisq̄ue nigricantibus, his maculis magnis rufis ; prothorace subtiliter fere obsolete punctato ; elytris crebre subtiliter, coxis crebre fortiter punctatis. Long. $2\frac{3}{8}$, lat. $1\frac{1}{8}$ m.m.

The male differs from the female only by the considerable dilatation of the basal joint on the front and intermediate tarsi.

The spots on the elytra sometimes nearly disappear, and it is then of a more or less unicolourous castaneous hue.

This species a good deal resembles the European *Hyphydrus cuspidatus* (No. 180), but is really very distinct therefrom. It is rather broader, the thorax in the middle is longer, the surface is nearly opaque in both sexes, and the punctuation of the elytra is more even, being if anything rather finer at the suture than near the sides, whereas in *Hyphydrus cuspidatus* it is coarse near the suture but becomes quite obsolete towards the sides. In the male of the North American species the front tarsi are broader and flatter, (or less compressed laterally) than in the corresponding sex of the European species, and the dilatation of the basal joint of the front tarsus is a good deal greater.

North America, (Michigan, Massachusetts). 147.

187. *Hydrovatus brevipes*, n. sp.—Brevissimus, latus, convexus, piceus, subopacus, antennis pedibusque rufis ; elytris sat crebre et vix subtiliter, coxis crebre fortiter punctatis. Long. $2\frac{1}{4}$, lat. vix $1\frac{1}{2}$ m.m.

The male is scarcely more shining than the female, but has the basal joints of the front and middle tarsi rather strongly dilated.

This species is smaller, narrower and darker than *Hyphydrus cuspidatus* (No. 180), and the punctuation of the elytra is a little coarser, more sparing, and less evenly distributed : the structure of the tarsi proves it to be undoubtedly a distinct species, for they are considerably shorter in *H. brevipes*, and the joints are of a different shape.

North America, (California). 148.

188. *Hydrovatus compressus*, n. sp.—Brevissimus, latus, convexus, piceus, subopacus, capite prothoraceque rufescentibus, antennis pedibusque rufis, elytris sat crebre subtiliter, coxis posterioribus crebre fortiter punctatis. Long. $2\frac{1}{3}$, lat. $1\frac{1}{2}$ m.m.

This species is extremely closely allied to *Hydrovatus brevipes*, and is perhaps scarcely distinct therefrom, the punctuation of the upper surface however is finer, and the thorax is longer in the middle, so that it forms a more marked and distinct angle over the scutellum. I have seen only two males ; the tarsi in that sex differ but little from those of *H. brevipes*, but the front ones are scarcely so short and broad.

North America, (New Orleans). 149.

189. *Hydrovatus caraibus*, n. sp.—Brevior, convexus, nitidus, ferrugineus, elytris pectoreque fuscis, illis basi crebre fortiter, versus apicem obsolete parvissime punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

This species is convex, and not very broad; the front of the head is very distinctly margined, the surface of the head impunctate. The thorax is at the base closely and rather coarsely punctured, elsewhere the punctures are indistinct. The elytra at the base are deeply and closely punctured, but the punctures become finer and more scanty behind so as to be altogether wanting at the apex; they are dark in colour, without spots, but the apex is pale. The hind coxæ are coarsely punctured.

The individual described is no doubt a female as it has the tarsi quite small; the wing-cases are, however, shining. It is larger than *H. brevipes* (No. 187), and distinguished from it by the closer punctuation of the base of the wing-cases, which also in the female of *H. brevipes* are dull.

Guadaloupe. 1177.

190. *Hydrovatus aristidis*, Lep. Ann. Soc. Fr., 1879, p. lxxxii.—Crebre punctatus, brevissimus, ferrugineus, elytris thoraceque infuscatis, hoc medio late rufo, illis obscure rufo-signatis; prosterno medio transverso. Long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

Mas, antennis deformibus, articulis intermediis dilatatis, 8–10 simplicibus, 11^o iterum dilatato.

Extremely similar at first sight to *Hyphydrus cuspidatus* (No. 180), but with the punctuation of the upper surface rather closer and coarser; the clypeus is margined, but the margin in the middle is more depressed than in *H. cuspidatus*, and therefore not so distinct. The front and middle tarsi are a good deal longer than in *H. cuspidatus*, and the process of the prosternum is transverse instead of triangular, the front part being truncate instead of acuminate: the punctuation of the coxæ is less close and rather coarser.

I have only seen a single specimen of this species, which I have no doubt is a male: the structure of its antennæ is very remarkable: the first and second joints are simple, the third is broader than second, the fourth is broader than the third, very short, and slightly produced on the inner side, the fifth is extremely short and very broad, being much produced on the inner side, the sixth is very transverse, being just of the width of the fifth, but rather longer than it, the seventh is very large, and is dilated both on the outer and inner sides, eight to ten are simple and rather elongate, while the apical joint is again dilated, being about as long as, but not so broad as, the seventh.

Egypt. 5.

191. *Hydrovatus acuminatus*, Motsch., M.C.—Brevis, sat latus, parce subtiliterque punctatus, testaceo-ferrugineus, supra magis castaneus, antennis tenuibus, simplicibus. Long. 2, lat. vix. $1\frac{1}{2}$ m.m.

Very closely allied to *Hydrovatus clypealis* (No. 179), but smaller and narrower, and with the front and middle tibiæ, only about half as broad, the antennæ more slender but scarcely longer, the hind coxæ are also a little broader.

If, as I suppose, I have both sexes before me, these only differ by the male being slightly more shining than the female.

China, (Kiu Kiang, Lewis), Formosa, Celebes, Lomboek, Sumatra. 6.

192. *Hydrovatus fulvescens*, Motsch., M.C.—Oblongo-ovalis, brevis, sat latus, valde nitidulus, castaneo-testaceus, sparsim subtiliter punctatus, antennis brevibus simplicibus; coxis posterioribus sat fortiter sed sparsim subinæqualiter punctatis. Long. $1\frac{1}{2}$, lat. $1\frac{1}{3}$ m.m.

A very small species, distinguished by its very shining surface, and sparse fine punctuation: the front tibiæ are comparatively slender. I have seen only two individuals, which have the antennæ short, the penultimate joints being not so long as broad; the species is most allied to *Hydrovatus acuminatus*, but is considerably smaller, narrower, and less convex in form, more shining and more sparsely punctured.

East India, sent by Wehncke. 450.

193. *Hydrovatus fuscus*, n. sp.—Brevis, sat latus, nitidus, confertim sat fortiter punctatus, castaneus, antennis tenuibus simplicibus; coxis posterioribus fortiter crebre punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

This species is rather smaller and narrower than *Hyphydrus cuspidatus* (No. 180), and is of more obscure and uniform colour; it has the front tibiæ much thinner, and the antennæ rather more slender. The sexual differences appear to be extremely slight.

Macassar, Jan., 1874, (Beccari), Formosa, China. Though the specimens from these different localities differ slightly, I cannot notice anything to distinguish them as species. 7.

194. *Hydrovatus fasciatus* (Wehncke), n. sp.—Brevis, sat latus, nitidus, confertim minus fortiter punctatus, ferrugineus, prothorace (lateribus exceptis), elytris que picco-castaneis; antennis tenuibus simplicibus; coxis posterioribus fortiter crebre punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

Extremely similar to *Hydrovatus fuscus*, but slightly larger and more elongate, a little different in colour, and with the elytra more finely punctured.

Australia, (Brisbane, Rockhampton). 446.

195. *Hydrovatus sumatrensis*, n. sp.—Brevis, sat latus, nitidus, piceus subtus dilutior, antennis pedibusque testaceis, sat crebre minus fortiter punctatus; antennis tenuibus simplicibus; coxis posterioribus fortiter sed minus crebre subinaequaliter punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$, m.m.

This species is not quite so closely punctured on the hind coxæ as *H. fuscus*, and *H. fasciatus*, to which it is extremely closely allied, and it is also darker in colour. I detect no distinct sexual differences.

Sumatra, (ten individuals sent by Wehncke). 447.

196. *Hydrovatus ovalis* (Wehncke), n. sp.—Ovalis, brevis, sat latus, minus convexus, subnitidus, castaneo-ferrugineus, elytris basi sat crebre, subtiliter punctatis; antennis sat crassis, coxis posterioribus dense fortiter punctatis. Long. vix. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

The antennæ are rather stout, but are simple and not elongate. The surface of the thorax and elytra although little shining, is not evidently coriaceous; the punctuation of the thorax is very fine, and that of the elytra is also rather fine.

Australia, (Brisbane). 156.

197. *Hydrovatus sordidus*, n. sp.—Brevis, latus, nitidus, sat convexus, postice acuminatus, testaceo-ferrugineus, elytris magis castaneis, confertim subtiliter punctatis; antennis tenuibus, simplicibus. Long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

Very similar to *Hydrovatus simplex* (No. 183), hardly as large, slightly broader in proportion, rather less convex, with the punctuation of the upper surface finer, the antennæ scarcely more slender and about the same length; the front tibiæ are rather more slender than in *H. cuspidatus* (No. 180), and the punctuation of the under surface is less dense and distinct. Also very similar to *Hydrovatus fuscus*, but larger, broader, and less convex, the outline more acuminate and prolonged in its hinder part, the front legs rather broader, and the antennæ a little longer.

I have examined twelve individuals, but find no differences by which I can with certainty distinguish the sexes.

Mesopotamia, Egypt, Arabia (El Hedjaz). 8.

198. *Hydrovatus humilis*, n. sp.—Brevis, sat latus, convexus, vix nitidus, castaneus, elytris magis fuscis, sat crebre punctatis; antennis vix tenuibus; coxis posterioribus crebre punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

Very similar to *Hydrovatus simplex*, (No. 183), but rather narrower, not so shining, and with the elytra not quite so coarsely punctured, and the front tibiæ rather more slender. The only two individuals I have seen have the tarsi quite

simple. The species is also closely allied to *H. sordidus* (No. 197), but is a good deal narrower, and the antennæ are not so slender.

Madagascar, (fide Wehncke). 153.

199. *Hydrovatus elevatus*, n. sp.—Subrotundatus, convexus, ferrugineus, nitidus, crebre subtiliter punctatus, in elytris obsolete reticulatus; antennis brevibus simplicibus, coxis posterioribus sat fortiter sed minus crebre punctatis, nitidulis. Long. $2\frac{2}{3}$, lat. $1\frac{1}{5}$ m.m.

I have seen only three individuals, which show me no sexual differences; the antennæ are short and rather slender, the joints from four to ten being about as long as broad. The species is a little longer than *Hyphydrus cuspidatus* (No. 180) and a little more convex, the punctuation is less deep, and the anterior tibiæ are slightly broader.

Celebes, (Macassar, Jan., 1874, Beccari). 449.

200. *Hydrovatus tinctus*, n. sp.—Sat latus, nitidus, ferrugineus, supra fusco-castaneus, subtiliter vix crebre punctatus; antennis tenuibus simplicibus; elytris ad apicem sub-obtusis; coxis posterioribus fortiter sed minus crebre subinæqualiter punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

Rather smaller than *Hyphydrus cuspidatus*, (No. 180) especially narrower and more parallel, darker in colour, more shining, more finely punctured; the coxæ much more sparingly punctured; the antennæ rather shorter and a good deal thinner. The species is excessively close to *H. sumatrensis*, (No. 195) but is a good deal smaller, and has the punctuation of the elytra more obsolete.

Siam, (Bangkok). 9.

201. *Hydrovatus cribratus*, n. sp.—Ferrugineus, latus, elytris fortiter crebriusque punctatis, prothoracæ basi subtiliter punctato, coxis parce punctatis. Long. $2\frac{1}{4}$, lat. $1\frac{1}{2}$ m.m.

Mas, antennis elongatis, articulis intermediis latioribus, unguiculis anterioribus elongatis.

Fem., antennis tenuibus, simplicibus, sat elongatis.

Clypeus very distinctly margined, especially in the male, in which sex it is scarcely rounded, but is very slightly emarginate on each side. The antennæ in the male are rather stout, and the intermediate joints, especially the sixth and seventh, are a good deal thicker than the others; in the female the antennæ are very slender. The punctuation of the elytra is close and very distinct.

This species is closely allied to *Hydrovatus longicornis*, (No. 184) but is narrower,

the antennæ of the male are not quite so greatly developed, and the front of the head departs much less from the form of *H. cuspidatus*; the punctuation of the elytra is closer and much more distinct.

Africa, (Gaboon). 10.

202. *Hydrovatus confertus*, n. sp.—Brevissimus, latus, brunneus, subopacus, evidenter reticulatus, elytris crebre (fere dense) punctatis; clypeo medio subemarginato. Long. $2\frac{1}{4}$, lat. $1\frac{2}{3}$ m.m.

Mas, antennis crassiusculis, medio leviter incrassatis.

Fem., antennis tenuibus simplicibus.

Smaller than *Hyphydrus cuspidatus*, very similar to *H. clypealis* (No. 179), even slightly shorter in proportion to its length; the whole of the upper and under surface is covered with a fine distinct dense reticulation, which makes it opaque; the thorax bears scattered extremely fine punctures, and the elytra are more closely punctured than in the other species of the group, the punctures being rather deep and distinct but not coarse; the punctures on the coxæ are not dense. The margin of the clypeus is very indistinct, and the front of the clypeus appears a little emarginate in the middle. The antennæ of the female are about as long as in *H. cuspidatus*, (No. 180) but considerably thinner than in the same sex of that species. The antennæ in the male are a little thinner at the base and apex, but slightly thicker in the middle than in the male of *H. cuspidatus*. The male tarsi have the basal joint only slightly dilated, with the front claws not elongate, the tibiæ are not quite so broad as in *H. cuspidatus*.

Siam. 13.

203. *Hydrovatus subtilis*, n. sp.—Ferrugineus, latus, subtiliter reticulatus, subopacus, subtiliter sat crebre punctatus: clypeo obsolete marginato, subtruncato. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

Mas, antennis crassiusculis, medio incrassatis.

About as large as *H. clypealis* (No. 179); not so broad in the middle as is *H. cuspidatus* (No. 180), and so more parallel. Very closely allied to *H. confertus*, but rather larger, and more parallel in form, and the punctuation less close, and the reticulation of the surface less evident; in the male the tarsi are a good deal broader and the antennæ are a little longer and stouter, and there is an increase in the size of the joints towards the extremity, commencing at the sixth joint, the fifth and sixth joints are however only slightly enlarged, but the seventh and eighth are much more distinctly so, the ninth is a good deal narrower than the eighth.

Siam. 14.

204. *Hydrovatus acutus*, n. sp.—Latus, subtiliter reticulatus, subopacus, in elytris crebre evidentè punctatus, testaceo-ferrugineus supra leviter infuscatus; clypeo indistinctè marginato, subtruncato; coxis posterioribus minus crebre fortiter punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

Mes, antennis longioribus ante medium incrassatis.

Extremely similar to *H. subtilis* (No. 203), but with the incrassate joints of the male antennæ different, the fourth and fifth joints being thicker than the others, while the sixth is a little and the seventh decidedly narrower than the preceding ones: the extremity of each wing-case is very slender and acuminate so as almost to form a spine.

Celebes, (Jan., 1874, Beccari). Sumatra. 448.

205. *Hydrovatus fractus*, n. sp.—Ferrugineus, latus, subnitidus, crebre fortiter punctatus, prothoracis lateribus subparallelis. Long. $2\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

The margin of the clypeus is extremely obsolete; the elytra are closely and coarsely punctured, the coxæ not closely, and not so coarsely. The size is nearly that of *H. cuspidatus* (No. 180) but the form is not quite so broad in the middle. The antennæ are very slender and quite simple; the front tibiæ not quite so broad as in *H. cuspidatus*. The species may be readily distinguished from its allies by the difference in the outline when looked at from the sides, it is then seen that this insect has the thorax a good deal more parallel-sided, and the elytra are more curved in and contracted at the shoulders, so that the lateral outline of the thorax and elytra is less continuous.

I am not at all sure of the sex of the individual described, the front tarsi are broad, but the basal joint is scarcely so broad as the following one.

Siam. 15.

206. *Hydrovatus crassulus*, n. sp.—Ferrugineus, nitidus, crebre fortiter punctatus, convexus, sat latus, postice acuminatus. Long. $2\frac{1}{8}$, lat. $1\frac{1}{3}$ m.m.

A very convex species, a good deal smaller than *H. clypealis* (No. 179). The antennæ are moderately long and stout. The thorax becomes but little broader towards the base, and the epipleural line of the elytra is much curved behind the shoulder. The coxæ are closely and coarsely punctured.

Brazil. (Santa Rita, August 1850, Dr. R. F. Sahlberg). 17.

207. *Hydrovatus parallelus*, n. sp.—Angustulus, subparallelus, minus convexus, testaceus, subnitidus, sparsim punctatus, ad apicem breviter acutus. Long. 2, lat. $1\frac{1}{6}$ m.m.

Antennæ rather short, and stout. Clypeus extremely obsolete marginated. Thoracic punctuation very slight. Elytra rather sparingly but distinctly and evenly punctured. Coxæ sparingly punctured.

This species is intermediate in form between *Hydrovatus* and a small *Hydroporus*, but in its structure it departs but little from *Hydrovatus clypealis* (No. 179).

Australia, (Rockhampton). 18.

208. *Hydrovatus pumilus*, n. sp.—Oblongus, minus convexus et elongatus, sat nitidus, testaceus, sparsim subtiliter punctatus, ad apicem breviter acutus; coxis posterioribus sparsim obsolete punctatis. Long. $1\frac{1}{2}$, lat. 1 m.m.

Though very closely allied to *H. parallelus*, this is a little smaller and decidedly shorter. It is the smallest species of the genus and the one in which the articulations of the hind legs are least separate.

Sumatra, (two individuals sent by Wehncke). A specimen from "India" sent also from Wehncke differs in being a little less shining. 451.

209. *Hydrovatus opacus*, n. sp.—Latus, brevis, ferrugineus, evidenter reticulatus, subopacus, crebre fortiter punctatus; antennis sat elongatis; processu prosternali antice obtuso et apice leviter deflexo. Long. $2\frac{3}{4}$, lat. $1\frac{3}{4}$ m.m.

Mas, antennis crassiusculis, medio leviter incrassatis.

Fem., antennis sat tenuibus simplicibus.

Longer but not at all broader than *H. cuspidatus*, (No. 180), and with closer and more regular, and rather coarser punctuation, and with the front tibiæ rather longer and more slender; in the female the antennæ are rather longer than they are in *H. cuspidatus*; and in the male they are a good deal longer than in the female, and the middle joints (especially 4-6), are rather thicker than the others, the tarsi in this sex are also a good deal more dilated than in the other: the form of the point of the prosternal process distinguishes the species from *H. confertus* (No. 202), and its allies, which it greatly resembles.

Australia, (Rockhampton). 12.

210. *Hydrovatus obtusus*, Motsch., M.C.—Testaceo-ferrugineus, minus latus, ad apicem minus acuminatus, crebre evidenter reticulatus, subtiliter sat crebre punctatus. Long. $2\frac{1}{2}$ m.m., lat. $1\frac{1}{2}$ m.m.

Smaller and a good deal narrower than *H. cuspidatus*, (No. 180), and much less acuminate behind, and with the punctuation rather finer and more evenly distributed. The large punctures on the coxæ are rather sparing and subobsolete, being but little impressed.

The only specimen I have seen of this species is in the collection of the Brussels

Museum ; it was obtained from Chevrolat's collection, and is I believe an authentic individual received from Motschoulsky : a second specimen associated with it in Chevrolat's collection is a female of *H. confertus*. *Hydrovatus obtusus* much resembles *H. confertus*, (No. 202), but is narrower and more parallel, considerably less acuminate behind, and has the surface less densely and distinctly punctured ; it is also peculiar in form, the narrowing of the elytra commences nearer the apex than in the allied species, so that the form is broader and more truncate behind.

India. 16.

211. *Hydrovatus politus*, n. sp.—Ferrugineus, nitidus, convexus, prothorace crebre subobsolete punctato ; clytris obsolete punctatis, seriebus punctorum sat distinctis, coxis fere impunctatis. Long. $3\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

Clypeus almost without margin ; antennæ slender and rather short. Thorax with numerous but indistinct punctures. Elytra with the punctuation very obsolete, except that each bears some moderately evident traces of series of longitudinal punctures, one of these series, along the suture, is only distinct towards the apex ; the second series is the most distinct, while the third and fourth are very indistinct. The hind coxæ are almost impunctate, and the hind trochanters rather close to one another.

This species is very closely allied to *H. castaneus*, Motsch. (No. 217), but is rather broader, and a little more acuminate behind ; the sculpture of the surface is more obsolete, but the sutural series of punctures is more distinct, and the antennæ are rather shorter.

Australia, (Port Bowen). 11.

212. *Hydrovatus nigricans*, n. sp.—Nigro-piceus, nitidus, convexus, latus, dense fortiter punctatus, antennis pedibusque rufis ; trochanteribus posterioribus valde distantibus. Long. $4\frac{1}{3}$, lat. $2\frac{7}{8}$ m.m.

Antennæ rather long, and slender. Thorax closely and distinctly punctured. Elytra rather coarsely and closely punctured, and with rudiments of one or two longitudinal series of punctures. Coxæ rather closely but irregularly punctured. Middle and hind legs very widely separated.

The only difference I see between the sexes of this species is that in the male the basal joints of the front and middle tarsi are broadly dilated.

Madagascar. 19.

213. *Hyphydrus uniformis*, Fairm. Ann. Soc. Fr. 1869, p. 185.—Nigro-piceus, subopacus, latus, subrotundatus, convexus, dense fortiter punctatus, antennis pedibusque rufis, illis crassiusculis. Long. $4\frac{1}{4}$ m.m., lat. 3 m.m.

Closely allied to *H. nigricans*, but broader and with the upper surface nearly opaque; but readily distinguished by its shorter, broader antennæ.

I have seen only a single male, whose front and middle tarsi are distinctly dilated.

Madagascar. 150.

214. *Hydrovatus badeni*, (Wehncke), n. sp.—Nigro-piceus, latus, convexus, dense fortiter punctatus, antennis pedibusque rufis. Long. $4\frac{1}{4}$, lat. $3\frac{1}{2}$ m.m.

Mas, nitidus, antennis sat elongatis et gracilibus, tarsis anterioribus et intermediis dilatatis.

Fem., opaca, magis obsolete punctata, antennis paulo brevioribus, tarsis latiusculis, sed articulis basalibus haud dilatatis.

Allied to *Hydrovatus nigricans*, (No. 212), but a good deal larger and with great differences between the two sexes.

Madagascar. 151.

215. *Hydrovatus compactus*, n. sp.—Convexus, ferrugineus, nitidus, lateribus valde rotundatis, crebre sat fortiter punctatus; trochanteribus posterioribus valde distantibus. Long. $3\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

Antennæ rather long and slender; clypeus with a distinct and uninterrupted margin. Thorax closely and distinctly punctured. Elytra rather closely and coarsely punctured. Coxæ externally rather closely punctured. The general form is very convex and compact, and greatly rounded at the sides, so as to be much narrowed in front and behind.

This species is closely allied to *Hydrovatus nigricans*, (No. 212), but is paler in colour and much smaller, it is even more convex and the elytra are less elongate. The individual described is a male but the tarsi are only about half as broad as in the ♂ of *H. nigricans*. In my collection there is a specimen which, from its resemblance in form, I believe to be the female of this species, but it differs remarkably from the ♂ by its sculpture, the whole of the upper surface being quite dull, densely reticulate, and with the sculpture obsolete, and the punctuation of the coxæ is finer and more sparing.

Africa, (Gaboon). 20.

216. *Hydrovatus nigrita* (Wehncke), n. sp.—Nigro-piceus, nitidus, convexus, latus, dense fortiter punctatus, antennis pedibusque rufis; trochanteribus posterioribus bene distantibus. Long. fere 4, lat. $2\frac{1}{2}$ m.m.

Extremely like *Hydrovatus nigricans*, (No. 212), but rather smaller and distinctly narrower, the antennæ slightly shorter, the hind and middle legs not quite so widely

separated, and the hind legs rather more slender. In the male the basal joints of the front and middle tarsi are a good deal more dilated than in the female, but are not so broad as in the corresponding sex of *H. nigricans*.

The only specimen I have seen from the Philippine Islands was sent me by Herr Wehncke, it appears to agree entirely with the Australian individuals.

Australia, (Cape York, Rockhampton). Philippines. 21.

217. *Hydrovatus castaneus*, Motsch., M.C.—*Castaneus, nitidus, convexus, sat angustus*: prothorace crebre punctato; elytris obsolete punctatis, seriebus punctorum sat distinctis, coxis parce obsoleteque punctatis. Long. $3\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

This species is very convex, and rather narrow in proportion. The clypeus is without distinct raised margin, and a good deal emarginate over the labrum; the punctures on the thorax are distinct and rather dense about the middle: the punctuation of the elytra is more sparing and indistinct than that of the thorax. The hind trochanters are moderately widely separated, and the punctuation of the coxæ is very scanty and rather indistinct.

A specimen sent from Celebes (Macassar, Jan., 1874, Beccari) is rather more distinctly punctured, while one from Rangoon, (Wehncke), is smoother than the type.

Ind. or., Burmah. 22.

218. *Hyphydrus rufo-niger*, Clark, M.C.—*Nigricans, subtus piceus, pernitidus, convexus, angustulus*; prothorace crebre, subtiliter obsoleteque punctato; elytris fere impunctatis, sed seriebus punctorum impressis distinctis; coxis parce punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

The most shining and most indistinctly punctured, and comparatively the narrowest (with the exception of the little *H. parallelus*), of all the species. Very closely allied to *Hydrovatus castaneus*, Motsch. The antennæ are rather long. The punctuation of the coxæ though sparing is more distinct than in *H. castaneus*; and the raised margin of the clypeus is not interrupted in the middle.

Siam, (Bangkok). 23.

219. *Hydrovatus picipennis*, Motsch., M.C.—*Piceus, subtus dilutior, nitidus, convexus, robustus, sat latus*, prothorace elytris que crebre subobsolete punctatis, illis seriebus punctorum parum distinctis; coxis parce punctatis. Long. 4, lat. vix. $2\frac{1}{2}$ m.m.

In this species, although the front margin of the head is but little distinct, it is more defined in the middle than at the sides; the upper surface of the head is almost impunctate, the antennæ are rather long and slender, their shortest joint (the tenth), being much longer than broad. The thorax has a distinct though rather ill-defined punctuation on the disc, but at the sides it is most obsoletely

punctured, in fact almost impunctate; the elytra have a rather coarse, but very little impressed and therefore obsolete punctuation; the more internal of their series of punctures can be distinguished at the base only, and the more external series are extremely indistinct.

The species is larger and broader than *Hyphydrus rufo-niger*, Clk. (No. 218), and has the elytra more punctate, but with the inner series of punctures on the other hand more indistinct. In form and sculpture it is nearer to *Hydrovatus castaneus*, Motsch., but it is larger and darker, and the margin of the clypeus is less obsolete. It is the largest East Indian species here described. I have seen only a single individual in bad condition; it is I believe a female.

Siam, (Bangkok), Castlenau. 1153.

220. *Hydrovatus bonvouloiri*, n. sp.—Ferrugineus, latus, convexus, nitidus, prothorace crebre punctato; elytris fortiter sat crebre punctatis; coxis parcius distincte punctatis. Long. $3\frac{1}{2}$, lat. $2\frac{1}{3}$ m.m.

Antennæ rather long and slender, simple. Clypeus without margin, and very slightly emarginate over the labrum. Head completely destitute of sculpture. Thorax rather closely and somewhat finely punctured. Elytra with numerous scattered, distinct punctures. Coxæ very shining and with very distinct but sparing punctures.

India bor, (coll. Bonvouloir). 24.

221. *Hydrovatus major*, n. sp.—Rufescens, supra piceo-rufus, capite, thorace, elytrorum maculis dilutionibus; elytris fortiter punctatis, anterius ad latera impressione longitudinali profunda. Long. $3\frac{3}{4}$, lat. $2\frac{3}{4}$ m.m.

This species is of broad form; the head has very little punctuation, but the thorax is rather closely and distinctly punctured; the elytra are strongly punctured, the punctuation being very coarse and close near the sides, and obsolete at the apex, a little behind the shoulder near the epipleura there is a deep elongate depression. The posterior coxæ are very coarsely punctured.

The species is remarkable by the impressions on the sides of the elytra; the colour of the upper surface is variable, and the red spots on the wing-cases are in some instances much more conspicuous than in others. The sexual differences seem to be extremely slight; the antennæ are slender and rather short, and in the male are slightly more serrate internally than they are in the female; and in this latter sex the punctuation on the wing-cases seems to be just perceptibly denser than it is in the male.

It is closely allied to *Hydrovatus horni*, Crotch.

Duenas, Guatemala, G. C. Champion, 1879. 1122.

I. 18.—Genus *QUEDA*.

Coxal incision shorter in the longitudinal than in the transverse direction: only the fringes of the labrum visible; length 6 m.m. A single South American species.

222. *Queda compressa*, n. sp.—Pieca, nitida, convexa, lata, posterius angustata, et sat acuminata, elytrorum humeris rufis, antennis pedibusque rufo-testaceis; dense sat fortiter punctata. Long. $5\frac{1}{2}$ m.m., lat. $3\frac{1}{2}$ m.m.

Mas, antennis articulis 3-5, ceteris longioribus et latioribus.

Fem., antennis articulis 3-5 ceteris longioribus haud latioribus.

Of a compact and peculiar form, very broad in front and acuminate behind. Clypeus distinctly margined. Head finely and closely punctured. Thorax closely and rather finely punctured, the punctuation extending quite to the sides. Elytra closely, distinctly and evenly, but not coarsely punctured. Under surface distinctly punctured, the punctures on the hind coxæ coarser than elsewhere, those on the ventral segments fine but numerous. A specimen in Bonvouloir's collection, labelled "fulvipes Reiche Columbia," is possibly a distinct species, being entirely black, and slightly longer.

Brazil, (Santa Rita, August and Sept. 1850, R. F. Sahlberg). 25.

II. 7.—Group *BIDESSINI*.

The posterior border of the hind coxæ is completely soldered to the first ventral segment. The hind coxal cavities are separated and not protected by the adpressed coxal processes.

The soldering of the hind coxa to the ventral segment is peculiar to these insects, and occurs in no other Coleoptera. Except for this the other characters of the group are much the same as in the Hyphydrini.

	Middle coxæ conspicuously separated, prosternal process broad and short with obtuse hind margin.	{ On the undersurface of head the labrum is exerted. }	} <i>HETERHYDRUS</i> , (<i>vide p.</i> 337).
		{ Only the anterior border and fringes of labrum visibly exerted on underside of the head. }	
Prosternal process attaining the metasternum.	Middle coxæ more approximate, prosternal process rhomboidal, with acute termination.	{ — }	} <i>DESMOPACHIRIA</i> , (<i>vide p.</i> 340.)
		{ Coxal lines longer than prosternal process. }	
Prosternal process oblong.		{ Coxal lines shorter than the prosternal process. }	} <i>HUXELHYDRUS</i> , (<i>vide p.</i> 369).
		{ — }	
Prosternal process not reaching to the metasternum.			

I. 19.—Genus *HETERHYDRUS*.

Labrum conspicuously exerted on under surface of head; middle coxæ rather widely separated; prosternal process broader than long, its obtuse hind margin reaching the metasternum. Hind tibiæ straight, the basal portion not conspicuously narrower than the apical one.

A single species forms this genus.

223. *Hyphydrus senegalensis*, Aubé, M.C.—Ovalis, subtus convexus, subopacus, niger, antennis rufis, pedibus piccis; elytris sat crebre et sat fortiter punctatis; pectore parce subtiliter, abdomine crebrius et magis distincte punctato. Long. 6 m.m., lat. $3\frac{1}{3}$ m.m.

Antennæ moderately long and slender; clypeus broadly rounded in front, with a sharply defined edge, indistinctly margined; the surface of the head finely and rather sparingly punctured, and with no distinct depressions. Thorax very short and broad, but little longer in the middle than near the sides, the front angles, however, very produced, the lateral margins distinct, the surface rather finely, irregularly and sparingly punctured.

The type of *Heterhydrus agaboides* communicated to me by M. Fairmaire has the surface dull and rather strongly punctured, and is perhaps a female; if so the specimen in my collection, (for which I am indebted to Herr Wehneke), must be the other sex, for it is shining and but little punctate. On the other hand it is possible that these individuals may belong to different species: the latter individual, (the shining one), seems to agree exactly with a specimen from Senegal, now in the collection of Count Mnizech, who obtained it from Dupont's collection, it being one of the individuals on which Aubé described his *Hyphydrus senegalensis*: this individual agrees exactly with Aubé's description and measurement, but it does not accord very well with Laporte de Castlenau's few words of hurried description, nor with his measurements, (Et. Ent. p. 106), and it is possible that Laporte may have had some other insect in view; as however his description is insufficient for independent recognition, and we have no idea where his type was preserved, I have cited Aubé as the authority for the species name, and the reference to Laporte de Castlenau should for the future pass unnoticed.

Madagascar. 154.

I. 20.—Genus *PACHYDRUS*.

Labrum concealed, only its front margin and fringes being visible; middle coxæ rather widely separated; prosternal process broader than long, its obtuse hind margin reaching the metasternum; hind tibiæ straight, their basal portion not conspicuously narrower than the apical one.

Five species from tropical America and the Antilles are included in this genus;* they are very similar to one another in most respects; the punctuation of their wingcases is much coarser than is usual in the Dytiscidæ, and the species are best distinguished from one another by a reference to this character.

224. *Pachydrus punctatus*, n. sp.—Ovalis, nitidus, convexus, latus, piceus, capite thoraceque dilutioribus, antennis pedibusque rufo-testaceis; prothorace superficie subinæquali, fortiter irregulariter punctato; elytris crebre, grosse punctatis, punctis elongatis. Long. 4, lat. $2\frac{3}{8}$ m.m.

Head somewhat finely, but quite distinctly and moderately closely punctured. Thorax with the surface obscurely wrinkled, and distinctly and rather coarsely punctured, the punctures being irregularly distributed, so as to leave small, smooth spaces. Elytra very coarsely punctured, the punctures being elongate in the longitudinal direction, this is most strikingly seen on their basal half, the punctuation at the sides is finer and dense, the humeral portions are paler than the rest. The outer portions of the hind coxæ are somewhat coarsely punctured; the metasternum is only very obsoletely punctured.

In this species and its allies I have not detected any external marks to distinguish the sexes.

Brazil. (Santa Rita, September, 1850, Sahlberg; Rio de Janeiro). 48.

225. *Pachydrus cribratus*, n. sp.—Ovalis, subopacus, latus, brevis, piceus, capite thoraceque dilutioribus, antennis pedibusque rufo-testaceis; prothorace superficie subinæquali, crebre irregulariter punctato; elytris dense, fortiter profundeque punctatis. Long. $3\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

This species is a good deal shorter than *P. punctatus*, to which it is very closely allied, but is very readily distinguished by the sculpture of the upper surface, which is closer, the punctures on the elytra show no elongation.

Mexico; Castleton, (? U. S., N. America); Guadeloupe. 49.

* The following two species' descriptions probably refer to insects of this genus; *Hyphydrus cayennensis* Cast., (No. 1461 huj. op.); South America.—*Hyphydrus globosus* Aubé, (No. 1463); Antilles.

226. *Hyphydrus obniger*, Chev., M.C.—Ovalis, nitidus, convexus, sat angustus et elongatus, piceus, capite thoraceque dilutioribus, antennis pedibusque rufis; prothorace crebre, irregulariter, subtiliter punctato; elytris sat sparsim et subtiliter punctatis. Long. $4\frac{1}{2}$ m.m., lat. $2\frac{1}{2}$ m.m.

This species is narrower than *P. punctatus*, and readily distinguished by the much finer punctuation of the elytra; this towards the sides is a good deal closer and coarser than it is on their sutural portion. The species is very closely allied to *P. obesus*, but is more elongate, the punctuation of the thorax is coarser, while that of the elytra is rather finer (especially on the sutural portion), and less close and distinct.

Cuba. 50.

227. *Pachydrus obesus*, n. sp.—Ovalis, nitidus, convexus, sat latus, piceus, capite thoraceque dilutioribus, antennis pedibusque rufis; prothorace irregulariter, subtiliter, sparsim punctato; elytris crebre vix fortiter punctatis. Long. 4, lat. $2\frac{3}{4}$ m.m.

The surface of the thorax in this species is but little uneven, but the punctures are scattered in an irregular manner, and are quite fine, being not at all coarser than those of the head. The punctures of the elytra are rather small, but rather deep and distinct. The species is slightly narrower in its form than *P. punctatus*, but is very readily distinguished therefrom by its punctuation.

Venezuela, (Cumana). 51.

228. *Pachydrus brevis*, n. sp.—Ovalis, sat nitidus, latus, piceus, capite thoraceque dilutioribus, antennis pedibusque rufis; prothorace superficie vix inæquali, sparsim punctato; elytris crebre sat fortiter punctatis. Long. 4, lat. $2\frac{2}{3}$ m.m.

This species is intermediate in form and sculpture between *Pachydrus cribratus* and *Hyphydrus obniger*, (No. 226). It is rather more elongate than *Pachydrus cribratus*, and is readily distinguished by the much less dense sculpture of the elytra; it is a good deal less elongate than *Hyphydrus obniger*, and has the sculpture of the upper surface much coarser, deeper and closer; it differs from *Pachydrus cribratus* very slightly, except in the sculpture, the distinction in this respect being however very conspicuous.

Porto Rico. Antigua. 158.

I. 21.—Genus *DESMOPACHRIA*.

Front coxæ almost reaching the front border of the prosternum ; prosternal process minute, rhomboidal, about as broad as long, its extremity sharply angulate ; intercoxal process of metasternum connected with the mesosternal fork ; hind tibiæ straight, their basal portion not conspicuously narrower than the apical one.

Thirteen species are included in this genus ; they are insects of peculiarly broad short form, the breadth being nearly as great as the length. Nearly all the species are at present rarely represented in our collections ; they are peculiar to the New World.

229. *Desmopachria suturalis*, n. sp.—Brevis, lata, subrotundata, sat convexa ferruginea, crebre sat fortiter punctata, elytris stria suturali distincta ; prothorace basi utrinque sinuato, angulis posterioribus acutis. Long. $2\frac{2}{3}$, lat. 2 m.m.

The head is rather narrow, the clypeus in front somewhat produced, the surface finely and moderately closely punctured. The thorax is distinctly punctured, the punctures along the whole breadth of the basal portion being dense. The elytra are distinctly and closely punctured, and along the basal portion of the suture are marked by a stria formed by elongate punctures. The hind coxæ, except in their hinder portion, are rather coarsely punctured ; the metasternum is impunctate.

Brazil, (Santa Rita, August 1850, Sahlberg). 52.

230. *Desmopachria ovalis*, n. sp.—Brevis, lata, subrotundata, convexa, ferruginea, crebre sat fortiter punctata ; prothorace basi utrinque leviter sinuato. Long. $2\frac{1}{8}$, lat. $1\frac{5}{8}$ m.m.

Closely allied to *D. suturalis*, but only half the size, rather more convex, with the front and middle tarsi much less elongate, but stouter, and with no sutural stria on the elytra ; the sinuation of the base of the thorax near the hind angles is less distinct.

Brazil, (Santa Rita, August 1850, Sahlberg). 53.

231. *Desmopachria concolor*, n. sp.—Brevis, lata, subrotundata, sat convexa, ferruginea, crebre vix fortiter punctata, prothorace basi utrinque leviter sinuato. Long. $2\frac{1}{4}$, lat. $1\frac{2}{3}$ m.m.

Very closely allied to *Desmopachria ovalis* but slightly broader and less convex, less acuminate behind, and with the punctuation of the elytra rather finer, and the posterior tarsi rather longer.

South America, (Uruguay). 56.

232. *Desmopachria varians*, Wehncke, Stet. Zeit. 1877, p. 151.—Brevis, lata, subrotundata, convexa, testacea, prothorace basi medio elytrisq̄ue nigro-signatis; crebre fortiter punctata, elytris stria suturali impressa. Long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

Closely allied to *Desmopachria suturalis* (No. 229), but smaller and differently coloured; the ground colour is yellow, and the base of the thorax is black, and the elytra are marked along the suture with black, and external to this have some large confluent, longitudinal black marks. This insect at first sight bears a good deal of resemblance to *Dytiscus inæqualis*, (No. 381), but it is broader and rather less convex, more finely punctured, and has the antennæ shorter and finer.

Brazil, (Bahia). 57.

233. *Desmopachria lævis*, n. sp.—Brevis, lata, subrotundata, pernitida, impunctata, castaneo-testacea, pectore abdomineq̄ue nigris. Long. $1\frac{2}{3}$, lat. $1\frac{1}{3}$ m.m.

The head is very broad and short, very gently rounded in front, and very finely margined. The thorax is slightly sinuate on each side near the hind angles, and is quite impunctate. The elytra are also impunctate, as is the under surface.

Although this species is excessively similar to *Desmopachria nitida* (No. 236), and allies, it is readily distinguished by the dark colour of the under surface, and the polished, shining, almost absolutely impunctate upper surface.

In this species the prosternal process takes two different forms; in one it is similar to that of *Desmopachria nitida*, viz., it consists of an anterior part, formed by two raised margins joined to form an acute angle in front, and a posterior part which projects from between these as an acute point; in the other it is a bifid or furcate process; the change is effected by the diminution of the central and posterior portion, the greater elevation of the raised sides of the anterior portion and their not being joined in front; the character is I have little doubt truly a sexual one.

Brazil, (Santa Rita, August 1850, Sahlberg). 59.

234. *Desmopachria subtilis*, n. sp.—Brevis, lata, subrotundata, sat convexa, ferruginea, sat crebre et fortiter punctata, prothorace basi utrinque leviter sinuato. Long. fere 2 m.m., lat. $1\frac{1}{3}$ m.m.

Very closely allied to *Desmopachria ovalis*, (No. 230), but a good deal smaller and with the punctuation more distant and rather finer: the form of the prosternal process is the same in both species, but I can scarcely think these two forms will prove to be but one species.

This is one of two species confounded by Aubé and described as one species under the name of *Hydroporus convexus*.

Brazil, (Campos). 54.

235. *Hydroporus granum*, Lec., Proc. Ac. Phil. 1855, p. 294.—Breve, latum, subrotundatum, sat convexum, nitidum, rufo-testaceum; elytris versus suturam subtiliter punctulatis, lateribus apiceque cum prothorace et corpore subtus fere omnino levigatis. Long. $1\frac{5}{8}$, lat. $1\frac{1}{8}$ m.m.

This species is very closely allied to *Desmopachria nitida*, Bab., but is a little smaller, and the punctuation of the upper surface is rather less close and distinct. I am not quite sure that the Brazilian specimens will prove to be conspecific with the North American ones, but the resemblance is excessive, and I have failed to detect any satisfactory distinctive character.

North America, Brazil, (Santa Rita, Aug., 1850, Sahlberg). 453.

236. *Desmopachria nitida*, Bab., Tr. Ent. Soc. Lond. III, 1841, p. 17.—Brevis, lata, subrotundata, sat convexa, nitida, rufo-testacea; elytris sat crebre, distincte sed subobsolete punctatis. Long. $1\frac{5}{8}$, lat. 1 m.m.

The clypeus is broadly rounded in front with the margin fine, the surface of the head is impunctate. The thorax is only indistinctly punctured. The under surface is very nearly impunctate, the coxæ exhibiting only a few obsolete fine punctures.

The species is very closely allied to *Hydroporus granum* (No. 235), but is a little larger, and is a little less indistinctly punctured; on the other hand it is decidedly smaller than *Hydroporus convexus*, and its punctuation is less distinct; it thus appears to be about intermediate between these two closely allied species.

Brazil, (Rio de Janeiro). 55.

237. *Hydroporus convexus*, Aubé, M.C.—Brevis, latus, fere rotundatus, sat convexus, ferrugineus, sat crebre subtiliter punctatus; prothorace basi utrinque vix sinuato. Long. $1\frac{7}{8}$, lat. $1\frac{3}{8}$ m.m.

The clypeus in front is broad and gently rounded, extremely finely margined; the punctuation of the hind coxæ is sparing and fine, but quite distinct.

I have seen only one specimen from Brazil, and am by no means sure it will prove to be conspecific with the North American individuals, although I cannot at present point to any satisfactory distinctive character.

United States of North America; and Brazil, (Santa Rita, Sahlberg). 58.

238. *Hydroporus bryanstoni*, Clk., M.C.—Brevis, latus, subrotundatus, sat convexus, pallide castaneus, nitidus, elytris sutura infuscata; prothorace fere lævi, basi utrinque sinuato, angulis posterioribus acutis; elytris crebre obsolete punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{7}{8}$ m.m.

Head with rather sparing and fine, but quite distinct, punctures. Thorax with only some indistinct punctures at the base in the middle. Elytra with numerous

fine punctures, which are distinct on the sutural portion, and more obsolete towards the sides. Under surface impunctate and very shining.

Also in this species the prosternal process takes two forms, in the one it is rhomboidal with the margins raised, and in the other a deeply bifid process.

Brazil, (Bahia). (Mexico, *vide* Clark). 60.

239. *Hyphydrus mendozanus*, Steinheil, Atti. Soc. Ital. Sci. Nat. XII, p. 249.—Brevis, latus, sat convexus, ferrugineus, vix nitidus, dense sat fortiter punctatus, prothoracis angulis posterioribus acutis. Long. $2\frac{1}{3}$, lat. $1\frac{2}{3}$ m.m.

Closely allied to *Desmopachria suturalis* (No. 229), and *D. ovalis*, but distinguished by the much denser punctuation; there are only very indistinct indications of a sutural stria, the sinuation of the base of the thorax on each side is close to the hind angles, and is not very distinct, because the side of the thorax is a little depressed. The hind coxæ are coarsely and deeply punctured.

I am indebted to Herr Steinheil for the only specimen I have seen of this species.

South America, (San Carlos). 78.

240. *Hydroporus latissimus*, Lec., M.C.—Latissimus, brevis, nitidus, sine pubescentia, crebre sat fortiter punctatus, ferrugineus, prothorace basi infuscato, elytris testaceis, sutura late irregulariter maculaque externa nigricantibus; clypeo acute marginato, prothorace utrinque plica curvata; elytris stria suturali sat distincta, lateribus foveolatis; coxis posterioribus fortiter punctatis. Long. 2, lat. $1\frac{2}{3}$ m.m.

The fovea of the elytra is placed quite at their edge so that it may easily escape notice.

California. 170.

241. *Hydroporus dispersus*, Crotch, Tr. Am. Ent. Soc. IV, p. 358.—Latissimus, brevis, nitidus sine pubescentia, crebrius sat fortiter punctatus, ferrugineus, prothorace basi infuscato, elytris testaceis, sutura signaturaque externa nigris; prothorace utrinque plica curvata; elytris stria suturali distincta; coxis posterioribus sparsim sat fortiter punctatis. Long. 2, lat. $1\frac{5}{8}$ m.m.

Very similar in form to *Hydroporus latissimus*, (No. 240), but readily distinguished by the more finely and densely punctured thorax, the absence of fovea on the elytra, and the less extent of the dark markings, and the less distinctly punctured coxæ. It also a good deal resembles *D. varians*, (No. 232), but is shorter and broader, and has the punctuation of the coxæ less developed than that species.

California. 171.

I. 22.—Genus *BIDESSUS*.

Prosternal process longer than broad, parallel-sided, but with a more or less acute extremity which attains the metasternum; intercoxal process of metasternum not attaining the mesosternal fork, so that when the prothorax is taken away it may be seen that the middle coxæ touch one another; posterior tibiæ with the basal portion much more slender than the apical one. Coxal lines longer than prosternal process.

These insects are of small size, (2 or 3 m.m. long.), and are found in most parts of the world.

More than 80 species are included in this genus*; this renders it necessary that an arrangement of the descriptions should be made to facilitate reference; and in order to do this as naturally as possible, I have separated from the bulk of the species four natural groups, and left together the remainder of the genus in one group, which I have artificially divided into two sections according to whether there is present or not a sutural stria on the wing case. This grouping may be thus tabulated:—

GROUP 1.—Head with an even, distinct, raised front margin: in the other groups (except in Nos. 256 and 257) the head is without a definite margin. Species Nos. 242 and 243.

GROUP 2.—Thorax with a minute basal plica or impression, which is not in the least continued on to the elytra; apex of elytra very acuminate. Species 244 to 246.

* Besides these eighty species, the following descriptions may, (with the exception of the first of them), be assigned with considerable certainty to the genus:—

Hydroglyptus flaviculus, Motsch. (No. 1,335 *huj. op.*); Ceylon.—*Hydroporus adumbratus*, Clk. (No. 1,338), near No. 308; Mexico.—*Hydroporus amandus*, Lec. (No. 1,339), Group 5 B.; North America.—*Hydroporus angularis*, Klug. (No. 1,340); Nubia.—*Hydroporus atomus*, Regt. (No. 1,342), ? near No. 307; Manilla.—*Hydroporus charlotti*, Clk. (No. 1,350), ?=No. 318; Mexico.—*Hydroporus elegantulus*, Boh. (No. 1,366), ? near No. 252; Caffraria.—*Hydroporus emilianus*, Clk. (No. 1,367), ?=No. 318; Mexico.—*Hydroporus evanescens*, Boh. (No. 1,368); Caffraria.—*Hydroporus fryi*, Clk. (No. 1,372), ? near No. 256; Mexico.—*Hydroporus infirmus*, Boh. (No. 1,385), near No. 269; Caffraria.—*Hydroporus magensis*, Clk. (No. 1,396); Mexico.—*Hydroporus nicobaricus*, Redt. (No. 1,403); Nicobar Islands.—*Hydroporus obscurus*, Bab. (No. 1,407), ?=No. 313; Brazil.—*Hydroporus pseudo-geminus*, Regt. (No. 1,420); Manilla.—*Hydroporus seminulum*, Lec. (No. 1,431), ? Group 2; North America.—*Hydroporus subtilis*, Lec. (No. 1,436), Group 5, B.; North America.—*Hydroporus tetragrammus*, Hoch. (No. 1,441), near No. 270; Caucasus.

GROUP 3.—Short broad species without pubescence, but with a most remarkably sculptured surface, the punctures on the under surface being especially large, the plica at the base of the thorax is continued on to the elytra in so conspicuous a manner that it forms a sort of elongate-carina extending half the length of the wing cases. Species 247 to 254.

GROUP 4.—Hind coxæ not longer than broad; surface not entirely glabrous, plica on elytra not extending one-half of length of the wing cases; under surface with an extensive development of moderately coarse punctuation. Species 255 to 268.

N.B.—The species placed at the end of this group connect it with the following one.

GROUP 5.—Hind coxæ longer than broad, under surface with but little coarse punctuation, apex of elytra but little acuminate; elytra with a basal plica, which is continued (except in two species, Nos. 291 and 292), on to the base of the elytra either as a short punctiform impression or as a distinct line. Species 269 to 325.

This group is further sectionized thus:—

A. Each wing case provided with a distinct sutural stria. Species 269 to 292.

B. Wing cases destitute of a distinct sutural stria. Species 293 to 325.

GROUP 1.

242. *Hydroporus cribrosus*, Schaum, M.C.—Ovalis, brevis, latus, convexus, elytris creberrime fortiter punctatis, vix nitidis; pectore crebre æqualiter fortiter punctato. Long. $2\frac{1}{3}$, lat. $1\frac{1}{2}$ m.m.

Egypt, (Cairo). 98.

243. *Bidessus migrator*, n. sp.—Ovalis, brevis, latus, convexus, elytris crebre fortiter punctatis, subnitidis; pectoris lateribus fortiter, medio obsolete, punctatis. Long. 2, lat. $1\frac{1}{4}$ m.m.

Very closely allied to *Hydroporus cribrosus*, Schaum, but rather narrower, and with the punctures on the elytra not quite so close, and slightly coarser: the punctures on the hind coxæ are finer, and those on the middle of the sternum much finer than in the Egyptian species.

Australia, (Rockhampton). 99.

GROUP 2.

244. *Hydroporus apicatus*, Clk., M.C.—Brevis, latus, ovalis, posterius valde acuminatus, castaneo-testaceus, nitidus, glaber; prothorace basi utrinque striola subtili; elytris crebre subtiliter sed distincte punctatis. Long. $1\frac{5}{8}$, lat. 1 m.m.

Head very broad, impunctate, clypeus not margined. Thorax almost impunctate, with the hind angles indistinct but a little obtuse. Elytra with fine punctures, which become very indistinct at the sides and extremity. Hind coxæ with some moderately coarse punctures, middle of breast quite impunctate.

I am not quite sure as to the locality of this peculiar little species, but I believe it is St. Domingo. I have only seen two individuals of it. 75.

245. *Bidessus borrei*, n. sp.—Brevis, latus, ovalis, valde convexus, posterius acuminatus, nitidus, glaber, castaneo-testaceus, elytris obscurioribus; prothorace basi utrinque stria subtili, elytris sat crebre subtiliter punctatis; coxis posterioribus fere impunctatis. Long. $1\frac{1}{2}$ m.m., lat. $\frac{7}{8}$ m.m.

This species seems closely allied to *Hydroporus apicatus*, but it appears to me to have the prosternal process rather broader, it is also considerably smaller, narrower, and more convex, and the elytra are more obscure in colour.

I have seen only a single individual which is in the collection of the Brussels Museum. It is I believe from Pernambuco, and bears a label, "fuscipennis, Chev." 76.

246. *Hyphydrus acuminatus*, Steinheil, Atti. Soc. Ital. Sci. Nat. XII, p. 249.—Brevis, latus, ovalis, convexus, posterius acuminatus, nitidus, glaber, ferrugineus, elytris obscurioribus, prothorace basi utrinque stria subtili; elytris sat crebre subtiliter punctatis; coxis posterioribus, sparsim distincte punctatis. Long. $1\frac{1}{2}$, lat. 1 m.m.

Closely allied to *Hydroporus apicatus* and *Bidessus borrei*, (Nos. 244 and 245), but has the antennæ a good deal thinner than in *H. apicatus*, and is rather larger and a good deal broader than *Bidessus borrei*, and has the hind coxæ distinctly punctured.

I am indebted to M. Steinheil for an authentic example of this interesting species.

Buenos Ayres. 77.

GROUP 3.

247. *Hydroporus bicarinatus*, Clairville, M.C.—Breviter ovalis, subtus convexus, sine pubescentia, nigricans, thorace medio rufescente, elytris testaceis, sutura fasciisque nigris; supra dense subtiliter sed evidentiter, subtus fortiter profundeque

punctatus; elytris cristis duabus abbreviatis elevatis; antennis pedibusque testaceis, plus minusve infuscatis. Long. 2, lat. $1\frac{1}{4}$ m.m.

I see no external sexual distinctions in this species.

This species varies greatly as to the general colour and markings; in Corsica very dark specimens are found, the elytra in some of them being nearly entirely black, this is the var. *obscurior*, Desb.

Central and Southern Europe, and North Africa; Illyria, on the banks of the Isonzo; Switzerland, France, Spain, Corsica, Algeria and Marocco. 124.

248. *Bidessus bicristatus*, n. sp.—Breviter ovalis, latus, subtus convexus, sine pubescentia, testaceus, prothoracis marginibus anterioribus et posterioribus, elytrorum sutura maculisque nigris; elytris fortiter crebre punctatis, cristis duabus elevatis; corpore subtus fortiter profundeque punctato. Long. 2, lat. $1\frac{3}{8}$ m.m.

Closely allied to *Hydroporus bicarinatus*, but broader and more coarsely punctured, and with the dark marks less: those on the elytra consist of a stripe along the suture which on the middle is dilated so as to form an angular mark, and of a small round mark just at the termination of the inner crista.

Found at Jeddah in Western Arabia, by Dr. Millingen. 125.

249. *Hydroporus porcatus*, Klug, M.C.—Oblongo-ovalis, subtus convexus, sine pubescentia, testaceus, prothoracis basi elytrorumque signaturis nigris; elytris crebre fortiter punctatis, crista unica elevata; corpore subtus ferrugineo, fortiter punctato. Long. $2\frac{1}{8}$, lat. $1\frac{3}{8}$ m.m.

In the male the front and middle tarsi are rather longer, and have the basal joint a little more dilated than in the female.

Egypt. 126.

250. *Hydroporus dohrni*, (Welmcke), n. sp.—Breviter ovalis, latus, subtus convexus, sine pubescentia, testaceus, elytris lineis abbreviatis fere parallelis nigris, corpore subtus ferrugineo, fortiter punctato; elytris fortiter, crebre punctatis, crista longitudinali elevata, alteraque externa obsoleta. Long. $2\frac{1}{3}$, lat. $1\frac{5}{8}$ m.m.

South West Africa. 127.

251. *Hydroporus costipennis*, Fairm. Ann. Soc. Fr. 1869, p. 187.—Breviter ovalis, latus, subtus convexus, sine pubescentia, subtus ferrugineus, supra testaceus, sat nitidus, elytris sutura signaturisque transversis nigris; thorace parce punctato, striga valde obliqua; elytris fortiter crebre punctatis, cristis duabus elevatis; corpore subtus fortiter profundeque punctato.

Ste. Marie, Madagascar. 146.

252. *Bidessus insignis*, n. sp.—Ovalis, latus, subtus convexus, capite thoraceque rufescentibus, elytris testaceis, basi plagaque magna irregulari, pectore abdomineque nigricantibus, antennis pedibusque testaceis; thorace crebre, basi fortius, punctato; elytris striis duabus suturalibus abbreviatis punctorum impressorum, plica discoidali ultra medium ducta sat elevata, prætereaque subobsolete punctatis; coxis posterioribus punctis magnis. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ m.m.

This species by its form and sculpture suggests itself as a connecting link between the very dissimilar *Dytiscus geminus* (No. 269) and *Hydroporus bicarinatus*, (No. 247). There seems to be scarcely any difference between the sexes.

Western Arabia, (Hedjaz). 1131.

253. *Bidessus* (*Anodochilus*) *maculatus*, Bab. Tr. Ent. Soc. Lond. III, 1841, p. 16.—Brevis, sine pubescentia, rufo-testaceus, elytris fuscis, indeterminate testaceo-signatis; prothorace brevi, fere impunctato, basi plicula utrinque fortiter elevata, inter pliculas canalicula profunda transversa; elytris sat crebre, fortiter, irregulariter subseriatim punctatis, crista tenui elongata; subtus pectore abdomineque basi utrinque grosse punctatis. Long. 2, lat. $1\frac{1}{3}$ m.m.

Brazil. (Santa Rita, Aug., 1850, Sahlberg). 128.

254. *Hydroporus exiguus*, Aubé, Spec. p. 490.—Brevis, sine pubescentia, rufo-testaceus, elytris obscurioribus indeterminate fusco-maculatis; prothorace brevi, fere impunctato, lateribus rugulosis, basi utrinque plicula fortiter elevata, inter pliculas canalicula profunda transversa; elytris crebre fortiter punctatis, crista tenui elongata; subtus pectore abdomineque basi utrinque grosse punctatis. Long. $1\frac{2}{3}$, lat. 1 m.m.

Closely allied to *Bidessus maculatus*, but rather shorter and broader, and with the elytra a good deal more regularly and evenly, and not so coarsely punctured.

United States of North America. 136.

GROUP 4.

255. *Hydroporus cinetellus*, Lec., M.C.—Oblongo-ovalis, fere sine pubescentia; sat nitidus, ferrugineus, capite elytrisque infuscatis, his fascia interrupta sub-basali, signaturaque ante-apicali testaceis; thorace crebre evidenter punctato, elytris et coxis crebre fortiter punctatis; antennis fusco-testaceis. Long. 2, lat. $1\frac{1}{3}$ m.m.

North America. 137.

256. *Hydroporus pietodes*, n. sp.—Sat latus, ovalis, convexus, subtilissime et omnium brevissime pubescens, vix nitidus, piceo-rufus, thorace testaceo, basi late

infuscato; elytris nigro-fuscis, fascia lata interrupta sub-basali, maculaque magna ante-apicali testaceis; elytris cum thorace dense, distincte, fere æqualiter punctatis; coxis posterioribus crebre fortiter punctatis; clypeo anterieus marginato. Long. 2, lat. $1\frac{1}{3}$ m.m.

North America. 138.

257. *Hydroporus plicipennis*, Crotch, Tr. Am. Ent. Soc. IV, p. 388.—Oblongo-ovalis, sat latus, fere opacus, brevissime pubescens, fuscus, thorace testaceo, basi et margine anteriore fuscis; elytris fascia lata, interrupta, sub-basali, et macula magna ante-apicali testaceis, cum thorace æqualiter dense et distincte punctatis, sutura sat elevata, disco plica longitudinali, lata, elevata; antennis pedibusque obscure rufis; pectore rufo, dense fortiter punctato; clypeo anterieus marginato. Long. 2, lat. $1\frac{1}{4}$ m.m.

The only specimen I have seen is a male, and has the front and middle tarsi rather strongly dilated.

California. 139.

258. *Hydroporus flavicollis*, Lec., M.C.—Oblongo-ovalis, opacus, brevissime evidenter pubescens, testaceus, elytris fuscis, fasciis latis duabus interruptis testaceis; elytris cum thorace densissime subtiliter punctatis, coxis posterioribus crebre fortiter punctatis. Long. $1\frac{2}{3}$, lat. 1 m.m.

The outline of this peculiar little species is much that of *Dytiscus duodecempustulatus*, (No. 462); in the male the front and middle tarsi are distinctly dilated: the hind tibiæ seem to approximate to those of *Deronectes* and *Hydroporus*; in the only individual I have been able to examine the wings are abortive, so that this will probably prove to be a very distinct and important species. The hind tibiæ seem to make a link between *Bidessus* and *Deronectes*; in the specimen I broke up, the wings as stated were undeveloped.

North America, (Illinois, Pennsylvania, Massachusetts). 141.

259. *Bidessus obesus*, n. sp.—Latus, ovalis, convexus, brevissime pubescens, fere opacus, obscure testaceus, elytris obsolete fusco-signatis, thorace et elytris dense subtiliter, æqualiter punctatis; coxis posterioribus dense fortiter punctatis; clypeo minus distincte marginato. Long. 2, lat. $1\frac{1}{3}$ m.m.

This species is similar in appearance to *Hydroporus cribrosus*, Schaum, (No. 242), but the upper surface is much more densely, finely, and evenly punctured. The male has the front and middle tarsi distinctly dilated.

North America, (Texas). 142.

260. *Bidessus discretus*, n. sp.—Oblongo-ovalis, brevis, sat convexus, fere sine pubescentia rufo-testaceus, elytris fuscis, signaturis magnis pallide testaceis, abdomine plus minusve infuscato; elytris crebrius fortiter punctatis, prothorace minus distincte punctato; coxis posterioribus fortiter punctatis. Long. 2, lat. $1\frac{1}{3}$ m.m.

The male is shining and has the front and middle tarsi distinctly dilated: of the female there are two forms, one similar to the male in sculpture, the other dull and with the punctuation of the upper surface more obsolete. The plica (or basal impression) on the elytra is very distinct, and is about as long as that on the thorax. The colour of the elytra is somewhat variable; the base is fuscous, but a slight distance from it there is a very broad pale yellow band, which externally reaches as far forward as the shoulder, and internally is interrupted at the suture, across the middle there is a dark band which indeed extends nearly to the apex, except that there is a very large subapical mark; the yellow colour, however, at the base and apex is sometimes more extensive owing to the comparative obliteration of the dark marks.

North America, (Texas, Belfrage). 1130.

261. *Dytiscus unistriatus*, Schranck, *Hydroporus unistriatus*, M.C.—Ovalis, piceus, vel fuscus, vel rufescens, thorace rufescente, subtiliter sed distincte pubescens, subnitidus; elytris crebre, distincte, basi sat fortiter punctatis, stria suturali abbreviata. Long. 2, lat. 1 m.m.

The male has the front and middle tarsi distinctly dilated. There are two forms of the female, one is quite dull, and has the punctuation quite obsolete; the other differs but little from the male so far as the sculpture is concerned.

This is a very variable species, the colour is sometimes nearly black, with the margins of the elytra, and an interrupted obscure basal fascia pale, the thorax being nearly red: sometimes the general colour is of an obscure red with the suture slightly darker. In Finland is found a variety which is more shining and less pubescent, and has the punctures of the elytra more distinct and distant: I have seen from Lanaeken, in Belgium, two specimens closely approaching this Finland form.

Europe, from Lapland to Corsica; Britain, Belgium, France, Germany. 116.

262. *Hydroporus goudotii*, Lap., M.C.—Ovalis, nitidus, tenuissime pubescens, antennis, pedibus, capite thoraceque testaceis, hoc basi infuscato; elytris fusco-testaceis, signaturis externis indeterminate pallidioribus; crebre punctatis, punctis ad basin versus suturam fortioribus; pectore abdomineque piceis. Long. $1\frac{1}{2}$, lat. 1 m.m.

I do not see any characters by which the male can be distinguished from the

female in this species; the front and middle tarsi are slender in all the specimens I have examined.

This species is very closely allied to *Dytiscus unistriatus*, but is rather paler in colour than even the palest varieties of that species; the male tarsi are undilated; and the fossa (or transverse depression) behind the middle coxal cavities is much deeper than in that species.

Southern Europe: Sicily, Southern France, (Nîmes, Beziers, Biarritz and Pyrenees). Algeria, Morocco, 117.

263. *Hydroporus pumilus*, Aubé, M.C.—Ovalis, brevis, latus, sat nitidus, fere nudus, rufo-testaceus, pectore elytrisque infuscatis, his fortiter punctatis maculis tribus externis rufo-testaceis. Long. 2, lat. $1\frac{1}{4}$ m.m.

In this species I see no sexual difference, the tarsi being slender in all the individuals I have seen.

Near Vienna is found a form which may perhaps prove to be a distinct species; it is considerably narrower in proportion, and has the sculpture of the upper surface less dense: I have not however seen sufficient individuals to enable me to form a positive opinion.

Southern France, and Spain. 118.

264. *Hydroporus exornatus*, Reiche, M.C.—Ovalis, subtilissime pubescens, testaceus, pectore, thoracis basi medio elytrisque infuscatis; his crebre fortiter punctatis, maculis plurimis pallidioribus. Long. 2, lat. $1\frac{1}{2}$ m.m.

The male has the front and middle tarsi a little dilated; of the female there are two forms, one quite dull and with the punctuation of the upper surface less distinct, while in the other the sculpture scarcely differs from that of the male.

Syria, (Beyrouth), Crete, Turkey. 119.

265. *Bidessus coxalis*, n. sp.—Ovalis, fusco-niger, thorace testaceo, basi medio infuscato, elytris fasciis interruptis testaceis ornatis, antennis fuscis basi testaceo, pedibus testaceis tarsis obscurioribus; elytrorum lateribus distincte curvatis; coxis posterioribus medio sparsim, fere fortiter punctatis; elytris dense subtiliter punctatis. Long. $1\frac{3}{4}$, lat. 1 m.m.

This species is allied to *Hydroporus minutissimus*, Germ., (No. 267) but is shorter in form, darker in colour, and has the punctuation of the hind coxæ coarser, more distinct and less dense, the sculpture of the upper surface is also less fine and dense.

Spain, (Madrid). North Africa, (Tangiers). 120.

266. *Hydroporus saucius*, Desb. Mitt. Schweiz. ges. III, p. 338.—Ovalis, nigricans, thorace in medio elytris que maculis parvis externis testaceis, pedibus fuscis, antennarum basi dilutiore; elytrorum lateribus distincte curvatis; coxis posterioribus medio sparsim fere fortiter punctatis; elytris dense subtiliter punctatis. Long. vix 2, lat. 1 m.m.

Very closely allied to *Bidessus coxalis* and probably only a variety of it, but rather larger and darker in colour, so that the pale marks on the elytra have nearly disappeared.

Corsica. 121.

267. *Hydroporus minutissimus*, Germ., M.C.—*Angustulus*, suboblongus, testaceus, subtus leviter infuscatus, prothorace basi medio elytris que fasciis transversis nigris, elytrorum lateribus sat curvatis; coxis posterioribus medio crebre subtiliter punctatis; elytris dense subtilissime punctatis. Long. $1\frac{2}{3}$, lat. 1 m.m.

I have from Switzerland a pale variety which in some respects is intermediate between this and *Hydroporus delicatulus*.

In Corsica there occurs a dark variety with the black marks of the upper surface much extended.

Europe, from South of England to Algeria; Corsica, and Canary Islands. 122.

268. *Hydroporus delicatulus*, Schaum, Stet. Zeit., 1844, p. 198.—*Elongatus*, angustus, depressus, testaceus, elytris fasciis transversis fuscis; elytrorum lateribus vix curvatis; coxis posterioribus medio crebre subtiliter punctatis; elytris omnium dense subtilissime punctatis. Long. $1\frac{2}{3}$, lat. $\frac{2}{3}$ m.m.

Very closely allied to *Hydroporus minutissimus* but rather smaller, narrower, and paler in colour, with the punctuation of the coxæ and elytra a little finer; the basal fascia of the elytra indistinct: it is possible that in Switzerland specimens may be found to connect these two forms.

Schaum did not distinguish *Bidessus coxalis* from this and the preceding species, and consequently considered *Hydroporus minutissimus* as an intermediate form of *Bidessus coxalis* and *Hydroporus delicatulus*.

Europe, (Germany). 123.

GROUP 5. (A. Each wing-case with a sutural stria).

269. *Dytiscus geminus*, Fab., *Hydroporus geminus*, M.C.—Niger, vix nitidus, thorace in medio rufescente, elytris testaceis plaga magna irregulari nigra; thorace sparsim subtiliter punctato; elytris crebre subtiliter punctatis, et pubescentibus,

antennis basi testaceo apice fusco, pedibus testaceis, tibiis posterioribus apice fuscis ; coxis posterioribus sparsim obsolete punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{4}$ m.m.

The sexes differ very little externally, in the male, however, the front and middle tarsi are slightly broader than in the female.

The specimens found in Algeria are rather smaller and broader, and have the mark on the elytra rather less in extent, and the punctuation of the elytra more sparing ; but they cannot be considered a distinct species, as intermediate forms occur in Spain.

Europe : apparently rare in Northern Europe, but recorded from 61 in Finland by Sahlberg. Algeria, Syria. 64.

270. *Hydroporus confusus*, Klug, Symb. Phys. IV, t. 34, f. 4.—Oblongo-ovalis, subparallelus, testaceus, vertice, prothoracis basi medio, pectoreque infuscatis, abdomine nigricante ; elytris fusco-signatis, signaturis anterie divisis et prolongatis, sparsim obsolete punctatis ; coxis posterioribus obsolete punctatis. Long. 2, lat. 1 m.m.

This species is very closely allied to *Dytiscus geminus*, (No. 269), but is smaller, narrower, and more parallel, and is more brightly coloured.

Though the *Hydroporus confusus* Klug, was considered by Schaum as not sufficiently different from *Dytiscus geminus*, it appears to me probable that it is really a distinct species.

Egypt, (Cairo). 66.

271. *Hydroporus pentagrammus*, Schaum, M.C.—Oblongo-ovalis, testaceus, prothorace basi medio, abdominis pectorisque lateribus plus minusve infuscatis ; elytris sutura lineisque duabus posterioribus conjunctis fuscis, crebre obsolete punctatis, subopacis : coxis fere impunctatis. Long. 2, lat. 1 m.m.

Closely allied to *Hydroporus confusus*, but yet narrower, and more brightly coloured, the elytral markings consist of two dark lines, which are joined together behind, but are throughout quite distinct from the sutural mark.

Egypt. 66.

272. *Hydroporus thermalis*, Germ., M.C.—Oblongo-ovalis, testaceus, pectore abdomineque infuscatis ; elytris sutura lineisque duabus fuscis, interna apice hamata, externa valde abbreviata, sparsim obsolete punctatis ; coxis posterioribus parce obsolete punctatis. Long. 2, lat. 1 m.m.

In this species the thoracic line can scarcely be said to be continued on to the elytra ; the continuation is, however, represented by a small fovea or elongate

puncture. The external dark line on the wing case though very short, is generally very distinct and definite, but sometimes becomes connected with the more elongate internal line.

Arabia, Persia, Egypt, Algeria, Southern Europe. 68.

273. *Bidessus major*, n. sp.—Oblongo-ovalis, subtus niger, supra nigro testaceoque variegatus, antennis pedibusque testaceis; prothorace sparsim distincte punctato, medio testaceo, basi margineque apicali fuscis; elytris versus suturam distincte sat crebre punctatis; coxis posterioribus parce subtiliter punctatis. Long. 3, lat. $1\frac{3}{4}$ m.m.

This species is very similar to *Dytiscus geminus*, (No. 269), but is more than twice as large, and the punctuation of the upper surface is rather coarser.

Arabia; Persia. 69.

274. *Hyphydrus hamulatus*, Gyll., *Hydroporus hamulatus*, M.C.—Oblongo-ovalis, opacus, testaceus, abdomine infuscato, elytris lineis duabus crassiusculis fuscis, interna apice hamata, externa abbreviata; elytris densissime æqualiter subtiliter punctatis; coxis posterioribus obsolete punctatis. Long. 2, lat. 1 m.m.

The pubescence of the upper surface is very fine but distinct; the thorax is rather closely, finely and evenly punctured, but not so densely and finely as the elytra.

This species is excessively rare; I am indebted to Dr. J. Sahlberg of Helsingfors for the only individual I have seen. Its structure appears very similar to that of *Dytiscus geminus* and its allies; my specimen is probably a male, for the four front tarsi are rather broad.

Scandinavia, among marine Confervæ. 71.

275. *Bidessus laticulus*, n. sp.—Oblongo-ovalis, nitidus, fere lævis, rufo-testaceus, subtus lateribus infuscatis; elytris signaturis fuscis, punctis impressis distantibus, subtilibus sed distinctis; coxis posterioribus paucissime subtiliter punctatis. Long. 2, lat. 1 m.m.

The thorax is almost impunctate. The markings on the elytra are a dark transverse angulated one at the extreme base, a dark common line on the suture, a longitudinal line outside the sutural one and which is at its hind part thickened externally, a smaller dark mark near the outer margin, and a mark near the humeral angle connecting the basal mark with the others. The species much resembles *Hydroporus japonicus*, (No. 286), but is readily distinguished by the abbreviated impressions of the elytra and thorax. I see no sexual differences.

Siam, (Bangkok): Celebes, (Macassar, Jan. 1874, Beccari). 72.

276. *Hydroporus strigicollis*, (Fairm.), n. sp.—Sat angustus, minus convexus, opacus, subtiliter pubescens, fuscus, thorace in medio pallidiore; elytris subtiliter fere dense punctatis, coxis posterioribus sparsim sub-obsolete punctatis. Long. 2, lat. $1\frac{1}{3}$ m.m.

I have seen only two individuals (in bad condition) of this species, and do not know their sex. It is readily distinguished from *Dytiscus geminus*, (No. 269), by the narrower form and darker colour; and by the basal striga of the elytra, which is excessively short.

Madagascar. 145.

277. *Bidessus sordidus*, n. sp.—Oblongo-ovalis, subopacus, pectore abdomineque nigris, prothorace testaceo, basi margineque apicali nigris; elytris testaceis minus discrete fusco-signatis, sat crebre sub-obsolete punctatis; antennis pedibusque testaceis, illis apicem versus plus minusve infuscatis; coxis posterioribus obsolete punctatis. Long. $2\frac{7}{8}$, lat. $1\frac{1}{2}$ m.m.

Very closely allied to *D. geminus*, (No. 269), but larger, and longer in proportion to the width.

The markings on the elytra are indistinct and confused, and consist of some longitudinal marks more or less confluent, much as in *Hydroporus confusus*, (No. 270).

In the male the front and middle tarsi are a good deal broader than in the female.

Abyssinia. 73.

278. *Hydroporus lineolatus*, Boh., M.C.—Oblongo-ovalis, nitidus, testaceus, pectore abdomineque nigris; elytris disco irregulariter minus discrete fusco, sparsim subtiliter punctatis tenuissimeque pubescentibus; coxis posterioribus fere impunctatis. Long. $2\frac{1}{3}$, lat. $1\frac{1}{3}$ m.m.

I have seen only two individuals (in very bad condition) of this species, which appears to me to be very closely allied to *Dytiscus geminus*, (No. 269). It is however rather larger, and narrower in form, more shining and more sparingly punctured, and has the dark marks on the elytra very indistinct. The thorax is nearly entirely reddish, and there is no distinct dark mark at the base of the elytra.

I am not at all sure whether this is really the species described by Boheman under this name; he describes an insect having four distinct lines on each wing case; the two individuals I have described scarcely agree on this point, in one of them scarcely any trace of dark lines is to be seen, while the other might be described as having two or three indistinct dark lines on each wing case.

South Africa, (Caffraria; Cape Good Hope). 74.

279. *Bidessus striola*, n. sp.—Oblongo-ovalis, subopacus, testaceus, sutura elytrorum, pectore abdomineque infuscatis; crebre obsolete punctatus, subtus fere impunctatus. Long. $2\frac{1}{3}$, lat. $1\frac{1}{8}$ m.m.

Var. Elytris fascia basali maculaque magna communi nigricantibus.

The head is impunctate, and the thorax has only a few very indistinct punctures; the punctures on the elytra are close, but very indistinct; the striola at the base of the elytra is fine and very short, being rather shorter than that of the thorax, the thoracic striola itself is short, reaching not quite half way to the front. The coxæ are almost impunctate.

In the male the front and middle tarsi are a little broader than in the female.

Celebes, (Wallace). The variety with a pattern on the elytra found at Macassar, January 1874, by Beccari. 79.

280. *Hydroporus basalis*, MacLeay, Tr. N. S. W. 1871, p. 124.—Oblongo-ovalis, brevis, nitidus, capite, thorace, antennis pedibusque testaceis, thoracis basi medio fusco, elytris longitudinaliter fusco-signatis, crebre obsolete punctatis; abdomine pectoreque fuscis. Long. $1\frac{3}{4}$, lat 1 m.m.

This species is rather similar to *Hydroporus confusus*, (No. 270), but is a good deal smaller. I have no doubt that I have the sexes before me, but they show very slight distinctions.

Australia, (Gayndah, Rockhampton). 91.

281. *Bidessus signatus*, n. sp.—Oblongo-ovalis, rufo-testaceus, nitidus, elytris sparsim subtiliter punctatis, thoracis basi medio, pectore abdomineque nigricantibus, elytris sutura lineisque duabus longitudinalibus (interna extus hamata, externa abbreviata) nigris. Long. $2\frac{1}{3}$, lat. $1\frac{1}{4}$ m.m.

This species is very closely allied to *Hydroporus thermalis*, (No. 272), but is rather larger, and has the elytra more sparingly punctured. I have seen but two specimens which are I think males, though they have the four front tarsi slender.

Australia, (Brisbane). 92.

282. *Bidessus godeffroyi*, (Wehncke), n. sp.—Oblongo-ovalis, subopacus, testaceus, thoracis basi medio elytris que fuscis, his basi lateribus apiceque testaceo-maculatis, dense obsoleteque punctatis, subtiliter distincteque pubescentibus. Long. 2, lat. $1\frac{1}{4}$ m.m.

Though I have examined several specimens, I see no sexual distinctions.

Australia, (Gayndah, Rockhampton, Melbourne). 93.

283. *Bidessus daemeli*, (Wehneke), n. sp.—Oblongo-ovalis, sat elongatus, subopacus, rufo-testaceus, prothorace basi medio nigro, elytris fusco-variegatis, dense subtiliter punctatis, distincteque pubescentibus; coxis posterioribus subtiliter sed perspicue punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{4}$ m.m.

Mas., tarsi anterioribus et intermediis mediocriter dilatatis, abdomine infuscato.

Fem., tarsi simplicibus, abdomine rufo.

Australia, (Cape York, Port Denison, Rockhampton). 94.

284. *Hydroporus mastersi*, MacLeay, Tr. N. S. W. 1871, p. 123.—Oblongo-ovalis, elongatus, subopacus, rufo-testaceus, thorace basi medio elytris que nigro-signatis, pectore abdomine que fuscis; elytris dense subtiliter punctatis, coxis posterioribus crebre fortiter punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

In the male the front tarsi are distinctly broader than in the female, and the hind tarsi are slightly longer.

Australia, (Gayndah, Rockhampton). 95.

285. *Bidessus orthogrammus*, n. sp.—Oblongo-ovalis, elongatus, subopacus, rufo-testaceus, thorace basi medio elytris que nigro-signatis; elytris dense subtiliter punctatis, coxis posterioribus crebre sat fortiter punctatis. Long. $2\frac{3}{4}$, lat. $1\frac{1}{2}$ m.m.

I have seen only a single female individual, and it is just possible it may not be distinct from *Hydroporus mastersi*; it is brighter in colour, and unicolorous beneath, the markings on the elytra are less confused and more linear longitudinally, the punctuation of the upper surface is a little more dense, and that of the hind coxæ not quite so coarse.

North-west Australia. 96.

286. *Hydroporus japonicus*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 54.—Oblongo-ovalis, supra rufo-testaceus, capite prothoracisque basi plus minusve infuscatis, elytris sat crebre distincte punctulatis, signaturis longitudinalibus plus minusve coalescentibus nigris; subtus piceus, coxis posterioribus parce et subtiliter sed distincte punctatis. Long. 2, lat. 1 m.m.

Rather narrower and more parallel than *Dytiscus geminus*, (No. 269), more brightly coloured, and with the punctuation of the upper surface more distinct, and the sides of the thorax a little curved.

The external sexual characters seem to consist only in a very slight dilatation of the front and middle tarsi in the male.

This species varies a good deal in size and colour, and in the markings of the

elytra. The Chinese specimens are smaller and paler and less variegated in their marks than those I have seen from Japan, but I have no doubt all are one species.

Japan, China, (Kiu Kiang, Mr. Geo. Lewis). 65.

287 *Hydroporus orientalis*. Clk., M.C.—Oblongo-ovalis, subopacus, rufo-testaceus, elytris fuscis, testaceo-signatis, crebre, subtiliter, sub-obsolete punctatis distincteque pubescentibus. Long. $1\frac{1}{2}$, lat. 1 m.m.

The elytra have a pale lateral border, which behind the base is greatly dilated and extends inwardly nearly to the suture, it is also broader and more projecting inwards at the apex, and again at an intermediate spot.

The male differs from the female by having the front and middle tarsi moderately dilated.

The species is extremely similar to a variety of *Bidessus striola*, (No. 279), which has the elytra similarly marked, but that species has the under surface more obscurely coloured.

Siam, (Bangkok, Castelnau). 104.

288. *Bidessus transversus*, n. sp.—Oblongo-ovalis, rufo-testaceus, nitidus, elytris fuscis, testaceo signatis, sat crebre, minus subtiliter punctatis, sparsim subtiliter pubescentibus, stria suturali basin versus obsoleta; coxis posterioribus medio sparsim distincte punctatis. Long. $1\frac{1}{2}$, lat. 1 m.m.

The pale marks on the elytra consist of a narrow lateral margin, with a broad patch extending inwardly behind the base, and a much narrower process behind the middle, the terminal portion of which is abruptly turned forwards.

The only individual I have seen is I think a male, if so the front and middle tarsi are only slightly dilated.

Siam, (Bangkok). 105.

289. *Hydroporus intermixtus*, Walk. (?), M.C.—Oblongo-ovalis, sub-brevis, sat nitidus, tenuissime pubescens, capite, thorace, antennis pedibusque testaceis, elytris sordide testaceis, sutura infuscata; pectore fusco-testaceo, abdomine nigricante; elytris minus dense obsolete punctatis; corpore subtus fere impunctato. Long. $1\frac{1}{2}$, lat. 1 m.m.

This species is closely allied to *Bidessus striola* (No. 279), but is much shorter and has the elytra more sparingly punctured. I have seen three individuals.

Sumatra, (sent by Wehncke). 455.

290. *Bidessus fuscipennis*, n. sp.—Oblongo-ovalis, angustulus, rufo-testaceus, sat nitidus, elytris abdominisque lateribus infuscatis; elytris fortiter sat crebre punctatis, stria suturali profunda; coxis posterioribus medio sparsim, obsolete punctatis. Long. 2, lat. $\frac{7}{8}$ m.m.

The pubescence on the elytra of this species, though scanty is rather long, and distinct; the elytra have no defined marks, but the sides just behind the shoulders are rather paler, and behind this rather darker than elsewhere.

I do not know the sex of the only individual I have seen.

Siam. 114.

291. *Bidessus denticulatus*, n. sp.—Oblongo-ovalis, elongatus, sub-opæus, rufo-testaceus, elytris nigro-signatis, cum thorace dense æqualiter sat subtiliter punctatis; coxis posterioribus subtiliter sed perspicue punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

I have seen but two individuals of this very distinct species, and I have no doubt they are male and female, though the characters that distinguish them are very slight, the male tarsi being only slightly broader than those of the female. The prosternal process is broad, the stria on the thorax is minute, and the elytra are denticulate near the extremity.

Australia, (Rockhampton). 97.

292. *Bidessus flammulatus*, n. sp.—Oblongo-ovalis, angustulus, capite, thorace, antennis pedibusque testaceis, thorace basi medio infuscato, pectore, abdomine elytrisque fuscis, his pone basin, lateribus apiceque testaceo-signatis, crebre, subtiliter, sub-obsolete punctatis, distincte pubescentibus. Long. $2\frac{1}{4}$, lat. $1\frac{1}{2}$ m.m.

The pale markings of the elytra consist of a waved and angulated fascia behind the base, which extends somewhat backwards along the sides, of an apical mark, and of a lateral mark between these. The punctures of the coxæ are sparing, and extremely obsolete.

The male has the front and middle tarsi rather strongly dilated; the female I have not seen.

China, (Kiu Kiang, Mr. Geo. Lewis). 103.

(B. no sutural stria on wing cases).

293. *Hydroporus amabilis*, Clk., M.C.—Oblongo-ovalis, lævigatus, pernitidus, fuscus, pedibus testaceis, capite thoraceque sæpe rufo-testaceis; elytris fusco-testaceis, versus suturam distincte punctatis, humeris et lateribus lævigatis; thorace basin versus fere paulo latiore. Long. $3\frac{1}{8}$, lat. $1\frac{1}{2}$ m.m.

This species varies in colour, form and punctuation, and also in size, and even a little in the thickness of the antennæ.

The male has the front and middle tarsi rather broader than in the female.

Australia, Tasmania; apparently common, (Melbourne, Port Denison). 80.

294. *Bidessus inornatus*, n. sp.—Oblongo-ovalis, angustulus, lævigatus, pernitidus, rufo-testaceus, elytris obscurioribus, subtus lateribus infuscatis; elytris apice et versus suturam crebre subtiliter punctatis; thorace basi quam medio fere angustiore; antennis tenuibus. Long. $2\frac{5}{8}$, lat. $1\frac{1}{3}$ m.m.

Closely allied to *H. amabilis*, readily distinguished by its more parallel and narrower form, and the more parallel-sided thorax.

I have seen only one individual, which is a male, and has the front and middle tarsi (especially these latter) very much broader than they are in *H. amabilis*.

West Australia, (Duboulay). 81.

295. *Bidessus impressus*, n. sp.—Oblongo-ovalis, lævigatus, pernitidus, testaceus, subtus nigricans, elytris fusco-testaceis; his crebre distincte punctatis, punctis versus latera apicemque obsoletioribus; prothoracis lateribus fere parallelis; antennis (præsertim in femina) crassiusculis. Long. 3, lat. vix $1\frac{1}{2}$ m.m.

Closely allied to *Hydroporus amabilis*, but with the thorax narrower behind, the punctures of the elytra more distinct, and the prosternal process narrower and less parallel.

The male has the front and middle tarsi moderately dilated, and the antennæ longer and more slender than in the female.

The specimens in my collection labelled Australia bear no special locality and may perhaps be actually from New Zealand.

New Zealand, and Australia. 82.

296. *Bidessus plicatus*, n. sp.—Oblongo-ovalis, lævigatus, nitidus, castaneo-testaceus; elytris sat crebre et fortiter punctatis, punctis lateribus et apice subtilioribus; prothoracis lateribus subparallelis. Long. ♂ $2\frac{1}{2}$, ♀ $2\frac{1}{4}$, lat. $1\frac{1}{4}$ m.m.

Closely allied to *Bidessus impressus*, but smaller, and more pallid, and with the antennæ of the female considerably more slender.

The male has the front and middle tarsi a good deal more dilated, and the elytra are more elongate; the breast and abdomen are black. In the female the elytra are short, and not so parallel-sided, the colour of the breast and ventral segments is more or less infuscate testaceous, and the antennæ are rather shorter than they are in the male but not stouter.

The specimens sent by Mr. Lawson, from Auckland, are females, and are slightly

larger and more distinctly punctured than those sent by Capt. Broun: the specimens from the Southern Island also depart considerably from the type in some of the details, and possibly there may prove to be more than one species.

New Zealand, (North Island, Capt. T. Broun and R. Lawson; Christchurch, Wakefield; Otago, Prof. Hutton). 83.

297. *Bidessus huttoni*, n. sp.—Oblongo-ovalis, supra testaceus, subtus nigricans; elytris versus suturam vix fortiter punctatis; prothoracis lateribus subparallelis. Long. 3, lat. $1\frac{1}{2}$ m.m.

The male is moderately shining on the wingcases, and has the front and middle tarsi but little dilated. The female has the upper surface dull, and the elytra rather shorter and broader than in the male, and its antennæ are stouter.

Although very similar to *B. plicatus*, the two species are easily distinguished when the corresponding sexes are compared; the male of *B. huttoni* has the anterior and particularly the middle tarsi almost without dilatation, and can thus be distinguished from the corresponding sex of *B. plicatus*; while the female of *B. huttoni*, is readily recognised by its dull upper surface and incrassate antennæ.

New Zealand, (Otago, a pair sent by Prof. Hutton in 1877). 1127.

298. *Hydroporus shuckhardi*, Clk., M.C.—Oblongo-ovalis, capite thoraceque rufo-testaceis, sparsim obsoleteque punctatis; elytris fusco sub-nebulosis, crebre punctatis. Long. $2\frac{1}{4}$, lat. $1\frac{1}{4}$ m.m.

Mas, major sat nitidus, antennis mediocribus, tarsis anterioribus et intermediis fortiter dilatatis, pectore abdomineque nigricantibus.

Fem., minor, opaca, antennis crassis, tarsis simplicibus, pectore abdomineque rufescentibus.

This species is allied to *Hydroporus bistrigatus*, but is smaller, and the sexual disparity is greater.

Australia, (from Melbourne to Queensland, but apparently rare). 85.

299. *Hydroporus bistrigatus*, Clk., M.C.—Oblongo-ovalis, elytris dense subtilissime punctatis, pone medium fusco-nebulosis; pectore nigerrimo; coxis posterioribus sparsim distincte punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

Mas, sat nitidus, tarsis anterioribus et intermediis fortiter dilatatis, abdomine nigro.

Fem., fere opaca, antennis paulo crassioribus et brevioribus, tarsis simplicibus, abdomine læte rufo-testaceo.

Australia, (apparently common and widely distributed). 84.

300. *Hydroporus compactus*, Clk., M.C.—Ovalis, levigatus, pernitidus, rufotestaceus, elytris paulo obscurioribus, his versus suturam crebre sat fortiter punctatis, humeris et lateribus impunctatis. Long. 2 $\frac{1}{2}$, lat. 1 $\frac{1}{4}$ m.m.

This species is readily distinguished by its peculiar form, giving it somewhat the aspect of one of the *Noterini*; the elytra continue the outline of the thorax almost without any interruption, and their hinder part is attenuate and narrow. The prosternal process is broader than it is in the allies.

In the male the antennæ are more slender than in the female, and the front and middle tarsi are slightly broader.

This species varies in form; some specimens (especially those from Brisbane) being more elongate than others.

Eastern Australia, (from Melbourne to Brisbane). 86.

301. *Hydroporus gemellus*, Clk., M.C.—Oblongo-ovalis, angustulus, subopacus, rufescens, elytris vix obscurioribus, abdomine pectoreque nigricantibus; elytris versus suturam crebre punctatis; tibiis anterioribus tarsisque posterioribus gracilibus. Long. 3, lat. 1 $\frac{1}{2}$ m.m.

This species is distinguished amongst its immediate allies, by its narrower form, and its slender front tibiæ, and slender and elongate tarsi.

I have only seen two individuals of this species, which I believe are both females; both have lost the antennæ except that in one the six basal joints remain, these are rather slender.

Australia, (probably the western portion; South Australia, fide Clark.) 87.

302. *Bidessus mundus*, n. sp.—Oblongo-ovalis, sat angustulus, subopacus, rufescens, elytris vix obscurioribus, pectore nigricante, abdomine piceo; elytris crebre punctatis; tibiis anterioribus crassiusculis, tarsi posterioribus sat gracilibus. Long. 3, lat. 1 $\frac{1}{2}$ m.m.

Intermediate between *Hydroporus gemellus* and *Bidessus biformis*, distinguished from the latter by its rather smaller size and narrower form, by the less obsolete punctuation at the base of the elytra, and rather more slender legs.

I believe I have the sexes of this species before me, and if so they are very similar, the tarsi indeed show no difference, but the antennæ of the male are slightly more elongate; in both sexes they are rather slender.

Australia, (probably the west). 88.

303. *Bidessus biformis*, n. sp.—♂ Oblongo-ovalis, nitidulus, fuscus, capite thoraceque rufescentibus; elytris basi sparsim apice crebre punctatis; antennis

gracilibus, tibiis anterioribus sat latis; tarsis anterioribus et intermediis fortiter dilatatis tarsis posterioribus gracilibus. Long. 3. lat. vix $1\frac{1}{2}$ m.m.

♀ Oblongo-ovalis, sericeo-subopaca, rufescens, elytris pectoreque obscurioribus; elytris basi sparsim apice crebre punctatis; antennis brevioribus, crassiusculis, tibiis anterioribus latis, tarsis posterioribus crassiusculis. Long. $2\frac{5}{8}$ m.m.

The sexes of this species have the appearance of being quite distinct species.

Australia, (King George's Sound, Swan River.) 89.

304. *Bidessus dispar*, n. sp.—Oblongo-ovalis, brevis, obscure castaneus, elytris crebre punctatis, tibiis anterioribus et tarsis posterioribus sat gracilibus. Long. $2\frac{1}{4}$, lat. 1 m.m.

Mas, nitidulus, elytris sat fortiter punctatis, antennis gracilibus, tarsis anterioribus et intermediis leviter dilatatis.

Fem., (a.) subopaca elytris subtiliter punctatis, antennis crassis.

(b.) opaca elytris obsolete punctatis, antennis crassis.

In this species there exists two forms of the female and the sexual characters are very remarkable; besides those mentioned above, the hind legs of the male are a little longer and more slender than those of the female.

Australia, (Swan River). 90.

305. *Bidessus occultus*, n. sp.—Sub-oblongus, parum elongatus, castaneo-testaceus, capite obscuriore; elytris crebre subtiliter punctatis; coxis posterioribus parce subtiliter punctatis. Long. $1\frac{3}{4}$, lat. 1 m.m.

This little species differs from *Hydroporus lacustris* (No. 319), by its smaller size more strongly punctured elytra and paler under surface. It is still closer to some of the smallest varieties of *Hydroporus affinis* (No. 318), but it is still smaller, and is of different form, its upper surface being flatter, and the outline much less acuminate behind and the wing-cases are without paler markings. I have seen only a single individual.

Arabia, (El Hedjaz, Dr. C. Millingen). 1128.

306. *Bidessus perforatus*, n. sp.—Clypeo antice incrassato, sed vix marginato; oblongo-ovalis, brevis, rufo-testaceus, elytris sordide testaceis obsoleteque parce fusco-adspersis, fortiter sat crebre punctatis, fere nudis; coxis posterioribus abdominalis segmentis basalibus utrinque fortiter punctatis. Long. vix 2, lat. 1 m.m.

The only two specimens I have seen of this distinct little species, have the front and middle tarsi very slender, and are probably females. The prosternal process is strongly margined at the sides.

China, (Kiu Kiang, Mr. Geo. Lewis). 106.

307. *Bidessus dilutus*, n. sp.—Clypeo antice submarginato; oblongo-ovalis, brevis, minus latus, rufo-testaceus. elytris sordide testaceis obsoleteque parce fusco-punctatis; coxis posterioribus abdominisque segmentis basalibus utrinque fortiter sat profunde punctatis. Long. $1\frac{3}{4}$, lat. 1 m.m.

Closely allied to *Bidessus perforatus* but a good deal smaller and rather narrower, and with the punctuation of the under surface less developed.

Siam, (Bangkok). 107.

308. *Hydroporus pulicarius*, Aubé, Spec. p. 494.—Oblongo-ovalis, subtiliter pubescens, supra opacus, testaceus, elytris obscurioribus obsolete punctatis; coxis posterioribus medio sparsim sat fortiter sed minus profunde punctatis. Long. $1\frac{3}{4}$, lat. 1 m.m.

This species is variable, and it is possible I have mixed more than one under the name; but I do not see any characters sufficient to distinguish the two Brazilian from the two North American individuals I have seen.

America, North and South, (Florida; Santa Rita, Brazil). 143.

309. *Hydroporus caraibus*, Chev., M.C.—Oblongo-ovalis, subtiliter pubescens, supra opacus, testaceus, elytris obscurioribus, externe indistincte fusco-maculatis, obsolete punctatis; coxis posterioribus medio sparsim obsolete punctatis. Long. 2, lat. 1 m.m.

Closely allied to *Hydroporus pulicarius*, but rather larger and more elongate, and with the coxæ more obsoletely punctured.

Cuba. 144.

310. *Hydroporus chilensis*, Sol., M.C.—Oblongo-ovalis, sat latus, subtus niger, antennis pedibusque testaceis, capite thoraceque fusco-testaceis, hoc lateribus dilutioribus, elytris testaceis, fusco signatis, dense sat fortiter punctatis; coxis posterioribus fortiter punctatis. Long. 2, lat. $1\frac{1}{2}$ m.m.

The male is more shining than the female, and has the punctuation of the upper surface deeper and more distinct, and the front and middle tarsi are slightly broader.

Chili. 101.

311. *Hydroporus flavofasciatus*, Steinheil, Atti. Soc. Ital. Sci. Nat. XII, p. 249.—Oblongo-ovalis, minus latus, sine pubescentia, sat nitidus, subtus niger, antennis pedibusque sordide testaceis, supra fusco-niger, prothoracis lateribus obscure dilutioribus, elytris fascia lata sub-basali plus minusve interrupta testacea; thorace elytrisque dense profunde punctatis; coxis posterioribus fortiter punctatis. Long. $1\frac{3}{4}$, lat. 1 m.m.

This species is very similar to *Hydroporus chilensis*, but is a good deal smaller and narrower. I have seen only a single individual, for which I am indebted to Herr Steinheil.

South America, (Achiras). 454.

312. *Bidessus uruguayensis*, n. sp.—Oblongo-ovalis, nitidus (♂), vel opacus (♀), obsoletissime punctatus, parvissime brevissime pubescens (fere nudus), fuscus, capite, thorace, antennis pedibusque testaceis, thorace medio infuscato, elytris obsolete et minus late testaceo-signatis; coxis posterioribus impunctatis. Long. vix 2, lat. 1 m.m.

The fuscous colour by which the elytra are suffused, leave some ill-defined small pale marks.

The male is shining and has the fine and scanty punctuation of the elytra distinctly visible, while the female is dull and without distinct sculpture: the tarsi of the male are rather broader and shorter than in the female.

The species is scarcely distinct from some of the varieties of *Hydroporus affinis* (No. 318), but the male is more obsoletely punctured, and the female has the upper surface dull, without sculpture.

South America; Uruguay. 109.

313. *Bidessus nitidus*, (Bab).—Oblongo-ovalis, nitidus, nudus, fuscus, capite, thorace, antennis pedibusque testaceis, elytris indeterminate testaceo-signatis, interne crebre fortiter punctatis, lateribus fere impunctatis; coxis posterioribus medio parce sub-obsolete punctatis. Long. 2, lat. 1 m.m.

The male has the front and middle tarsi slightly dilated.

This is extremely closely allied to some of the varieties of *Hydroporus affinis* (No. 318), but it is a little broader than any of them, and the punctuation of the elytra is coarser and more sparing; and the few punctures on the coxæ are less obsolete; it is still more similar to *Hydroporus liliputanus* (No. 316), but the impression on the elytra is more elongate and the punctures on the coxæ fewer and smaller.

This species was described by Babington under the name of *Hydroporus nitidus*, but this name cannot be used on account of the prior *Hydroporus nitidus*, Sturm.

Brazil. (Petropolis, May and December, 1850; Santa Rita, August, 1850, R. F. Sahlberg.) 110.

314. *Bidessus crassus*, n. sp.—Brevis, latus, nitidus, nudus, testaceus, pectore abdomineque infuscatis; elytris indeterminate fusco-punctatis et lineatis, circa suturam basin versus fortiter minus crebre punctatis, lateribus apiceque lævigatis; coxis posterioribus omnino lævigatis. Long. 1½, lat. 1 m.m.

This species is distinguished among its immediate allies by its very short, broad

form; the dark markings on the elytra consist of one or two lines and several spots, or thickened and interrupted lines: the basal ventral segment of the hind body shows a single series of punctures on each side and elsewhere is quite smooth.

The only specimen I have seen is, I think, a female.

Brazil, (Santa Rita, August, 1850, R. F. Sahlberg). 111.

315. *Bidessus atomarius*, n. sp.—Ovalis, angustulus, lævis, nitidus, impunctatus, rufo-testaceus, elytris infuscatis, pone basin et ad apicem testaceo-signatis. Long. $1\frac{1}{2}$, lat. $\frac{2}{3}$ m.m.

This minute species looks like a *Laccophilus*. I have seen only three individuals, all of which have the front and middle tarsi quite slender.

Brazil, (Petropolis, May, 1850, R. F. Sahlberg). 112.

316. *Hydroporus liliputanus*, Aubé. M.C.—Oblongo-ovalis, sat latus, nitidus, fuscus, antennis pedibusque testaceis; elytris versus suturam crebre sub-obsolete punctatis, stria discoidali impressa; coxis posterioribus omnino lævigatis. Long. 2, lat. 1 m.m.

Aubé's unique type is a little paler than the specimen above described, but otherwise I see not the least difference.

Brazil, (Bahia). 113.

317. *Bidessus texanus*, n. sp.—Oblongo-ovalis, angustulus, sub-depressus, dense subtilissime pubescens, sub-nitidus, testaceus, abdomine pectoreque nigricantibus, elytris sutura fasciisque transversis fuscis, dense subtilius punctatis; corpore subtus fere impunctato. Long. $1\frac{2}{3}$, lat. 1 m.m.

This species is very similar in appearance to the European *Hydroporus minutissimus*, (No. 267): I have seen only two individuals, both of which have the front and middle tarsi quite slender.

North America, (Texas, sent by Belfrage). 456.

318. *Hydroporus affinis* Say, M.C.—Oblongo-ovalis, sat angustus, sat nitidus, fere nudus, fuscotestaceus, pedibus, capite thoraceque testaceis, hoc disco infuscato; elytris plus minusve distincte pallido-signatis, medioeriter punctatis; coxis posterioribus medio parce obsolete punctatis, vel lævigatis. Long. $1\frac{1}{2}$, lat. 1 m.m.

Obs. species statura, pictura, punctatura coloreque corporis variabilis.

This species is very variable, and I had at first separated the variations as distinct species, but after a repeated study I have been unable to detect any definite characters to distinguish the varieties.

From Sitka I have seen a small variety, (*Hydroporus erythrostomus*, Mann.), in which the elytra are largely pale with a few fuscous vittæ, this form is narrow and the punctuation fine, and the colour beneath is dark.

In California there is a variety, (*H. obscurellus*, Lec.) which is very dull, and of an obscure fuscous red colour, almost without markings on the elytra, and the colour of the under surface dark.

In Nevada occurs a variety in which the elytra are much variegate, and the colour beneath is between black and yellow.

In Utah the specimens I have seen are large, with much variegate elytra, and black beneath.

H. macularis, Lec. is entirely pale beneath, it is of small size, and I can see nothing to distinguish it from the Sitka specimens except the rather paler colour of the under surface.

In Central America the colour is dark, and the punctuation of the elytra scanty.

The specimens from Chili are variable in colour and punctuation, but I cannot find any constant distinction from the North American specimens: and the same remark applies to *H. bonariensis*, Steinheil.

H. strobili, Steinh. from S. Luis, differs but little from the North American type.

North and South America, from Sitka to Buenos Ayres. 102, 115, 129, 130, 132, 135.

319. *Hydroporus lacustris*, Say, M.C.—Oblongo-ovalis, nitidulus, parce subtiliter pubescens, testaceus, abdomine pectoreque nigris; elytris ochraceis, sat crebre subtiliter punctatis; coxis posterioribus nitidis, impunctatis. Long. $1\frac{3}{4}$, lat. 1 m.m.

The punctuation of the upper surface in this species is finer than in any of the North American immediate allies. The colour of the under surface varies, sometimes the ventral segments are black, sometimes yellow. The tarsi are slender in all the specimens I have examined, (eight in number), and I see no sexual characters.

The species is easily distinguished from *Hydroporus affinis*, and *H. fuscatus*, by the stria at the base of the elytra being rather longer than the thoracic stria; it has also traces of a sutural stria on the elytra.

North America, (Massachusetts, Texas). 133.

320. *Hydroporus fuscatus*, Crotch, Tr. Am. Ent. Soc. IV, p. 391.—Oblongo-ovalis, minus angustus, nitidulus fere sine pubescentia, rufescens, elytris fusco-signatis, sat crebre fortiter punctatis, striga basali brevissima vel omnino nulla; coxis posterioribus medio sparsim fortiter punctatis. Long. 2, lat. 1 m.m.

This species is readily distinguished from all the varieties of *Hydroporus affinis*, (No. 318), by the comparatively coarse punctuation of the hind coxæ, and the very

short impressed stria at the base of the elytra. It varies a little in colour and size, some individuals having the hind body and breast infuscate. The length of the striga also varies a little, it is sometimes so abbreviated as to be scarcely perceptible.

Atlantic States of North America: "from Lake Superior to Florida," Crotch. 131.

321. *Hydroporus pullus*, Lec., M.C.—Elongato-ovalis, nitidulus, tenuissime pubescens, testaceus, elytris vittis elongatis fuscis tribus, crebre distincte punctatis; coxis posterioribus pectoreque impunctatis, nitidis. Long. 2, lat. 1 m.m.

In this species the apical ventral segment is a good deal broader and larger than in its allies, and by this character it may readily be distinguished from varieties of other North American species which resemble it in appearance: it has moreover an indistinct dorsal stria extending about half the length of the wing-case. The tarsi are rather long and slender, but I see no differences between the sexes.

North America, (Red River, Pennsylvania, Louisiana). 134.

322. *Hydroporus granarius*, Aubé, M.C.—Breviter ovalis, latus, subtus convexus, subtiliter pubescens, nitidus, ferrugineus, elytris obscurioribus; prothorace obsolete punctato, elytris crebre distincte punctatis; coxis posterioribus nitidis, sparsim, subtiliter sed distincte punctatis; abdomine fere impunctato; antennis fuscis, basi testaceo. Long. $1\frac{3}{4}$, lat. $1\frac{1}{2}$ m.m.

This species has the form of a minute *Hyphydrus*, the elytra continuing the outline with the thorax. I see no sexual characters among the five specimens I have examined, all of which have the tarsi small and rather slender.

United States of North America, (Massachusetts). 140.

323. *Bidessus lynceus*, n. sp.—Brevis, ovalis, fere sine pubescentia, nigricans, capite fusco, prothorace ad angulos anteriores late testaceo, elytris fasciis duabus, transversis, flammulatis, testaceis; prothorace basi et disco punctatis; elytris crebrius sat fortiter, pectore fortiter, punctatis; antennis testaceis, apicem versus plus minusve infuscatis. Long. 2, lat. $1\frac{1}{2}$ m.m.

The male has the upper surface a little shining, the anterior and middle tarsi are but little dilated: in the female the upper surface is dull.

The species is allied to *Hydroporus cinctellus*, Lec. (No. 255) but it is a good deal broader and shorter, and the fasciæ on the elytra are very irregular, being irregularly angulate; these yellow marks are variable in their extent, sometimes occupying nearly half the surface of the wing-cases, and at other times diminished in size, and broken into more or less separated marks.

Central America, (Guatemala City, E. C. Champion). 1129.

324. *Bidessus discoidalis*, n. sp.—Oblongo-ovalis, ferrugineo-testaceus, nitidus, nudus, elytris testacco nigroque lineatis, prothoracis marginibus anterioribus et posterioribus anguste nigricantibus; elytris crebre, subtiliter, sed distincte et æqualiter punctatis, stria discoidali impressa; coxis posterioribus lævigatis, abdominis segmentis basalibus utrinque fortiter punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

The only specimen I have seen of this species has the tarsi quite slender and is probably a female. It seems to be allied to *Hydroporus pullus*, Lec. (No. 321) but is very much broader.

South America, (Parana). 108.

325. *Hydroporus duponti*, Aubé, M.C.—Oblongo-ovalis, niger, supra in capite, thorace et elytris signaturis testaceis; prothorace elytris angustiore, lateribus versus basin fere angustioribus, utrinque striola obliqua profunda impresso, inter striolas transversim depressiusculo; elytris versus suturam crebre fortiter, versus latera obsolete, punctatis; corpore subtus nitido, coxis posterioribus fortiter punctatis. Long. 3 m.m., lat. $1\frac{1}{2}$ m.m.

I have seen only a single individual—one of Aube's types—of this very distinct species; I do not know its sex, the tarsi are not dilated, but the last ventral segment is prominent at the apex and foveolate. The form recalls *Huxelhydrus syntheticus*. The yellow marks on the upper surface are, a transverse line on the vertex, a yellow band across the thorax near the front, interrupted in the middle, and four or five, small, isolated markings on the elytra, all distant from the suture.

Brazil, (Coll. Mnizech). 1132.

I. 23.—Genus *HUXELHYDRUS*.

Prosternal process elongate, parallel-sided; intercoxal process of metasternum not attaining the mesosternal fork; hind tibiæ with a distinct, slender, basal portion. Coxal lines shorter than the prosternal process.

A single species, (and of that only two or three individuals) is known.

326. *Huxelhydrus syntheticus*, n. sp.—Niger, antennis pedibusque rufis, capite piceo, thorace elytris testaceis, thorace marginibus anterioribus et posterioribus nigricantibus, elytris indeterminate nigro-lineatis, dense obsolete punctatis, apice subtruncatis, utrinque obtuse angulatis, stria discoidali impressis; corpore subtus dense æqualiter subtiliterque punctato. Long $3\frac{1}{4}$, m.m., lat. $1\frac{5}{8}$ m.m.

I have seen only three individuals of this small but most interesting insect; one,

a very old individual was contained in Chevrolat's collection, with the label "Hydroporus apicalis, Chev. Australia, bor.;" the other two were in Andrew Murray's New Zealand collection, labelled "nov. spec. New Zealand." The true habitat is therefore still to be ascertained.

Northern Australia; (Mus. Chevrolat). New Zealand, (Mus. Murray). 100.

I. 24.—Genus *TYNDALLHYDRUS*.

Prothorax narrowed behind, prosternal process prevented by the contiguous and intervening middle coxæ from attaining the metasternum.

This is an autogenus of which only an unique individual is known.

327. *Tyndallhydrus caraboides*, n. sp.—Oblongo-ovalis, brevisculus, sine pubescentia; dense punctatus, opacus, testaceus, elytris signaturis interruptis nigris; prothoracæ valde transverso, elytris angustiore, posterius angustato, utrinque striga obliqua profunde impressa; elytris densius sat fortiter punctatis; coxis posterioribus fortiter punctatis; abdomine impunctato. Long. $3\frac{1}{2}$, lat $1\frac{3}{4}$ m.m.

I have seen but a single specimen of this species, and am uncertain about its sex, the front tarsi are rather broad, though the joints are not at all dilated.

Africa, (Algoa Bay). 445.

II. 8.—Group *HYPHYDRINI*.

Hind coxal cavities separated, quite exposed, being not at all protected by the coxal processes, the apices of which are rounded or obtuse, and are closely adpressed to the level of the ventral segments.

One genus—*Hyphydrus*—is rather widely distributed in the eastern hemisphere, and is well known by numerous species; the other genera are all auto-genera, confined to South Africa, and very rare in collections.

Epipleura gra-
dually nar-
rowed from
shoulder to
extremity. }

— — — —

DARWINHYDRUS
(Vide p. 373.)

Epipleura narrowed from shoulder to hind margin of first ventral segment; after that very slender and necessarily, therefore, nearly parallel.	Prosternal process not touching metasternum.	—	—	—	<i>ANDEX</i> (<i>Vide below</i>).
	Prosternal process touching metasternum.	Terminal joint of front tarsus elongate; intercoxal process of metasternum not connecting with mesosternal fork.	Last joint of front tarsus about as long as the third joint.	—	<i>CÆLIHYDRUS</i> (<i>Vide p. 373.</i>)
			Last joint of front tarsus twice as long as third joint.	Elytra without definite genicular fossa.	<i>PRIMOSPES</i> (<i>Vide p. 372.</i>)
				Elytra with definite genicular fossa at shoulder of epipleura.	<i>HYDROPEPLUS</i> (<i>Vide p. 372.</i>)
		Terminal joint of front tarsus short; intercoxal process of metasternum touching mesosternal fork.	—	—	<i>HYPHYDRUS</i> (<i>Vide p. 374.</i>)

I. 25.—Genus *ANDEX*.

Prosternal process abbreviate; its concealed extremity not extending outside the middle coxæ, and not reaching the metasternum. Prothorax much narrower than the after-body, so that the outline at the shoulders is very interrupted.

A single South African species is the only one yet known.

328. *Andex insignis*, n. sp.—*Depressiusculus*, subopacus, sine pubescentia, capite nigricante antè ferrugineo, thorace ferrugineo, medio maculis duabus vage fuscis, elytris obscure ferrugineis, pectore abdomineque nigris, hoc apicem versus ferrugineo; antennis pedibusque rufescentibus; thorace elytrisque sparsim subtiliter punctatis, illo medio ante basin transversim depresso; pectore abdomineque opacis sed vix punctatis. Long. 5½, lat. 3 m.m.

This species is very distinct by the prosternal process, and by the form of the thorax which is much narrower at the base than are the elytra.

In the male the two basal joints of the front and middle tarsi are much dilated, the basal one being elongate as well as broad.

Cape of Good Hope, (found by Drège). 168.

I. 26.—Genus *HYDROPEPLUS*.

Terminal joint of front tarsus quite twice as long as the third joint; head rounded in front; elytra at the shoulder of the epipleura with a fossa limited behind by a distinct raised line.

329. *Hydporus trimaculatus*, Cast., M.C.—Ovatus, crassus, subdepressiusculus, dense subtilissime punctatus, opacus, sine pubescentia, supra fuscus, infra niger; antennis pedibusque obscure testaceis; capite nigro in vertice macula minima ferruginea; thorace ad latera paulo rotundato, marginibus late rufo-ferrugineis, macula oblonga ferruginea in medio postice notato; abdomine rufo-nigro vel nigro. Long. $5\frac{1}{2}$, lat. $3\frac{1}{8}$ m.m.

Mas, tarsi anterioribus et intermediis fortiter dilatatis, intermediorum articulo basali secundo evidenter latiore.

Fem., tarsi anterioribus et intermediis sat dilatatis, intermediorum articulo basali secundo paulo latiore.

Southern Africa, (Cape Town, Caffraria). 167.

I. 27.—Genus *PRIMOSPES*.

Terminal joint of front tarsus quite twice as long as the third joint; head subtruncate in front; the depression at the base of the elytral epipleura not limited behind by a raised line.

A single South African species is the only one known.

330. *Primospes suturalis*, n. sp.—Ovalis, sub-opacus, subtilissime punctatus, sine pubescentia, niger, antennis pedibusque rufis, prothorace testaceo, medio maculis duabus fuscis, elytris fusco-testaceis, sutura margineque externo dilutionibus, lineis

duabus punctorum sat distinctis; prothoracis angulis posterioribus acutis. Long. $4\frac{1}{4}$, lat. $2\frac{1}{2}$ m.m.

Mas, tarsi anterioribus et intermediis valde dilatatis.

Fem., tarsi anterioribus et intermediis latis.

This species has a good deal the form and appearance of a *Laccophilus*; the excessively fine punctuation is an important diagnostic of the species.

South Africa, (Cape Town). 169.

I. 28.—Genus *CÆLHYDRUS*.

Epipleura much narrowed from the shoulder to the hind margin of the first ventral segment, behind that very slender, and therefore necessarily nearly parallel. Last joint of the front tarsus about as long as the third joint. Prosternal process reaching intercoxal process of the metasternum.

A single South African species is the only one known.

331. *Cœlhydrus brevicollis*, n. sp.—♂ Ovalis, crassiusculus, parumelongatus, subtus convexus, supra sparsim punctatus, ferrugineus, capite thoraceque nitidis, elytris subopacis, pectore nigricante; coxis posterioribus sparsim sat fortiter punctatis; tibiis posterioribus calcaribus subsinuatis. Long. $3\frac{7}{8}$, lat. $2\frac{1}{8}$ m.m.

This species has much the form of *Dytiscus confluens* (No. 423), but it is larger, more strongly built, comparatively a little broader, and more convex. The three individuals before me, appear all to be males, the front and middle tarsi are rather short, broad, and flat, the basal joint of the front ones is distinctly, of the middle ones strongly dilated. The head has no trace of margin in front, and has only a very scanty punctuation. The thorax is sparingly punctured along the base, almost without punctuation along the middle; the punctures on the elytra are distant from one another and not coarse, and have some finer very obsolete punctures mixed with them.

South Africa, (Port Elizabeth, 28th February, 1875, Geo. Lewis). 1138.

I. 29.—Genus *DARWINHYDRUS*.

Epipleuræ of elytra becoming narrower in a regular and gradual manner from the shoulder to the extremity; outline of thorax and elytra quite continuous, the latter acutely costate.

A single peculiar South African species* is the only one known.

* It is just possible this may be an Australian species.

332. *Darwinhydrus solidus*, n. sp.—Latus, sat convexus, fere opacus, sine pubescentia, ferrugineus, supra fusco-testaceus, fortiter punctatus, elytris costis tribus elongatis elevatis. Long. $3\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

Head broad and short, rather coarsely punctured, the clypeus completely rounded in front and finely margined. Thorax very short, very closely adapted to the base of the elytra, the lateral margins strongly elevated, moderately coarsely punctured. Elytra with large distinct punctures rather closely placed, and each with three elevated ribs, the inner one placed at a considerable distance from the suture, the outer one rather near to the pleural margin and curved so that it joins the inner line close to the extremity of the elytra. the middle rib does not join the others. Coxæ coarsely, moderately closely, punctured.

I have seen only one individual, of whose sex I feel doubtful.

South Africa, (Cape Town). 188.

I. 30.—Genus *HYPHYDRUS*.

Intercostal process of metasternum obscurely but decidedly connected with the mesosternum: its extremity being turned upwards so that it rises into the mesosternal fork. Terminal joint of the front tarsus very obscure and but little exerted from the third joint.

This genus consists at present of about twenty-five species* ; they are very similar to one another, and their determination is not easy ; no doubt many more species exist undescribed and an attempt to discriminate by means of a table the species here described would not be likely to prove of use. The punctuation of the wing-cases is very useful for distinguishing many of the species ; it consists often of a double punctuation viz, (*a*) coarse and few, (*b*), fine and numerous, punctures ; the comparative development of these two forms of punctuation should be noticed. The distinctive characters of the sexes are also very important aids.

The species do not occur in the New World.

* In addition to these the following descriptions probably refer to species of this genus. *Hydroporus bifasciatus*, Macl. (No. 1345 *huj. op.*) ? = No. 358 ; Australia.—*Hydroporus coquereli*, Fairm. (No. 1355), ? = No. 346 ; Madagascar.—*Hyphydrus caffer*, Boh. (No. 1460) ; Caffraria.—*Hyphydrus circumflexus*, Klug, (No. 1462), near No. 345 ; East Africa.—*Hyphydrus illigeri*, Perrd. (No. 1465) ? = No. 358 ; New Caledonia.—*Hyphydrus lugubris*, de Borre. (No. 1467) ; Sinai.—*Hyphydrus maculatus*, Bab. (No. 1468) ; ? South America. The genus to which the following two descriptions should be referred is doubtful, *Hyphydrus austro-caledonicus*, Perrd. (No 1459) ; New Caledonia.—*Pachytes elegans*, Mont. (No. 1499) ; New Caledonia.

333. *Hyphydrus grandis*, Cast. M.C.—Ovatus, brevis, crassus, thorace basi elytris angustiore, dense punctatus, rufescens, thorace antice et postice nigro, elytris irregulariter nigro-signatis, stria discoidali basi distincta. Long. 6, lat. 4 m.m.

Mas, nitidulus, fortiter punctatus, tarsi 4 anterioribus deplanatis, trochanteribus anterioribus valde elongatis.

Fem., subopaca, sat fortiter punctata, tarsi 4 anterioribus compressis, trochanteribus anterioribus brevibus.

In this species and *H. major*, the front legs are more elongate, and the outline of the body is much interrupted at the junction of the thorax and after body.

Africa, (Gaboon). 26.

334. *Hyphydrus major*, n. sp.—Ovatus, latus, sat brevis, thorace basi elytris multo angustiore, dense, æqualiter, sat fortiter punctatus, rufescens, thorace antice et postice nigro, elytris irregulariter nigro-signatis, stria discoidali sat distincta. Long. 6½, lat. 4 m.m.

Mas, nitidulus, fortiter punctatus, tarsi 4 anterioribus deplanatis, trochanteribus anterioribus valde elongatis.

Fem., subopaca, minus fortiter punctata, tarsi 4 anterioribus compressis, trochanteribus anterioribus brevibus.

Differs from *H. grandis*, only by the rather more elongate form, the rather longer and thinner front legs, and slightly more even and finer sculpture. The sexual characters are quite the same, and I cannot feel sure whether this be more than a local form of *H. grandis*.

Lower Egypt, and Nubia. 27.

335. *Hyphydrus parvicollis*, n. sp.—Ovalis, sat latus, valde convexus, ferrugineus, thorace antice et postice nigro, elytris nigro-signatis, thorace parvo, basi elytris angustiore; fortiter crebre, æqualiter punctatus. Long. 5, lat. 3 m.m.

Head small, rather coarsely and closely punctured. Thorax very transverse, the sides strongly oblique, of a dark yellowish colour, black in front and behind, rather coarsely and moderately closely punctured. Elytra rather coarsely punctured, the punctures rather close, much finer towards the sides, the punctures, except for this, are all of one size; they are of a yellowish or tawny colour, black along the suture, outside this with a black band, and external to this with one or two other black marks. The under surface is reddish and shining; the prosternum bears on the front a small acute tubercle.

I have seen only three individuals of this species, they all agree exactly, and are I believe males, though they have the tarsi slender, the joints compressed laterally and not dilated; the shape of the front tibia is peculiar, it is slender, and on the inner side is slightly dilated above the middle, and thence obliquely narrowed to the knee.

Gaboon; found by Henri Deyrolle. 28.

336. *Hyphydrus pictus*, Klug, M.C.—Ovalis, sat latus, nitidus, ferrugineus, supra rufo-testaceus, prothorace medio infuscato, elytris nigro-signatis; thorace crebre fortiter punctato; elytris inæqualiter punctatis, punctis majoribus sat magnis, minoribus ad basin et ad latera obsolete apicem versus distinctis, stria discoidali distincta. Long. $4\frac{1}{2}$, lat. 3 m.m. ♂.

Mas, trochanteribus anterioribus profunde incisus, incisuræ margine externo tenui, subhamato; abdominis segmento apicali elongato profunde transversim impresso, apice prolongato, incrassato et truncato; tibiis et tarsis anterioribus leviter dilatatis.

Fem., paulo minor et magis subtiliter punctata, thoracis angulis posterioribus magis acutis, trochanteribus simplicibus, abdominis segmento apicali ante apicem transversim impresso, apice obtuse rotundato.

This species appears to be variable in punctuation and colour; the punctuation on the wing-cases is often much effaced, and the black markings are sometimes very indistinct.

I think Klug's description may apply to this species; it is not however very characteristic, and I may be mistaken in my interpretation of it.

Egypt, Sinai, Arabia. 29.

337. *Hyphydrus africanus*, n. sp.—Ovalis, latus, nitidus, convexus, ferrugineus, supra rufo-testaceus, prothorace medio infuscato, elytris nigro-signatis; thorace crebre fortiter punctato, elytris crebre, sat fortiter, vix inæqualiter punctatis, punctis majoribus minus conspicuis, minoribus ad basin subtilioribus; stria discoidali ad basin sat distincta.

Mas, trochanteribus anterioribus incisus, incisuræ margine externo crasso; abdominis segmento apicali vix impresso, apice tuberculato; tibiis anterioribus dilatatis. Long. $4\frac{1}{2}$, lat. 3 m.m.

Fem., minor, paulo magis subtiliter punctata, trochanteribus et abdomine muticis. Long. 4, lat $2\frac{3}{4}$ m.m.

Very closely allied to *Hyphydrus pictus*, but broader and more convex, the punctuation more distinct, and the front tibiæ of the male much broader, the apical segment of the hind body less developed in the male.

Senegal. 30.

338. *Hyphydrus crassus*, Woll. Col. Hesp. p. 33.—Ovalis, sat convexus et latus, crebre, fortiter, vix inæqualiter punctatus, piceus, capite, thoracis lateribus angustius, elytris rufis testaceis, his nigro-signatis, stria discoidali ad basin sat distincta. Long. ♂ $4\frac{1}{2}$, lat. 3 m.m.

Mas, trochanteribus anterioribus incisuræ parvæ margine externo crasso, abdom-

inis segmento apicali transversim impresso, apice medio incrassato ; tibiis anterioribus dilatatis.

Senegal ; Cape Verde Islands. 31.

339. *Hyphydrus stipes*, n. sp.—Ovalis, sat convexus et latus, crebre sat fortiter, minus inæqualiter punctatus, piceus, capite, thoracis lateribus angustius elytrisque rufo-testaceis, his nigro-signatis, stria discoidali ad basin distincta ; tarsorum anticorum articulo 3^o nigricante.

Mas, trochanteribus anterioribus incisissimis, incisuræ margine externo crasso ; abdominis segmento apicali profunde transversim impresso, apice medio late incrassato, tibiis anterioribus leviter dilatatis. Long. 4½, lat. vix 3 m.m.

Fem., minor, paulo magis subtiliter punctata.

Closely allied to *Hyphydrus crassus*, but scarcely so broad, with the sculpture of the upper surface not quite so dense, the finer punctures being not so large, and with the male tibiæ a good deal narrower. The greater development of the finer punctures of the upper surface readily distinguishes it from *Hyphydrus pictus*, (No. 336).

Madagascar, Bourbon. 32.

340. *Hyphydrus scriptus*, Aubé, M.C.—Ovalis, convexus, latus, nitidus, inæqualiter sat crebre punctatus, picescens, capite, thoracis lateribus angustius, elytrisque rufo-testaceis, his nigro-signatis, stria discoidali ad basin distincta.

Mas, trochanteribus anterioribus fere ad basin incisissimis, tarsorum quatuor anticorum articulo basali posteriorius fortiter dilatato ; tibiis anterioribus bene dilatatis ; abdominis segmento apicali transversim impresso, apice medio incrassato. Long. 4¼, lat. 3 m.m.

Fem., paulo minor et subtilius punctata.

A species of short, broad and convex form, with the fine punctures of the elytra distinct but small and not dense, so that they are quite distinct from the larger punctures although these are not coarse or conspicuous.

I have seen only a pair of this species, the female was one of two specimens in Déjean's collection labelled "*Hyphydrus scriptus* ? h. in Ins. Bourbon," the other individual being a female of *H. stipes*. The female of this species has the front tarsi yellow, while the third joint is infuscate in the male.

I cannot satisfactorily assign the description given by Fabricius (*Ent. syst. supp.* p. 65) to this or any other species, but it no doubt refers to some species of *Hyphydrus* (*Vide Syst. El. I. p. 257* where it is associated with *Dytiscus ovatus*, under the generic name *Hydrachna*). Although it is not probable that Aubé was correct in thinking the present species was the one intended by Fabricius, I have

adopted nevertheless the name used by Aubé, feeling sure that the Fabrician description must pass into oblivion as being insufficient for recognition.

Madagascar, Bourbon. 33.

341. *Hyphydrus distinctus*, Aubé, M.C.—Ovalis, minus convexus et latus, piceus, prothoracis lateribus dilutioribus, capite clytrisque ferrugineis; his nigro-signatis, stria discoidali ad basin sat distincta; crebre, fortiter inæqualiter punctatis; thoracis lateribus sub-rotundatis, angulis posterioribus rotundato-obtusis.

Mas, nitidus, pedibus crassis tarsorum quatuor anticorum articulo basali valde dilatato, trochanteribus anterioribus incisura magna, margine externo tenui; abdominis segmento apicali transversim impresso, apice medio prolongato et leviter incrassato. Long. $4\frac{3}{4}$, lat. $3\frac{1}{2}$ m.m.

Fem., opaca, obsoletius punctata, pedibus abdomineque simplicibus.

This species is less convex in form than its allies, and is very readily distinguished by the great dilatation of the basal joint of the four front tarsi, especially of the intermediate pair: the punctuation on the thorax is very close, and on the elytra the large punctures are much developed, the smaller ones being moderate.

I think Aubé's description was drawn up from specimens belonging to more than one species. A type of *H. distinctus* in Déjean's collection is a male of this species, which appears to be very rare in collections. I have only seen a single female, which differs from the male in colour and sculpture in a similar manner as does the female of *H. variegatus* from its male. Aubé says the female resembles the males, and it is possible there may be a shining form of the sex.

Madagascar, Bourbon. 34.

342. *Hyphydrus grossus*, n. sp.—Ovalis, convexus, nitidus, ferrugineus, prothorace infuscato lateribus dilutioribus, clytris testaceis nigro-signatis, stria discoidali ad basin distincta; confertim, fortiter, valde inæqualiter, punctatus, punctis majoribus perconspicuis.

Mas, trochanteribus anterioribus incisura sat magna, tibiis anterioribus evidenter dilatatis, abdomine segmento apicali transversim impresso, apice medio tuberculato-incrassato. Long. $4\frac{1}{2}$, lat. 3 m.m.

Fem., Paulo minor, vix adeo fortiter punctata.

This is a rather broad and convex species, and is remarkable for the very coarse and numerous conspicuous large punctures on the upper surface, the finer punctures between the large ones are distinct but not coarse, towards the apex of the elytra the large punctures are more indistinct, and the finer ones coarser and more numerous, so that there the unequal character of the sculpture is much less conspicuous than near the base of the elytra.

South Africa; Caffraria (Adeo bush); Cape Town. 35.

343. *Hyphydrus signatus*, n. sp.—Ovalis, convexus, nitidus, ferrugineus, prothorace infuscato, lateribus dilutioribus, elytris nigro-signatis, stria discoidali distincta, sat crebre valde inæqualiter punctatis, punctis majoribus conspicuis, minoribus versus basin subobsoletis. Long. 4, lat. $2\frac{3}{4}$ m.m.

This closely resembles the female of *Hyphydrus grossus*, but is a little smaller, and the punctuation of the upper surface is less marked. I have seen but two individuals of the species, they, I believe, are both females.

Africa, (Guinea). 452.

344. *Hyphydrus puncticollis*, n. sp.—Ovalis, sat convexus, subtus piceus vel testaceus, capite rufescente, prothorace nigro lateribus rufescentibus, elytris testaceis, nigro-lineatis; prothorace dense punctato; elytris confertim, fortiter inæqualiter punctatis, punctis majoribus conspicuis, stria discoidali ad basin distincta.

Mas, nitidus, trochanteribus anterioribus incisura sat magna, tibiis anterioribus vix dilatatis; abdominis segmento apicali transversim impresso, apice medio elevato et incrassato. Long. $4\frac{1}{2}$ lat. 3 m.m.

Fem., (a.) nitidula ut in mare punctata.

(b.) opaca, obsoletius punctata.

In this species the thorax is very densely punctured; the elytra also are densely punctured, and their large punctures are numerous and conspicuous. The species is closely allied to *Hyphydrus grossus*, but the punctuation of the thorax is a good deal denser, and the large punctures on the elytra are much less coarse and conspicuous.

Abyssinia. 36.

345. *Hyphydrus madagascariensis*, Wehncke, Stet. Zeit. 1877, p. 150.—Ovalis, sat convexus, minus latus, crebre æqualiter vix fortiter punctatus, ferrugineus, vertice prothoraceque nigricantibus, hoc medio rufo, elytris nigro testaceoque variegatis, stria discoidali obsoleta. Long. 5, lat. $3\frac{1}{2}$ m.m.

Head with a deep impression on each side near the eye, reddish with the upper portion blackish. Thorax red with the front and hind margins black, its hind angles distinct, the sides not rounded. The elytra are rather finely but quite distinctly punctured, without any larger scattered punctures, the discoidal stria indistinct even at the base; they are yellowish in colour, but largely covered with confused and confluent black marks.

I have seen only two individuals of this species; their upper surface is shining. The rather elongate form, the colour of the thorax, and the very evident impressions on the head make this a species very easily distinguished.

Madagascar. 155.

346. *Hyphydrus impressus*, Klug, M.C.—Parvus, ovalis, valde convexus, brevis piceus, capite thoracisque lateribus ferrugineis; elytris lateribus basique testaceo signatis, confertim, fortiter, æqualiterque punctatis, stria longitudinali nulla; antennis pedibusque testaceis; capite medio late impresso. Long. $3\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

This species is peculiar, and in its form approaches *Dytiscus inæqualis*, (No. 381), the margin of the clypeus is very distinct and definite, and on the middle of the head is a broad impression, which is very finely and minutely punctured so as to be dull. The legs are slender. I am unable to discover any external sexual characters.

Madagascar. 37.

347. *Dytiscus ovatus*, Linn., *Hyphydrus ovatus*, M.C.—Ovalis, convexus, latus, ferrugineus, elytris obscurioribus basi et marginibus lateralibus indistincte testaceo signatis.

Mas, major, dense fortiter, irregulariter punctatus, supra nitidus, pedibus quatuor anterioribus crassiusculis, tarsis bene dilatatis, subdeplanatis. Long. 5, lat. $3\frac{1}{2}$ m.m.

Fem., minor, obsoletius punctata, opaca, pedibus quatuor anterioribus gracilibus tarsis lateraliter compressis. Long. $4\frac{1}{2}$, lat. vix. 3 m.m.

Var.? Paulo latior et magis subtiliter punctatus, prothoracis lateribus subrotundatis, elytrorum epipleuris ad basin latioribus.

I have seen only a single male of this variety, should it prove to be a distinct species I would call it *Hyphydrus sanctus*. The sexual characters seem to be exactly similar to those of *Dytiscus ovatus*. It is from Jerusalem.

This species is one of the common water beetles of Central Europe, and is found in Sweden, and rarely in the extreme south of Scotland. In Castlenau's collection there is a large male of the species indicated as found in the Island of Pulo Penang. 38.

348. *Hyphydrus variegatus*, Aubé, M.C.—Ovalis, convexus, latus, subtus ferrugineus et opæus, capite ferrugineo vertice infuscato, thorace ferrugineo, basi infuscato, elytris fuscis, transversim angulariter testaceo-signatis. Long. $4\frac{1}{2}$, lat. 3 m.m.

Mas, supra sat nitidus, dense, fortiter, sat irregulariter punctatus, pedibus quatuor anterioribus mediocriter crassis.

Fem., vix minor, opaca obsolete punctata, thorace antierius medio foveolato, pedibus sat gracilibus.

In this species the traces of a sutural stria on the elytra are more strongly marked than in any other of the allies.

Southern Europe, and North Africa; South of France, Spair, Tangiers, and formerly found at Vienna. 39.

349. *Hyphydrus japonicus*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 54.—Ovalis, latus, convexus, testaceus, thorace basi, elytris que fusco-signatis, vertice maculis duabus parvis fuscis; elytris stria discoidali ad basin sat distincta, suturali subobsoleta. Long. $4\frac{1}{2}$, lat. 3 m.m.

Mas, nitidulus, crebre inæqualiter punctatus, tarsorum quatuor anticorum articulo basali posterius valde (præsertim intermediorum) dilatato, abdominis segmento basali medio tuberculo crasso subelevato.

Fem., pedibus paulo magis gracilibus,

(a.) ut in mare nitidula subtilius punctata; paulo minor.

(b.) opaca, obsolete punctata; evidenter minor.

In this species the sculpture of the elytra consists of large and small punctures mixed together, the large ones are rather numerous and are conspicuously different in size from the smaller ones, which are very fine; the ground colour in this species is a peculiar clay yellow, on which the dark markings are displayed in a very conspicuous manner.

Japan. 40.

350. *Hyphydrus frontalis*, n. sp.—Ovalis, latus, convexus, nitidus, confertim, fortiter, inæqualiter punctatus, ferrugineus, vertice maculis duabus minutis et prothorace basi medio fuscis; elytris testaceis fusco-signatis, stria discoidali ad basin sat distincta, suturali subobsoleta. Long. $4\frac{1}{2}$, lat. 3 m.m.

Mas, tarsorum quatuor anticorum articulo basali posterius valde (præsertim intermediorum) dilatato, abdominis segmento basali medio vix tuberculato.

Fem., paulo minor, pedibus paulo magis gracilibus.

This species is much allied to the *H. japonicus*, but the ground colour is redder, and the punctuation is rather coarser, which is especially to be remarked when the fine punctures of the elytra in the two are compared; the basal segments of the hind body are finely punctured on the middle.

Japan. 41.

351. *Hyphydrus læviventris*, n. sp.—Ovalis, latus, convexus, nitidus, sat confertim, inæqualiter punctatus, punctis majoribus (elytrorum) conspicuis, ferrugineus, prothorace basi medio elytris que fusco-signatis, his stria discoidali ad basin sat distincta, suturali fere omnino nulla; abdomine medio lævi, impunctato.

Mas, tarsorum quatuor anticorum articulo basali sat dilatato; major. Long. 5, lat. $3\frac{1}{4}$ m.m.

Fem., pedibus paulo magis gracilibus, minor. Long. $4\frac{1}{2}$ m.m.

In this species the large punctures of the elytra are strongly developed so as to be in conspicuous contrast with the finer ones: though extremely similar to *H.*

japonicus, and *H. frontalis*, this species is easily distinguished when the two are compared by the more slender and elongate third joint of the front tarsi, this difference being more striking in the males than in the females.

Japan. 42.

352. *Hyphydrus orientalis*, Clk., M.C.—Ovalis, latus, convexus, nitidus, confertim fortiter subinæqualiter punctatus, ferrugineus, supra rufo-testaceus, prothorace basi medio elytris que fusco-signatis, his stria discoidali ad basin sat distincta, suturali subobsoleta; abdomine segmentis basalibus medio subtiliter punctatis. Long $4\frac{1}{2}$, lat. vix 3 m.m.

Mas. tarsorum quatuor anticorum articulo basali sat dilatato; abdomine segmento basali medio macula rotunda, opaca (?glandulifera).

Fem., paulo subtilius punctata, pedibus paulo magis gracilibus.

This species in its general appearance much resembles *H. frontalis*, (No. 350), but the male tarsi are similar to those of *H. leviventris*.

Although I have not been able to examine the tarsi of the specimens in the British Museum of *Hyphydrus eximius*, and *H. pulchellus*, Clark, I believe they will prove to belong to this species.

China, (Kiu-Kiang). Also from Formosa; the specimens from this locality are rather more coarsely and distinctly punctured on the elytra, but as the structural and sexual characters seem to be quite the same as in the Chinese specimens, I cannot consider them a distinct species. 43.

353. *Hyphydrus indicus*, n. sp.—Ovalis, brevis, sat convexus, testaceus, prothorace nigro, lateribus late testaceis, elytris nigro-signatis, pectore abdomine que fusciscentibus, tarsorum articulo tertio nigricante; dense æqualiter punctatus, parum nitidus, elytris stria discoidali sat distincta. Long. 4, lat. $2\frac{2}{3}$ m.m.

Mas. tarsi quatuor anterioribus angustis; trochanteribus anterioribus parum profunde incisus sed extus spina tenui fere recta armatis; abdomine segmento apicali apice transversim tuberculato.

The single individual I have seen of this species indicates it as being very distinct from the others known to me: its form, size, rather dull surface and narrow simple tarsi, would lead one to think the male to be rather the other sex, but on careful comparison the characters point it out as allied to *H. lyratus*, and *H. xanthomelas*, but undoubtedly connecting them with the African *H. crassus* and its allies. The close even punctuation is similar to that of the corresponding sex of *H. lyratus* and *H. xanthomelas*, while by the structure of the trochanters it approaches the African species; the front and middle tarsi are less compressed than in *H. crassus*, but much less flat and broad than in *H. lyratus* and *H. xanthomelas*, from which species it also departs by its considerably shorter form.

East India, (ex. coll. Murray). 1125.

354. *Hyphydrus lyratus*, Schartz, M.C.—Oblongo-ovalis, sat latus et convexus, dense æqualiter punctatus, subtus ferrugineus, supra rufo-testaceus, prothorace basi medio nigricante, elytris longitudinaliter fusco vel nigro-signatis, stria discoidali ad basin sat distincta. Long. $4\frac{1}{2}$, lat. 3 m.m.

Mas, fortiter punctatus, sat nitidus, tarsis quatuor anterioribus dilatatis et deplanatis, abdomine segmento basali medio spina crassiuscula oblique erecta, segmento apicali medio quadrato-impreso, apice summo bi-denticulato.

Fem., antèrius angustior, opaca, subtiliter punctata, elytris versus latera fovea elongata impressa.

This species appears to be a variable one. *Hyphydrus nigro-notatus*, Clk., is the Formosan variety of the species.

Australia, Formosa, China, New Guinea, Pulo-penang. (Sidney, Port Denison, North-West Australia; Dorey). 44.

355. *Hyphydrus xanthomelas*, Regt. Ann. Soc. Fr. 1877, p. lxxx.—Oblongo-ovalis, sat latus et convexus, piceus, capite et prothoracis lateribus ferrugineis, elytris nigricantibus testaceo-signatis, dense æqualiter punctatus, elytris stria discoidali ad basin sat distincta. Long. $4\frac{1}{3}$, lat. $2\frac{3}{4}$ m.m.

Mas, fortiter punctatus sat nitidus, tarsis quatuor anterioribus sat dilatatis et deplanatis; abdomine segmento basali margine posteriore medio acute denticulato, apicali medio leviter longitudinaliter impreso, apice summo bi-denticulato.

Fem., ?

This species is very closely allied to *H. lyratus*, but the intermediate tarsi are not so much dilated, and the male sexual abdominal characters are less developed; the darker colour is perhaps not constant; indeed M. Regimbart's description indicates an insect less marked with black than the one I have described—the only one I have seen.

Philippine Islands, (Manilla). 45.

356. *Hyphydrus decem-maculatus*, Wehneke, Stet. Zeit. 1877. p. 151.—Anguste ovalis, sat convexus, piceus, capite ferrugineo plus minusve infuscato, elytris ferrugineo-maculatis; confertim fortiter æqualiter punctatus, elytrorum stria discoidali obsoleta. Long. $4\frac{1}{2}$, lat. $2\frac{7}{8}$ m.m.

Mas, trochanteribus anterioribus valde elongatis, subtus sinuatis, dextro apice acuminato, sinistro apice dilatato; tarsis anterioribus leviter, intermediis fortiter dilatatis et deplanatis.

Fem., paulo minor, pedibus simplicibus.

This species is variable in the colour. The structure of the male trochanters, which is different on the two sides of the body, is highly remarkable.

Australia, (Cape York, Rockhampton). 46.

357. *Hyphydrus contiguus*, Wehncke, Stet. Zeit. 1877, p. 150.—Anguste ovalis, sat convexus, testaceo-ferrugineus, elytris nigris testaceo-signatis, confertim fortiter æqualiter punctatus. Long. $3\frac{2}{3}$, lat. $2\frac{1}{4}$ m.m.

Mas, trochanteribus anterioribus elongatis, subtus sinuatis: tarsis anterioribus et intermediis dilatatis.

This species is very closely allied to *Hyphydrus decem-maculatus*, but is smaller, and different in colour. The coxæ are more densely punctured, and the front tarsi of the male are a little more dilated. I have seen but a single male of the species, and have not been able to see exactly the form of the front trochanters.

Australia. 157.

358. *Hyphydrus australis*, Clk. M.C.—Oblongo-ovalis, sat latus et convexus, nitidus, infra colore variabilis, supra rufo-testaceus, prothorace basi medio elytris-que nigro-vel fusco-signatis, confertim, æqualiter fortiter punctatus, elytris stria discoidali ad basin vix distincta, suturali subobsoleta.

Mas, tarsis anterioribus fortiter dilatatis, subdeplanatis, articulo tertio quam basali fere latiore; intermediis subdilatatis, lateraliter compressis. Long. 5, lat. 3 m.m.

Fem., pedibus minoribus, tarsis simplicibus. Long. $4\frac{1}{2}$ m.m.

Though the male of this species a good deal resembles the male of *H. lyratus*, the two species are found to be very distinct when the corresponding sexes of each are compared together. The structure of the front tarsi in the male of the present species is peculiar, the second joint is of an irregular, somewhat rhomboidal form, and when the soles are looked at it is seen that the posterior portions of the second and third joints are on a different plane to the anterior portions, and that only the anterior portions of these two joints are clothed with tomentum.

Australia, (apparently throughout), New Caledonia. 47.

I. 31.—Genus *STERNOPRISCUS*.

Anterior and middle tarsi with the fourth joint distinctly visible between the third and fifth joints. Mesosternum intervening in a conspicuous manner between the pro- and metasternum, its epimera extremely short, almost linear; ventral segments not soldered with the coxæ. Hind coxal cavities not contiguous but prolonged inwards over the coxal process, so as to become nearly connected by these prolongations.

The species are best distinguished by the sexual characters, which are frequently extraordinary; the males of some species are twice the bulk of the females, and may be the possessors of extraordinary structures on their antennæ and middle legs. They are peculiar to Australia.*

359. *Sternopriscus browni*, n. sp.—Oblongo-ovalis, subopacus, dense subtiliter punctatus subtiliterque pubescens, nigricans, capite fusco obscure testaceo-maculato, prothorace testaceo medio late infuscato, utrinque striga impressa, elytris fuscis indistincte testaceo-maculatis, antennis pedibusque fusco-testaceis; corpore subtus dense æqualiterque punctato.

Mas, major, (long. $3\frac{1}{2}$ m.m.) antennis articulis 2 et 3 elongatis, 4 et 5 brevibus, 6 sat elongato, 7–11 distortis; tibiis anterioribus leviter curvatis, intus emarginatis; pedibus intermediis elongatis, femoribus longius ciliatis, tibiis curvatis, tarsis articulis 4 et 5, (4° magno, 5° dilatato) externe spongiosis interne glabris; tarsis posterioribus crassis utrinque longius ciliatis.

Fem., minor, (long. $2\frac{7}{8}$ m.m.) antennis pedibusque simplicibus.

Head very finely but somewhat closely punctured, fuscous but with some indistinct spots on the front, and a still more indistinct one on the vertex, yellowish. Thorax and elytra densely and finely punctured; sides of the thorax nearly straight, the middle of the base forming a very evident angular projection. Elytra rather rounded at the sides, and deflexed towards their apex which is rather pointed.

Australia, (King George's Sound). Given by the lamented Edwin Brown. 159.

360. *Sternopriscus obscurus*, n. sp.—♀, Ovalis, opacus, dense subtilissime punctatus subtiliterque pubescens, nigricans, capite, prothorace, antennis pedibusque obscure fusco-rufis; corpore subtus dense, æqualiter, subtiliterque punctato. Long. 3 m.m.

I am only acquainted with the female of this species, which is very similar to the female of *S. browni*, but differs as follows: *S. obscurus* is rather larger and broader, and more obscurely coloured, and rather more finely punctured, and the antennæ and the apical joints of the front and middle tarsi are more elongate. The male will probably prove to have some difference in its sexual characters from those of *S. browni*.

Australia, (King George's Sound). 160.

* In addition to the ten species of which descriptions follow, there is yet another that should be included in the genus, viz., *Hydroporus hansardi*, Clk., (No. 1,376 huj. op.), near No. 361.

361. *Sternopriscus clavatus*, Wehneke, n. sp.—Ovalis, sat angustus, sub-opacus, dense subtiliter punctatus, brevissimeque pubescens, rufo-testaceus, pectore infuscato; prothorace marginibus anterioribus (in medio) et posterioribus nigris, striga utrinque obsoletissima; elytris nigricantibus, testaceo-maculatis; antennis in medio fuscis; elytrorum apice subobtusis.

Mas, major (long. 4 m.m.) antennis ultra medium distortis; tibiis anterioribus curvatis; pedibus intermediis leviter elongatis, tarsis crassiusculis

Fem., minor (long. 3½ m.m.) antennis tibiisque simplicibus.

Australia. (Sidney). 161.

362. *Sternopriscus tarsalis*, n. sp. Ovalis, angustulus, sub-opacus, testaceus, pectore obscuriore, vertice prothoracisque medio infuscatis, elytris fuscis maculis parvis irregularibus testaceis; elytris thoraceque dense subtiliter punctatis, hoc utrinque plica distincta, corpore subtus dense punctato. Long. 2½, lat. 1⅔ m.m.

In this species there is no trace of any constriction across the middle of the thorax, the base of which is quite as wide as the elytra, the plica on each side is distinct, but not strongly elevated, and there is no transverse depression between the two.

The only individual I have seen of this species is I have no doubt a male. The front tibiæ are curved, the front tarsi are distinctly 5-jointed, the three basal joints being dilated; the middle legs are long, their tibiæ slightly curved and their tarsi greatly elongate, the five joints of these are very distinct, the 4th being about as large as the third; the antennæ are rather elongate and slender.

Australia, (Sidney). 162.

363. *Sternopriscus signatus*, n. sp.—Ovalis, subopacus, testaceus, prothoracis marginibus anterioribus et posterioribus anguste fuscis, elytris nigro-testaceoque variegatis; prothorace lateribus rectis, utrinque plica minus distincta, medio obsolete transversim depresso; corpore toto dense subtiliter punctato, elytris subtiliter pubescentibus. Long. 2⅓, lat 1¼ m.m.

This species is allied rather closely to *Sternopriscus tarsalis*, but is smaller and less elongate, and the yellow colour is more predominant, and the punctuation is somewhat denser and finer.

I do not know the sex of the only individual I have seen; it has the front tibiæ rather short but simple, the three basal joints of the front tarsi dilated, the fourth joint short but distinct, the fifth moderately long; the middle tibiæ are rather stout, the basal joints of their tarsi dilated, the fourth joint distinct but not elongate,

the fifth rather long; the antennæ are slender and quite simple; altogether it is highly probable that this is the female.

Australia, (Murray River). 163.

364. *Hydroporus meadfooti*, Clk., M.C.—Ovalis, subopacus, nigricans, capite fusco obscure testaceo-maculato, prothorace lateribus rufis, medio fusco, elytris fuscis vage testaceo-maculatis, antennis fusco-testaceis, pedibus obscure testaceis; prothorace utrinque plica bene elevata, inter plicas transversim sat depresso; corpore dense subtiliter punctato, elytris evidenter subtiliter pubescentibus. Long. $2\frac{1}{4}$, lat. $1\frac{1}{4}$ m.m.

Mas, prothoracis lateribus rectis; antennis paulo elongatis medio leviter incrassatis; tarsis anterioribus articulis basalibus bene dilatatis; tarsis intermediis elongatis, articulis basalibus sat dilatatis.

Fem., paulo minor, prothoracis lateribus pone medium vix distincte constrictis, antennis gracilibus, tarsis anterioribus et intermediis articulis basalibus sat dilatatis; tarsis intermediis haud elongatis.

Australia, (Melbourne). 164.

365. *Hydroporus multimaculatus*, Clk., M.C.—Ovalis, subopacus, testaceus, abdomine pectore thoracis medio elytrorumque maculis numerosis nigricantibus; elytris dense subtiliter sed subscabroso punctatis, brevissime pubescentibus; prothorace utrinque plica valde elevata, inter plicas transversim depresso. Long. $2\frac{1}{3}$, lat. $1\frac{1}{3}$ m.m.

Mas, prothoracis lateribus rectis; antennis paulo elongatis; tarsis anterioribus articulis basalibus bene dilatatis.

Fem., prothoracis lateribus medio constrictis, antennis simplicibus; tarsis anterioribus articulis basalibus minus dilatatis.

This species is easily recognized by the peculiar dense rough punctuation of the elytra.

The female was described by Clark as a distinct species under the name of *Hydroporus sinuatocollis*.

Australia, (Adelaide and West Australia). 165.

366. *Sternopriscus wehnekei*, n. sp.—Ovalis, subopacus, testaceus, pectore abdomine vertice prothoracisque medio elytris fuscis, his maculis parvis irregularibus testaceis; antennis fusco-testaceis, basi dilutiore; prothorace utrinque plica bene elevata, medio leviter transversim impresso; corpore dense subtiliter punctato, elytris subtiliter pubescentibus. Long. $2\frac{1}{2}$, lat. $1\frac{1}{4}$ m.m.

Mas, antennis apicem versus incrassatis; tibiis anterioribus leviter curvatis, tarsis articulis basalibus fortiter dilatatis; tarsis intermediis elongatis, articulis basalibus subdilatatis.

Fem., antennis gracilibus; tarsis anterioribus et intermediis basi sat dilatatis.

Intermediate between *Sternopriscus tarsalis*, and *Hydroporus multimaculatus* (No. 365), smaller than the former, and with the antennæ of the male not so long, and the middle tarsi much less elongate; rather broader than *Hydroporus multimaculatus*, with the yellow colour more predominant on the head and thorax, the sculpture of the elytra not quite so fine; with the antennæ of the male having the apical joints thicker than the middle ones, and the intermediate tarsi a good deal more elongate.

Australia, (received from Herr Wehncke). 186.

367. *Sternopriscus oscillator*, n. sp.—Ovalis, subopacus, densissime punctatus, niger, supra testaceo nigroque irregulariter variegatus, pedibus testaceis, antennis basi testaceo, apice fusco; prothorace utrinque plica bene elevata, medio leviter transversim impresso. Long. $2\frac{5}{8}$, lat. $1\frac{3}{8}$ m.m. ♂.

Mas, major, antennis longioribus, fere simplicibus, tibiis anterioribus leviter curvatis, tarsis evidenter 5-articulatis, articulis basalibus dilatatis; tarsis intermediis elongatis articulis basalibus leviter dilatatis.

Fem., antennis gracilibus brevibus, tarsis anterioribus et intermediis brevioribus basi fortiter dilatatis.

Allied to *S. wehncke*, but with the sexes more different; the male is larger and more elongate than in that species, and the antennæ are more elongate and appear therefore less thickened towards the apex, the front tarsi are larger and more distinctly 5-jointed, and the middle legs are considerably longer and thicker. The female is much more like *S. wehncke* but the upper surface is of more obscure colour, the form is narrower, and the surface not so dull.

Australia, (Adelaide). 1133.

368. *Sternopriscus tasmanicus*, n. sp.—Oblongo-ovalis, subopacus, densius punctatus, niger, supra testaceo-variegatus, prothorace lateribus late testaceis; hoc utrinque plica sat elevata, ante basin in medio depresso; antennarum basi pedibusque testaceis; antennis versus apicem incrassatis, articulo ultimo præsertim latiore, angulo apicali interne producto acuto, tibiis anterioribus intus minute emarginato, tarsis evidenter 5-articulatis, articulis 3 basalibus dilatatis; pedibus intermediis elongatis, parum crassis, tarsis elongatis, superne longe ciliatis. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ m.m.

I have seen only a single male of this species; it may be readily recognized by the peculiar incrassation of the terminal joint of the antennæ.

Tasmania. 1134.

II. 9.—Group HYDROPORINI.

Front and middle tarsi 4-jointed (with a small additional joint occasionally visible at the base of the terminal joint); mesosternum but little visible, being placed at such an angle with the metasternum that it is much concealed between this and the prothorax: hind coxal cavities nearly or quite contiguous; ventral segments not soldered to coxæ; prosternal process acuminate behind.

There are ten genera comprised in the Hydroporini. I find it difficult to make a dichotomous key that would be practically useful for their identification, and have therefore drawn up the following series of abbreviated characters; these can be glanced through in a few minutes and the genus in this manner ascertained with certainty.

Elytral ligula free and abrupt, terminal joint of front tarsus very short in comparison with the third joint. Three species from the eastern portion of the Mediterranean region. }	<i>HYPHOPORUS.</i> (<i>Vide</i> p. 390.)
Elytral ligula free, abrupt, terminal joint of front tarsus not very short in comparison with the third joint, although often much concealed by the deep fissure of the latter. Numerous species in the European and North American regions. }	<i>CÆLAMBUS.</i> (<i>Vide</i> p. 394.)
Elytral ligula abrupt on the posterior face, gradually raised in front; hind coxal cavities approximate; posterior portion of epipleurae very narrow; humeral area of epipleura limited behind by a well-marked raised line. Six species, extending from Madagascar to Southern Europe. }	<i>HEROPHYDRUS.</i> (<i>Vide</i> p. 392.)
Elytral ridge very little developed; posterior coxal cavities much exposed and a good deal separated; posterior portion of epipleura very narrow; hind tibia with only the serial punctures on the infero-external face. Three species peculiar to Australia. }	<i>PAROSTER.</i> (<i>Vide</i> p. 391.)
Elytral ligula absent; posterior portion of epipleura comparatively broad; hind tibia with only the serial punctures on the infero-external face; posterior femora slender, with rounded outer angle. Four species found in Australia and Tasmania. }	<i>CHOSTONECTES.</i> (<i>Vide</i> p. 408.)
Posterior portion of epipleura comparatively broad; hind tibia punctured on the infero-external aspect; the true fourth joint of front tarsus scarcely visible. Eight species found in Australia and New Zealand. }	<i>ANTIPORUS.</i> (<i>Vide</i> p. 410.)
True fourth joint of front tarsus quite conspicuous, distinctly disengaged from the lobes of the third joint: (this structure more exaggerated in the males than in the females). Eight species found in Australia and Tasmania. }	<i>NECTEROSOMA.</i> (<i>Vide</i> p. 412.)
Hind tibia only with serial punctures on the infero-external aspect. Terminal portion of epipleura rather broad; posterior femora stout; their postero-external angle sharply defined. Six species found in Australia and Tasmania. }	<i>MACROPORUS.</i> (<i>Vide</i> p. 416.)

No ligula on inner face of elytron ; terminal portion of epipleura narrow ; lumeral area of elytra not limited behind by a raised line. Fifty species, principally inhabiting the European and Mediterranean region, with a few in the northern half of America. }	} <i>DERONECTES.</i> (<i>Vide</i> p. 418.)
Mesosternal fork connected with the intercoxal process of metasternum ; (in all the preceding genera of Hydroporini this connection does not exist.) One hundred and fifty species, nearly all peculiar to the European and North American regions. }	} <i>HYDROPORUS</i> (<i>Vide</i> p. 435.)

I. 32.—Genus *HYPHOPORUS*.

Ligula on inner face of elytron abrupt and prominent. Terminal joint of front tarsus very short in comparison with the third joint. Mesosternal fork not connected with intercoxal process of metasternum.

The three species* have much the appearance of the Hyphydri, to which genus they are allied by the tarsal structure. They are all Asiatic, but one extends to Egypt.

369. *Hyphoporus elevatus*, n. sp.—Ovalis, crassus, brevis, convexus, ferrugineus ; elytris vage nigro-signatis, punctis majoribus et minoribus dense munitis, majoribus ad apicem disinentibus ; corpore subtus grosse punctato. Long. $4\frac{3}{4}$, lat. 3 m.m.

This species has quite the thick convex form of a Hyphydrus, but structurally it is closely allied to *Hydroporus solieri*, (No. 371). The only individual I have seen is, I believe, a male, the front and middle tarsi are short and broad, the three basal joints being of about one width ; the apical joint is very short.

Northern India, (found by Captain Boyd). 172.

370. *Hyphoporus aper*, n. sp. ?—Ovalis, brevis, latus, convexus, ferrugineus, sine pubescentia, opacus, prothorace basi elytrisque fusco-signatis, his fortiter profundeque punctatis ; corpore subtus fortiter punctato. Long. $3\frac{5}{8}$, lat. $2\frac{1}{2}$ m.m.

This species has much the appearance of a rotund Hyphydrus, it is similar to *Hydroporus solieri*, but is readily distinguished by its much shorter form, and the coarser punctuation of the elytra. The only individuals I have seen are females.

Northern India. 173.

* The following two species should also pretty certainly be referred to *Hyphoporus*.

Hydroporus interpulsus, Walk., (No. 1387) ; Ceylon.—*Hyphydrus rufus*, Clk., (No. 1469), near No. 371 ; China.

371. *Hydroporus solieri*, Aubé, M.C.—Ovalis, sat brevis, convexus, sine pubescentia, testaceus; elytris lineis quatuor pluries valde interruptis nigris, dense punctatis; corpore subtus fortiter punctato. Long. 5, lat. 3 m.m.

Mas, supra fortiter punctatus sat nitidus, tarsis anterioribus et intermediis fortiter dilatatis, tibiis intermediis ad basin angustis, dimidio inferiore lato intus subangulatim dilatato.

Fem., subtiliter punctata opaca, pedibus simplicibus.

This species varies greatly as to the black markings, which are sometimes nearly entirely absent.

Egypt, Persia, Arabia, Northern India. 174.

I. 33.—Genus *PAROSTER*.

The longitudinal ridge on inner face of wing-case very little developed; posterior coxal cavities much exposed and a good deal separated; posterior portion of epipleura very narrow; hind tibia with only the serial punctures on the infero-external face. Mesosternal fork not connected with the inter-coxal process of metasternum.

The three species have the hind coxal cavities more exposed and separated than any other *Hydroporini*, and in this respect approach *Bidessus* of the *Bidessini*. They are found in Australia.

372. *Hydroporus nigro-adumbratus*, Clk., M.C.—Ovalis, convexus, sine pubescentia, nitidus, fuscus, antennis, pedibus, thorace in medio et ad latera elytris que testaceis; prothorace anterior et posterior subtiliter punctato, medio impunctato; elytris parce, subtiliter sed evidenter punctatis; corpore subtus fere impunctato; tibiis anterioribus apicem versus latis. Long. 3 $\frac{2}{3}$, lat. 2 m.m.

Mas, tarsis anterioribus dilatatis, unguiculis valde elongatis.

I have seen but a single individual of the species.

Australia, (Adelaide). 419.

373. *Paroster pallescens*, n. sp.—Ovalis, convexus, sine pubescentia, vix nitidus, fuscus, supra cum antennis pedibusque testaceus, capite magis obscuro; thorace elytris que sparsim subtilius punctatis; corpore subtus fere impunctato; tibiis anterioribus versus apicem latis. Long. 3 $\frac{2}{3}$, lat. vix 2 m.m.

This species at first sight exactly resembles *Hydroporus nigro-adumbratus*, (No. 372) but it has the punctuation of the upper surface less; the only individual I have seen, I judge, from its short broad front tarsi, to be a male; the claws are quite small.

West Australia. 420.

374. *Hydroporus insculptilis*, Clk., M.C.—Ovalis, convexus, sine pubescentia, nitidus, piceus, capite pedibus antennisque rufis, his versus apicem fuscis; thorace elytrisque sparsim subtiliter punctatis; coxis posterioribus fere impunctatis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

I have seen but a single individual of uncertain sex, it has the front tarsi moderately broad. The species has the front tibiæ more slender than the two preceding species, and has quite the appearance of a small *Hydroporus* such as *H. melanarius* (No. 555).

Australia, (Victoria). 421.

I. 34.—Genus *HEROPHYDRUS*.

Elytral ridge gradually raised till near the extremity, then suddenly diminishing; hind coxal cavities approximate; hind portion of epipleura very narrow, humeral area limited behind by a well marked raised line. Mesosternal fork not connected with the intercoxal process of the metasternum.

Only six species are known, they inhabit Madagascar and continental Africa, and one extends its range to southern Europe.

375. *Herophydrus heros*, (Dej.) n. sp.—Sat angustus, convexus, nitidus, piceus elytris rufo-signatis, crebre fortiter punctatus, antennis pedibusque rufis; clypeo immarginato, thoracis angulis posterioribus obtusis. Long. 6, lat. $3\frac{1}{2}$ m.m.

The head is finely and moderately sparingly punctured, rather paler in colour than the other parts. The punctures of the thorax are coarse and numerous. The elytra also are evenly and rather coarsely punctured; the red marks on them are variable, and consist chiefly of a larger irregular mark near the shoulder, and a smaller one near the apex, with one or two others near the outer margin between them. The

coxæ, except their hind margin, bear very coarse punctures, as do also the lateral parts of the metasternum; the ventral segments are also rather coarsely punctured.

Madagascar. 61.

376. *Herophydrus verticalis*, n. sp.—Latius, parum elongatus, convexus, piceus, sat nitidus, prothorace transversim in medio elytrisq[ue] lateribus obscure pallidesignatis, antennis pedibusq[ue] fusco-testaceis; thorace elytrisq[ue] crebre fortiter æqualiter punctatis; clypeo conspicue marginato, margine in medio parum interrupto. Long. $4\frac{1}{2}$, lat. 3. m.m.

This species is remarkable for its appearance, which is quite that of a *Hyphydrus*, its tibiæ and tarsi are slender, and the small size of the later suggest it as approaching *Hydrovatus*, but so far as I have been able to examine, it undoubtedly is allied to *Herophydrus spadiceus* and *Hyphydrus guineensis*, Aubé, (No. 378). I have seen but one individual which is very fragile and mutilated; and I do not know its sex. It is much broader and a little longer than *Hyphydrus guineensis*, and its head and thorax are rather more regularly and strongly punctured; the head has a transverse pale mark quite at the vertex; the thorax is broadly pale at the anterior angles, and this pallid colour extends as an excessively obscure band across the middle of the thorax; the elytra have a pale humeral mark, and their apical portion is marked with several irregular indistinct, longitudinal pale marks; these marks are ill defined and probably very variable.

Interior of Madagascar. 1167.

377. *Herophydrus spadiceus*, n. sp.—Sat angustus, convexus, nitidus, piceus, elytris rufo-signatis, crebre fortiter punctatus, antennis pedibusq[ue] rufis; clypeo utrinque marginato, thoracis angulis posterioribus obtusis. Long. $4\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

Very similar to *H. heros* but a good deal smaller, and readily distinguished by the very distinct margin of the clypeus, which however is interrupted in the middle. The red marks on the elytra are smaller and more numerous, the punctuation is not quite so coarse, and the front legs are rather more slender.

Madagascar. 62.

378. *Hyphydrus guineensis*, Aubé, M.C.—Sat angustus, convexus, nitidus, piceus, vel piceo-ferrugineus; dense fortiter punctatus; antennis pedibusq[ue] rufis; clypeo utrinque marginato, thoracis angulis posterioribus obtusis. Long. $4\frac{1}{2}$, m.m. lat. $2\frac{3}{4}$ m.m.

This species is very closely allied to *Hydroporus spadiceus*, but is rather smaller, is a little more densely punctured, and the elytra are without any distinct markings.

Senegal, Arabia, Egypt, Algeria, Corsica. 63.

379. *Herophydrus obscurus*, n. sp.—Ovalis, convexus, fere sine pubescentia, ferrugineus, thorace crebre distincte, elytris crebre fortiter punctatis; clypei margine medio breviter interrupto. Long. $4\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

Mas, nitidus.

Fem., opaca.

This species is very close to *Herophydrus oscillator* and is just possibly a variety of it, but the upper surface is nearly unicolorous, and the punctuation of the elytra is rather denser.

South Africa, (Cape Town). 187.

380. *Herophydrus oscillator*, n. sp.—Ovalis, convexus, nitidus, sine pubescentia, ferrugineus, prothoracis marginibus anterioribus et posterioribus nigricantibus, elytris testaceis signaturis nigris, antennis pedibusque testaceis; prothorace crebre distincte, elytris crebre fortiter punctatis; clypei margine medio breviter interrupto. Long. $4\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

The markings on the elytra are the suture and a long line near it black, with some shorter black lines outside these, all more or less confluent and confused. The punctures on the elytra are of one size except close to the base where the punctures are more distinct, and a few smaller ones are mixed with them. This species is about intermediate in form between *Hydroporus musicus* (No. 390), and *Dytiscus parallelogrammus*, (No. 416).

South Africa. (Adoo bush, Caffraria). 186.

I. 35.—Genus *CÆLAMBUS*.

Ligula on inner face of elytra free and abrupt; terminal joint of front tarsus not very short in comparison with the third joint, although frequently concealed by the deep fissure of the latter; humeral area of epipleura limited behind by a well marked line; mesosternal fork not connected with intercoxal process of metasternum.

The numerous species* are usually pale in colour, with dark markings on the

* In addition to those the characters of which are now given, the following should also be referred to this genus:—*Hydroporus Cleopatra*, Peyr. (No. 1351), near No. 390; Syria.—*Hydroporus discoideus*, Lec. (No. 1363), near No. 399; North America.—*Hydroporus fractilinea*, Solsky, (No. 1371); Turkestan.—*Hydroporus infacetus*, Clk. (No. 1383), near No. 401; Mexico.—*Hydroporus masculinus* Crotch, (No. 1397), near No. 403; North America.—*Hydroporus pectoralis*, Motsch. (No. 1412); Siberia.—*Hydroporus sellatus*, Lec. (No. 1429), near No. 401; North America.—*Hydroporus tauricus* Motsch. (No. 1439), near No. 420; Russia.—*Hydroporus unguicularis*, Crotch, (No. 1447), near No. 403; North America.—*Hygrotus impressifrons*, Motsch. (No. 1458); California. The generic position of the following is doubtful but probably is near, if not actually in, *Cælambus*: *Hydroporus inquinatus* Boh. (No 1386); Caffraria.

wing-cases. They may be arranged in three groups as follows; (but the distinction between the groups is not very marked, many of the species of the third group approximating to the preceding ones by the labrum being more or less retracted, and the front of the head not very distinctly emarginate).

GROUP. 1.—Labrum much concealed, head rounded in front, and with a more or less distinct raised margin: form usually very short, (the margin on the head is always fine, sometimes very indistinct and obsolete).
Species 381 to 389.

GROUP. 2.—Head rounded in front, and with a thick, but little elevated margin; labrum moderately concealed, approaching so nearly to the upper-surface of the head, that there is a slight interruption in the middle of the thickened margin. Form short or rather short. Species 390 to 392.

GROUP. 3.—Front of head without margin, and truncate-emarginate in the middle in front, labrum little concealed or quite conspicuous; form oval, more or less elongate. Species 393 to 423.

GROUP 1.

381. *Dytiscus inæqualis*, Fab., *Hydroporus inæqualis*, M.C.—Brevis, convexus, sat latus, nitidus, sine pubescentia, ferrugineus, prothorace basi apiceque nigro, elytris nigris margine externo signaturisque ferrugineis; capite thoraceque crebre subtiliter, elytris crebre fortiter punctatis; pectore fortiter, abdomine sat fortiter punctatis. Long. 3, lat. 2 m.m.

The markings on the elytra are variable, the sutural portion is always black and the external portion yellowish; sometimes the black portion is broken by some yellow irregular marks.

A variety nearly black in colour from Armenia is in the collection of Wehneke.

Abundant in Northern and Middle Europe; (Algeria, Wehneke). According to Crotch the species has also been found in Illinois, North America. 175.

382. *Hydroporus punctatus*, Say, M.C.—Brevis, convexus, latus, sine pubescentia, ferrugineus, prothorace basi elytrisque obscurioribus, his margine externo dilutiore, capite thoraceque crebre punctatis; elytris crebre fortiter punctatis; pectore fortiter, abdomine sat fortiter punctatis. Long. 3, lat. 2 m.m.

Closely allied to *Dytiscus inæqualis*, (No. 381), but rather different in outline, being broader in the middle and so less parallel in form, with the punctuation of the elytra rather dense, and the upper surface without distinct contrasts of colour.

United States of North America, (Middle and Western States). 176.

383. *Hydroporus hydropicus*, Lec., M.C.—Brevis, convexus, sat latus, sine pubescentia, ferrugineus, prothorace basi apiceque elytrisque fuscis, his signaturis vagis pallidioribus; elytris dense fortiter inæqualiter punctatis; corpore subtus dense fortiterque punctato. Long. 3, lat. 2 m.m.

This species is very like *Dytiscus inæqualis*, (No. 381), but the punctuation of the elytra is denser and more uneven, consisting on the basal portion of coarse and fine punctures mixed together; the species is however readily distinguished by the dilated tarsi of the male. The female I have not seen; according to Crotch it is opaque.

California, (San Diego). 177.

384. *Hydroporus faretus*, Lec., M.C.—Subrotundatus, convexus, opacus, sine pubescentia, ferrugineus; prothorace dense subtilissime punctato; elytris dense subtiliter reticulatis, punctis adspersis parvis; pectore dense sat subtiliter rugosopunctato; abdomine haud punctato sed alutaceo, opaco. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

I have seen of this species only a typical individual transmitted to me by Leconte, and which has lost its head; according to Crotch the clypeus is not margined, the species may be easily recognized by its rotund form and peculiar sculpture. The individual I have examined has the front and middle tarsi, short and rather broad, but I am in doubt as to its sex.

North America, (Massachusetts, New Jersey). 179.

385. *Cœlambus discedens*, n. sp.—Ovalis, convexus, nitidus, subtilissime pubescens, brunneo-ferrugineus, prothoracis marginibus elytrisque signaturis vagis pallidioribus; elytris crebre fortiter punctatis, punctis ad apicem obsolete; pectore abdominisque lateribus basi grosse punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

Antennæ slender and elongate. Thorax rather sparingly punctured about the middle, but more closely at the margins. Elytra at the shoulders and base with a large irregular pale mark and another near the extremity; their punctuation is rather coarse and not dense, at the apex the punctures are nearly wanting; the elytra bear a sparing, very fine pubescence. The sternum and coxæ and the sides of the abdomen at the base with excessively coarse deep punctures.

The only individual I have seen, has the three basal joints of the front tarsi elongate, but scarcely or not at all dilated; I am in doubt as to its sex. I am not sure that it is rightly placed in *Cœlambus*.

China, (Kiu Kiang, found by Mr. George Lewis). 180.

386. *Dytiscus versicolor*, Schall. Act. Hal. 313, *Hydroporus reticulatus*, M.C.—Breviter ovalis, convexus, sat nitidus, sine pubescentia, ferrugineus, elytris vittis interruptis nigris; creberrime subtilissime punctatus, elytris punctis majoribus adpersis; processu prosternali antice acute elevato. Long. $3\frac{1}{2}$, lat. 2 m.m.

The black marks on the elytra of this species consist of interrupted lines, and vary greatly in their extent. I do not see any sexual distinctions.

Northern and Middle Europe: ascends, according to Sahlberg, to $65^{\circ} 55'$. 181.

387. *Hyphydrus quinquelineatus*, Zett., *Hydroporus quinquelineatus*, M.C.—Breviter ovalis, convexus, nitidus, sine pubescentia, ferrugineus elytris lineis elongatis nigris; prothorace parce subtiliter punctato, elytris sat crebre et fortiter punctatis, punctis minutis inter majores adpersis; processu prosternali antice depresso. Long. 3, lat. vix 2 m.m.

Europe; Lapland, South Scotland, South Ireland, Belgium, Alsace, (Kasan, Wehncke). Ascends to $68^{\circ} 30'$, according to Sahlberg. 182.

388. *Hyphydrus decoratus*, Gyll., *Hydroporus decoratus*, M.C.—Brevis, ovalis, latus, convexus, sine pubescentia, nitidus, piceo-ferrugineus, elytris obscurioribus, lateribus maculisque indistincte rufescentibus; elytris minus crebre sat fortiter punctatis, punctisque minoribus inter majores adpersis. Long. $2\frac{1}{3}$, lat. $1\frac{1}{2}$ m.m.

Middle Europe, (South Sweden, England, Germany, France). Not a common species. 184.

389. *Hydroporus acaroides*, Lec., M.C.—Subrotundatus, subtus convexus, sine pubescentia, ferrugineus, pectore abdomineque plus minusve infuscatis (vel etiam nigris), elytris nigro-signatis; elytris dense fere subtiliter punctatis, versus latera plicula elevata abbreviata; pectore dense fortiter punctato, abdomine haud punctato sed alutaceo, opaco. Long. $2\frac{1}{8}$, lat. $1\frac{5}{8}$ m.m.

The colour in this species appears to be variable, especially on the ventral segments; the species may be readily distinguished amongst its allies by the elytral fold, and the peculiar sculpture of the ventral segments. The tarsi of the male though not broad are distinctly dilated; the female I am unacquainted with.

North America, (Western States). 178.

GROUP 2.

390. *Hydroporus musicus*, Klug, M.C.—Breviter ovalis, convexus, nitidus, sine pubescentia, ferrugineus, elytris lineis plus minusve interruptis nigris, prothorace crebre evidenter punctato, elytris crebre fortiter fere æqualiter punctatis. Long. $3\frac{3}{4}$, lat. $2\frac{1}{4}$ m.m.

This species is closely allied to *Hyphydrus quinquelineatus*, (No. 387), but the punctuation of the thorax and elytra is denser, and the punctures on the latter differ little from one another in size. The fovea at the shoulder of the elytra also is less deep.

Egypt and Mount Sinai. 183.

391. *Cœlambus interruptus*, n. sp.—Breviter ovalis, convexus, nitidus, sine pubescentia; testaceus, elytris lineis fractis, nigris; elytris fortiter sub-irregulariter punctatis. Long. 3, lat 2 m.m.

Mas, abdomine nigricante.

This species is very similar to *Hyphydrus quinquelineatus* (No. 387), but it is paler in colour, and the elytra have their black lines more disintegrated, and the punctuation coarser: in colour and the marks of the elytra it greatly resembles *Hydroporus musicus*, but it is smaller and narrower, and the punctuation of the elytra is distinctly unequal, the punctures on the basal portion of the wing-cases being a mixture of coarse and fine ones.

The front and middle tarsi are slender in each sex, and I can see no sexual difference in the sculpture; some of the females are not very much smaller in size than *H. musicus*.

Mesopotamia, Dr. Millingen. 1137.

392. *Cœlambus muticus*, n. sp.—Ovalis, convexus, pernitidus, sine pubescentia, niger, prothorace medio anguste lateribusque rufescentibus, elytris testaceis lineis latis nigris; femoribus piecis, tibiis tarsisque rufis, antennis testaceis articulo ultimo fusco; prothorace crebre distincte punctato; elytris basi subtiliter apice crebrius et fortius punctatis, stria discoidali punctorum; clypei margine crasso sed medio interrupto. Long. 4, lat. 2½ m.m.

This species is about intermediate between *Hydroporus musicus* (No. 390), and *Dytiscus parallelogrammus* (No. 416); the marks on the elytra are, the suture and an elongate line near it, and some more irregular marks external to these, black. The breast is impunctate in the middle, coarsely punctured at the sides. The ventral segments are rather closely punctured. I see no sexual distinctions.

Abyssinia, (found by Raffray at Gounlet, Agaos, and Lake Tzana). 185.

GROUP 3.

393. *Cœlambus chinensis*, n. sp.—Oblongo-ovalis, convexiusculus, nitidus, sine pubescentia, pectore abdomineque nigris, capite thorace pedibusque ferrugineis, hoc basi nigricante, elytris obscuris, basi parce apice crebre punctatis, basi seriebus

punctorum impressis obsoletis; corpore subtus nitido, coxis posterioribus antierius sat crebre profunde punctatis. Long. $4\frac{1}{2}$, lat. $2\frac{3}{8}$ m.m.

Mas, tarsi anterioribus unguiculo externo leviter incrassato et abbreviato.

This species approaches extremely near to the sparingly punctured forms of *Dytiscus impresso-punctatus* (No. 409), but the under surface is quite polished and shining, whereas it is dulled in all the varieties of *D. impresso-punctatus* I have seen. The male tarsi are not dilated, but I find that in some European males of *D. impresso-punctatus* they also are scarcely if at all broader than in the female. The North American *Hydroporus disimilis* is very closely allied to this species.

North China, (Kiu Kiang, found by Mr. Lewis). 206.

394. *Hydroporus turbidus*, Lec., M.C.—Ovalis, subtus convexus, sine pubescentia, nitidus, pectore abdomineque nigricantibus; elytris sat crebre et fortiter, inæqualiter punctatis; coxis posterioribus punctis magnis et profundis. Long. 3, lat. $1\frac{7}{8}$ m.m.

This species in size and general appearance approaches *Dytiscus inæqualis* (No. 381), and its allies, and the front tarsi (of the only individual I have seen) are scarcely so developed as in that species: the front of the clypeus is, however, quite without margin, and is distinctly notched in the middle.

North America, (United States, Boston). 394.

395. *Hydroporus wardi*, Clk., M.C.—Ovalis, sat elongatus, sine pubescentia, sat nitidus, testaceus, pectore abdomineque nigris, elytris vage infuscatis, crebre sat fortiter, æqualiter punctatis, serie punctorum impressa; coxis posterioribus abdomineque basi utrinque dense punctatis. Long. 4, lat. $2\frac{1}{8}$ m.m.

Mas, tarsi anterioribus leviter dilatatis, unguiculo interno leviter incrassato.

Mexico. 217.

396. *Hyphydrus marklini*, Gyll., *Hydroporus Marklini*, M.C.—Ovalis, leviter convexus, sine pubescentia, nitidus, abdomine pectoreque nigris, prothorace basi apiceque obscurioribus, elytris fusco-testaceis, sutura angustissime nigra, basi sat crebre, apicem versus crebrius et fortius punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

Mas, tarsi anterioribus vix dilatatis, unguiculo interno paulo crassiore.

The sexual differences in this species are extremely slight, the punctures on the coxæ vary a little, but do not cover so large a part of them as in many of the N. American allies.

Lapland, and Kirghiz Steppes. 218.

397. *Celambus fumatus*, n. sp.—Ovalis, angustulus, testaceus, abdomine pectoreque nigricantibus, prothorace basi elytrisque infuscatis, his dense æqualiter subtiliter punctatis, stria punctorum impressa distincta; coxis posterioribus fere crebre punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

The only individual I have seen is a female, it is extremely closely allied to *Hydroporus lutescens* (No. 398), but is a good deal smaller, the punctures on the coxa are not quite so close, and the tarsi are much smaller than in the individual described of that species.

North America, (United States). 216.

398. *Hydroporus lutescens*, Lec., M.C.—Ovalis, angustulus, elongatus, testaceus, abdomine pectoreque nigricantibus, prothorace basi elytrisque infuscatis, his dense æqualiter subtiliter punctatis, stria punctorum impressa distincta; coxis posterioribus crebre punctatis. Long. 4, lat. $2\frac{1}{8}$ m.m.

This species is smaller than *H. nubilus* (No. 403), and more finely and closely punctured: I am not sure as to the sex of the only individual I have seen, the claws of the front tarsi being equal though the tarsi are rather broad; the shape of the front and middle tarsi is however quite different from what it is in either sex of *Hydroporus nubilus*.

The determination of the name is not certainly correct, as I have seen no typical specimen of this species.

California, (San Francisco). 215.

399. *Hydroporus patruelis*, Lec., M.C.—Ovalis, sat elongatus, sine pubescentia, sat nitidus, testaceus, pectore abdomineque nigris, elytris apicem versus vage infuscatis, prothorace basi obscuriore; elytris minus fortiter, basi minus crebre subæqualiter, apice fere dense punctatis; coxis posterioribus crebre punctatis. Long 4, lat. $2\frac{1}{8}$ m.m.

Mas. tarsis anterioribus fortiter dilatatis, unguiculo interno crassiore.

Very closely allied to *Hydroporus nubilus* (No. 403), but less elongate with the male front tarsi rather broader and shorter, and the colour and sculpture not quite similar.

According to Crotch, *H. discoideus*, Lec. (Proc. Ac. Phil. 1855. p. 299), is a male of this species.

North America, (United States). 214.

400. *Hydroporus suturalis*, Lec., M.C.—Ovalis, sine pubescentia, nitidus, testaceus, abdomine pectoreque nigricantibus, prothorace basi et in medio infuscato, elytris

pallidis plus minusve infuscatis, sat fortiter fere dense sub-inaequaliter punctatis; coxis posterioribus punctis densis profundis; abdominis lateribus ad basin dense confluentur punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

The only individual I have seen is an immature female. It is extremely close to *H. medialis*, but is more regularly oval in form, and shows some slight distinctions of colour and sculpture.

North America, (Lake Superior). 213.

401. *Hydroporus medialis*, Lec., M.C.—Ovalis, sine pubescentia, nitidus, abdomine pectoreque nigris, capite, thorace, antennis pedibusque testaceis, elytris pallidis plaga magna vaga fusca, crebre sat fortiter aequaliter punctatis, stria discoidali punctorum impressa obsoleta; coxis posterioribus punctis magnis et profundis fere densis. abdominis lateribus ad basin fortiter confluentur punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{7}{8}$ m.m.

The sexual differences are very slight. The male front tarsi are slightly dilated, and the internal claw is a little thicker than the outer.

North America, (San Diego, California). 212.

402. *Hydroporus ovoideus*, Lec., M.C.—Ovalis, sine pubescentia, nitidus, abdomine pectoreque nigris, supra rufescens; elytris pallidioribus sutura angustissime nigra, sat crebre et fortiter fere aequaliter punctatis; corpore subtus nitido, coxis posterioribus sat crebre punctatis. Long. $3\frac{1}{2}$ lat. 2 m.m.

I have seen only a single specimen of this species which is closely allied to *Hyphydrus marklini* (No. 396), but is a little broader and has the punctuation of the elytra and thorax more sparing: the two may, however, perhaps prove to be one species.

North America, (Lake Superior). 210.

403. *Hydroporus nubilus*, Lec., M.C.—Ovalis, angustulus, elongatus, fere sine pubescentia, sat nitidus, testaceus, pectore abdomineque nigris; elytris signaturis coalescentibus plus minusve distinctis fuscis, crebre aequaliter fere subtiliter punctatis, coxis posterioribus crebre punctatis. Long. $4\frac{1}{5}$, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi distinctly dilated, and the internal claw on the front ones thickened. The female is not quite so shining as the male, and has the middle tarsi elongate and much compressed.

North America, (Massachusetts, Philadelphia, Texas, Colorado). 208.

404. *Cœlambus infuscatus*, n. sp.—Oblongo-ovalis, fere sine pubescentia, testaceus, abdomine pectoreque nigris, elytris signaturis magnis coalescentibus fuscis, dense,

æqualiter subtiliter punctatis, serie punctorum impressa minus distincta; coxis posterioribus externe minus crebre punctatis. Long. 5, lat $2\frac{2}{3}$ m.m.

This species is readily distinguished from *Hydroporus nubilus* (No. 403), by its larger size, and more finely and densely punctured elytra. I have seen only two individuals, both of which are females, one is shining, the other dull; the front tarsi are less compressed and are broader than in the corresponding sex of *Hydroporus nubilus*.

North America, (Nevada). 209.

405. *Hydroporus fraternus*, Lec., M.C.—Ovalis, sine pubescentia, nitidus, ferrugineus, abdomine pectoreque nigris, elytris signaturis fuscis, fortiter crebre æqualiter punctatis, punctis apicem versus fere densis; coxis posterioribus, abdomineque ad basin punctis magnis profundis densis. Long. $3\frac{1}{2}$, lat. $2\frac{1}{8}$ m.m.

Mas, tarsi anterioribus fortiter, intermediis sat dilatatis, illis unguiculo interno paulo crassiore.

I have seen only a single male of this species.

North America, (California). 219.

406. *Hydroporus polonicus*, Aubé, M.C.—Ovalis, fere sine pubescentia, sat nitidus, testaceus, abdomine pectoreque vel nigris vel testacis; elytris creberrime subtiliter punctatis, punctis ad basin inæqualibus; prothorace elytris evidenter angustiore, lateribus leviter obliquis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

Mas, tarsi anterioribus et intermediis valde dilatatis, anterioribus unguiculis crassis, elongatis, subrectis, externo paulo brevioribus; abdomine coxisque posterioribus nigris.

Fem., abdomine coxisque posterioribus testacis.

According to Aubé there is a female form of this species which is quite dull and more finely punctured.

Europe, (Poland, Southern Russia). 220.

407. *Cœlambus sahlbergi*, n. nom.—♂. Ovalis, fere sine pubescentia, sat nitidus, testaceus, abdomine pectoreque nigris; elytris creberrime subtiliter punctatis, punctis ad basin inæqualibus, prothorace elytris evidenter angustiore, lateribus leviter obliquis; coxis posterioribus parce sat fortiter punctatis. Long. $4\frac{1}{2}$, lat. vix $2\frac{1}{2}$ m.m.

Mas, tarsi anterioribus et intermediis articulis 1 et 2 leviter dilatatis; anterioribus unguiculis crassis, elongatis, subrectis, externo paulo brevioribus.

I have seen but one individual which scarcely differs from the male of *H. polonicus*, except by the little dilated tarsi.

This species was described by Sahlberg as *Cœlambus unguicularis*, but as Crotch had recently described another species under that name, I have been obliged to find a new one for Sahlberg's species.

Siberia, (Jenisei, July, 1876, Dr. J. Sahlberg). 458.

408. *Hydroporus dissimilis*, Har., M.C.—Ovalis, convexiusculus, nitidus, sine pubescentia, ferrugineus, abdomine pectoreque nigris; elytris sat crebre inæqualiter punctatis; corpore subtus nitido, coxis posterioribus fortiter punctatis. Long. 4, lat. $2\frac{3}{4}$ m.m.

I have seen but a single female of this species which is very close to the more sparingly punctured form of *Dytiscus impresso-punctatus*, (No. 409), but is very shining beneath.

North America, (Illinois, Lake Superior, New York). 207.

409. *Dytiscus impresso-punctatus*, Schall., *Hydroporus picipes*, M.C.—Oblongo-ovalis, sat angustus, convexiusculus, glabriculus, pectore abdomineque nigris, supra obscure ferrugineus, vertice utrinque, prothorace basi elytrisque lineis indistinctis nigricantibus; elytris basi fortiter profunde inæqualiter punctatis, stria suturali aliisque duabus externis punctorum ad basin impressis, apicem versus dense fere æqualiter punctatis; coxis posterioribus crebre, fortiter profunde punctatis. Long. 5, lat. $2\frac{3}{4}$ m.m.

Mas, tarsi anterioribus et intermediis bene dilatatis, anterioribus unguiculo interno leviter incrassato.

Fem., (a) ut in mare punctata et nitida.

(b) omnino opaca, elytris dense æqualiter magis subtiliter punctatis, seriebus punctorum impressis obsoletis.

This species varies greatly in size, colour, and in the punctuation of the upper surface; in some of the varieties the impressed series of punctures are scarcely to be distinguished.

H. decemlineatus, Mann. and *H. picatus*, Kirb., are North American varieties.

Europe and Asia Minor, Siberia, Sitka, and United States of North America. 205.

410. *Cœlambus elevatus*, n. sp.—Ovalis, convexus, breviusculus, nitidus, testaceo-ferrugineus, elytris lineis elongatis, alternis ad basin abbreviatis, fuscis; coxis posterioribus externe parce punctatis. Long. 4, lat. $2\frac{1}{2}$ m.m.

This species is very similar to *H. saginatus*, Schaum, (No. 412), but is much shorter, and the under surface is pale: the only individual I have seen is a female, the wing-cases are shining at the base, and the punctuation there consists of not

very close coarse punctures, and finer ones mixed with them, behind the middle the punctuation is closer, and the punctures of one size, and on this part a fine short pubescence may be detected; at the base there may be seen indistinctly two irregular striæ, similar to those which are much more distinct in *Dytiscus impresso-punctatus*, (No. 409).

Egypt, (Dr. Millingen). 1136.

411. *Hydroporus corpulentus*, Schaum, M.C.—“Ovalis, convexus, parce punctatus, supra testaceus, infra niger, fronte juxta oculos, prothoracisque puncto medio nigro-fuscis, elytris præter suturam lineis quatuor, secunda quartaque basin attingente, lineolisque externis tenuibus nigris. Long. $2\frac{1}{4}$, lin.” (Schaum). Coxis posterioribus externe parce punctatis. Long. 5, lat. $2\frac{3}{4}$ m.m.

I have seen only a single female of this species, it is of very much broader form than *D. parallelogrammus* (No. 416); the punctuation of the wing-cases is rather coarse, and not dense, the intermixed fine punctures are indistinct. Schaum says nothing of the male characters. It appears to be very like *H. saginatus*, but to be very much broader.

Europe, (Crimea). 1135.

412. *Hydroporus saginatus*, Schaum, M.C.—“Ovalis, convexus, punctatus, nitidulus, supra testaceo-ferrugineus, infra niger, capite postice obscuriore, prothoracis lateribus obliquis vix rotundatis, puncto medio fusco, elytris præter suturam lineis quatuor, secunda, nonnunquam etiam quarta basin attingente lineolisque duabus externis nigris. Long. $2\frac{1}{4}$ lin.” (Coxis posterioribus externe parce minus fortiter punctatis). Long. $4\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m).

Mas, “valde nitidulus, femina minus nitida crebrius et subtilius punctata,” (ex Schaum).

I have seen only one individual of this species. It is shorter than *Dytiscus parallelogrammus* (No. 416), with the punctuation of the elytra consisting of moderately large not dense punctures, which at the base are more distant and have on the interstices not very distinct finer punctures: this individual appears to be a female, and differs from *D. parallelogrammus*, independently of its size and punctuation, by the more prolonged black lines on the elytra.

Greece, (Nauplia, Kiesenwetter). Asia Minor? 204.

413. *Cœlambus inscriptus*, n. sp.—Ovalis, sat angustus, sine pubescentia, nitidus, testaceus, abdomine pectore, elytrorum sutura, linea postice dilatata, maculisque duabus nigris; elytris sat crebre et fortiter punctatis; coxis posterioribus parce fortiter punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

Mas, tarsi anterioribus sat latis, unguiculo interno sat abbreviato et incrassato.

This pretty little species is readily distinguished from its allies by the extreme minuteness of the fovea on the middle of the thorax, and by the markings of the elytra. The elytra are pale yellow, with the suture narrowly black, and with a black line near the suture which reaches neither to the base nor the apex, and is thickened at its termination, while outside this line are two black spots. I have seen only two males.

Persia, Mesopotamia, (Dr. C. Millingen). 203.

414. *Cœlambus orthogrammus*, n. sp.—Oblongo-ovalis, sat elongatus, sine pubescentia, nitidus, testaceus, abdomine, pectore elytris que lineis elongatis nigris; prothorace medio foveola minuta; elytris basi obsolete, apicem versus crebre subtiliter punctatis; corpore subtus fere opaco, coxis posterioribus parce subtiliter punctatis. Long. $4\frac{1}{4}$, lat. $2\frac{1}{3}$ m.m.

This species is very much smaller than *D. parallelogrammus* (No. 416), and is more finely and sparingly punctured; it resembles *Hydroporus lernæus* extremely but is broader in proportion to its length, and more finely and sparingly punctured. The only individual I have seen is a female.

Persia. 202.

415. *Hydroporus lernæus*, Schaum, M.C.—Oblongo-ovalis, elongatus, angustulus, sine pubescentia, nitidus, testaceus, abdomine pectore que, thoracis macula media elytris que lineis elongatis nigris; prothorace medio foveola minuta; elytris pone basin dense, basi inæqualiter (punctis majoribus pareis), punctatis; corpore subtus subopaco, coxis posterioribus sat crebre punctatis. Long. $4\frac{1}{4}$, lat. $2\frac{1}{3}$ m.m.

Mas, tarsi anterioribus et intermediis sat dilatatis, anterioribus unguiculo interno minuto, crasso, valde curvato.

Very closely allied to *Dytiscus parallelogrammus* (No. 416), but smaller and narrower, and with the elytra at the base only bearing a few large punctures. According to Schaum, the female is shining like the male.

Greece, Egypt, Syria. 201.

416. *Dytiscus parallelogrammus*, Ahrens, *Hydroporus parallelogrammus*, M.C.—Oblongo-ovalis, elongatus, sine pubescentia, testaceus, abdomine pectore que, thoracis macula media elytris que lineis elongatis nigris; prothorace medio foveola parva; elytris dense punctatis, punctatura basi inæquali, punctis majoribus pareis; corpore subtus fere opaco, coxis posterioribus sat crebre sed sub-obsolete punctatis. Long. $4\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

Mas, supra nitidus, tarsi anterioribus et intermediis dilatatis, anterioribus unguiculo interno crassiore et magis curvato.

Fem. (a) fere ut in mare punctata et nitida.

(b) omnino opaca, obsolete punctata.

The two forms of the female seem to have a different geographical distribution. In the northern part of its area it is chiefly, if not solely, the dull form that is found, while in the south this form seems to be absent. In Central Europe both forms are found.

Europe; Corsica, North Africa. In brackish and fresh waters, widely distributed, but absent from the north of Europe. 200.

417. *Hydroporus novemlineatus*, Steph., M.C.—Ovalis, sat elongatus, sine pubescentia, testaceus, thoracis macula media, elytrorum lineis quatuor elongatis, pectore abdomineque nigris; clytris dense subtiliter sed distincte punctatis; prothorace medio foveola minuta; coxis posterioribus crebre sat subtiliter punctatis. Long. 4, lat. 2 m.m.

Mas, supra sat nitidus, tarsi anterioribus et intermediis fortiter dilatatis, anterioribus unguiculo interno brevior et crassior, magis curvato, apice acuminato.

Fem., (a) supra omnino opaca.

(b) ut in mare punctata et nitida.

In Scotland I have found only the dull form of the female; but of two specimens of that sex sent me from Karelia by Dr. Sahlberg, one is the dull form, the other the shining one.

Northern Europe. (Found in lakes in Scotland and Lapland). 199.

418. *Hydroporus lautus*, Schaum, M.C.—“Ovalis, convexiusculus, supra testaceus, capite postice prothoracisque puncto medio nigris, clytris parce subtiliter punctulatis, lineis quatuor nec basin nec apicem attingentibus nigris: pectore utrinque sparsim sat fortiter punctato. Long. $1\frac{3}{4}$, lin.” $3\frac{1}{2}$ m.m.

Mas, nitidus, tarsi anterioribus et intermediis fortiter dilatatis.

Fem., “opaca subtilius punctata.” (ex Schaum.)

The claws on the front foot of the male are very fine, but the anterior one is stouter than, and twice as long as the minute hinder one. The comparatively short broad form of the species gives it some resemblance to *Dytiscus confluens*, (No. 423).

Europe: Germany. (This species was found in brackish water near Halle, about thirty years ago; a single pair is all I have seen of it). 198.

419. *Hydroporus enneagrammus*, Ahrens, *Hydroporus nigro-lineatus* M.C.—Oblongo-ovalis sat convexus, sine pubescentia, testaceus, pectore abdomineque

nigris; elytris lineis quatuor integris nigris; omnium subtilissime densissimeque punctatus fere lævis, (corpore subtus impunctato). Long. $3\frac{1}{2}$, lat. vix 2 m.m.

Mas, nitidulus, tarsis anterioribus leviter dilatatis.

Fem., opaca.

Var. Lineis nigris elytrorum alternis abbreviatis.

Europe. (Transylvania, South Russia.) The variety is from the Caucasus and Persia. 197.

420. *Hydroporus flaviventris*, Motsch., M.C.—Ovalis, minus convexus, sine pubescentia, nitidulus, supra capite thoraceque rufo-testaceis, elytris pallide testaceis lineis abbreviatis nigris; capite evidenter punctato, thorace fere impunctato, elytris omnium subtilissime, densissime vix visibilibus punctulatis, corpore subtus fere impunctato. Long. $3\frac{3}{4}$, lat. $2\frac{1}{8}$ m.m.

Mas, pectore abdomineque nigris, hoc apice rufescente.

Fem., subtus rufo-testacea.

This species is very similar to *Hydroporus pallidulus*, Aubé (No. 422), but is rather more elongate, and is readily distinguished by its more obsolete sculpture; the punctuation on the wing cases is so fine that it is not very easy to detect it, and the punctures of the undersurface are also obsolete.

Western Asia, (Songoria, Indersk). 196.

421. *Hydroporus caspius*, Wehneke, Deutsch. Ent. Zeit. 1873, p. 234.—Ovalis, supra minus convexus, sine pubescentia, nitidulus, niger, supra cum antennis pedibusque testaceis, vertice lineisque elytrorum nigris; elytris crebre obsoletissime punctatis, versus suturam punctis sparsis sat distinctis, serie discoidali obsoleta; coxis posterioribus sparsim obsolete punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{7}{8}$ m.m.

This species (of which I have seen but a single example) is even more elongate than *H. pallidulus* (No. 422), and is readily distinguished from it and *Dytiscus confluens* (No. 423), by the obsolete punctuation of the hind coxæ, as well as by the black colour on the head.

Europe, (Astrakan). 195.

422. *Hydroporus pallidulus*, Aubé, M.C.—Ovatus, crassus, sat convexus, supra pallido-testaceus, infra (ex parte) niger; elytris quatuor lineis abbreviatis præter suturam utrinque nigro-ornatis, subtilius punctulatis; coxis posterioribus crebre fortiter punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

Mas, pectore abdomineque nigris.

Fem., pectore nigro, abdomine pallido.

Very similar to *Dytiscus confluens* (No. 423), but narrower and less convex.

I have seen only a single pair of this species; the male has the breast and hind body black beneath, while in the female the ventral segments are pale red; the sides of the metasternum, and the hind coxæ except their posterior portion, are rather coarsely punctured. The punctuation of its elytra consists of numerous extremely fine punctures, evenly distributed as in *Dytiscus confluens*, but the larger punctures which are sparingly but distinctly to be seen in the common species, are reduced to three or four punctures at the base and along the suture in *Hydroporus pallidulus*; it possesses however a distinct discoidal line of fine impressed punctures on each wing case. Aubé says the female is opaque but in the individual before me the elytra of that sex are about as shining as in the male, though just perceptibly more finely punctured; it is probable therefore that there are two forms of the female in this species.

Southern Europe, (Sicily and Andalusia) and North Africa, (Algeria, Bône, Morocco). 194.

423. *Dytiscus confluens*, Fab., *Hydroporus confluens*, M.C.—Ovalis, brevis, subtus sat convexus, sine pubescentia, sat nitidus, subtus niger, supra testaceus, clytris pallidis, sutura lineisque abbreviatis nigris, antennis pedibusque testaceis; clytris punctis parvis sat magnis, aliisque densis minimis; coxis posterioribus crebre fortiter punctatis, metasterno medio nitido fere impunctato. Long. 3³, lat. 2 m.m.

The external difference between the sexes seems to be extremely slight.

Middle and Southern Europe, North Africa, and Canary Isles. 193.

I. 36.—Genus *CHOSTONECTES*.

The ridge on the inner face of the wing-case shows no ligula near the apex; the posterior portion of the epipleura is rather broad, and the genicular area is not limited by a raised line; the hind tibia shows on its infero-external face only the serial punctures; the posterior femur is slender and its outer angle rounded. The mesosternal fork is not connected with the intercoxal process of the metasternum.

The four species* are found in Australia and Tasmania; they are broad, robust, compact insects.

424. *Chostonectes sharpi*, (Welmcke), n. sp.—Ovalis, sat latus et convexus, posterius subacuminatus, opacus, evidenter pubescens, fusco-niger, capite, thorace

* In addition to these four species another but imperfectly known to me should be referred to *Chostonectes*, viz., *Hyphydrus johnsonii*, Clk. (No. 1149 Inj. op.), near No. 425; Australia. The position of the following is doubtful, but may be in *Chostonectes*, *Hydroporus bakewelli*, Clk. (No. 1343); Australia.

transversim in medio, elytrorum signaturis, anteanis pedibusque rufescentibus; clypeo antice rotundato, sed vix marginato, capite dense strigoso-punctato; thorace elytrisque crebre fortiter punctatis; corpore subtus fortiter punctato. Long. $3\frac{1}{2}$, lat. 2 m.m.

The marks on the elytra consist of a broad irregular sub-basal fascia which does not quite reach the suture, and some irregular marks towards the extremity which vary in their extent.

The four individuals I have examined all have the tarsi simple.

Australia, (New South Wales, Sidney). 190.

425. *Chostonectes latus*, n. sp.—Ovalis, latiusculus, sat convexus, posterius sub-acuminatus, subopacus, evidenter pubescens, nigricans, capite, thoracis lateribus, elytrorum signaturis basalibus et externis, antennis pedibusque ferrugineis; clypeo antice rotundato sed vix marginato, capite crebre punctato; thorace elytrisque crebre sat fortiter punctatis; corpore subtus fortiter punctato. Long. $4\frac{1}{4}$, lat. $2\frac{3}{8}$ m.m.

Mas, tarsi anterioribus et intermediis articulis sat fortiter dilatatis.

Fem., tarsi anterioribus et intermediis latiusculis, articulis basalibus haud dilatatis.

Australia, (Victoria, Mons Macedon). 191.

426. *Hydroporus nebulosus*, MacLeay, Tr. N.S.W. 1871, p. 123.—Late ovalis, brevis, sat convexus, opacus, evidenter pubescens, ferrugineus, elytris ferrugineo fuscoque obscure variegatis; clypeo rotundato, sat distincte marginato, capite subtiliter striguloso; elytris crebre fortiter minus profunde punctatis, corpore subtus fortiter punctato. Long. $3\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The three individuals I have seen of this species have the tarsi slender, and are perhaps females.

Australia, (Sidney). 189.

427. *Hydroporus gigas*, Boh., M.C.—Ovalis, sat latus et convexus, subnitidus, evidenter pubescens, pectore abdomine, antennis pedibusque rufis, supra nigricans, capite anticus et in medio, prothorace lateribus, elytris fascia interrupta basali maculisque externis ferrugineis; corpore creberrime sat fortiter fere æqualiter punctato; clypeo anticus subrotundato, indistincte incrassato, sed haud marginato. Long. $6\frac{1}{2}$, lat. $3\frac{5}{8}$ m.m.

Mas, tarsi anterioribus et intermediis bene dilatatis parallelis, unguiculis (præsertim anterioribus) magis elongatis.

Australia and Tasmania, (Clarence River, Melbourne, Sidney). 192.

I. 37.—Genus *ANTIPORUS*.

Posterior portion of epipleura comparatively broad; hind tibia punctured on the infero-external aspect; the true fourth joint of front tarsus is scarcely visible. The mesosternal fork is not connected with the intercoxal process of the metasternum.

The eight species* are found in Australia, Tasmania and New Zealand.

428. *Hydroporus femoralis*, Boh., M.C.—Ovalis, latiusculus, brevissime pubescens, dense æqualiter, sat subtiliter punctatus, subopacus, niger, prothorace utrinque, pedibus antennisque rufo-testaceis, his versus apicem infuscatis, elytris versus latera signaturis obsolete rufescentibus; corpore subtus densissime æqualiter punctulato, opaco. Long. 5, lat. $2\frac{3}{4}$, m.m.

In the male the front and middle tarsi are broader than in the female, and the front ones bear only one claw, which is moderately long and bears a tooth at its extreme base; the middle tibiæ are slightly curved; the hind femora have a large angular dilatation near the apex, on the outer side the sinus of this tooth is not angulated. In the female the elytra are sinuate-truncate at the apex.

Although Boheman describes his *H. femoralis* as having the abdomen yellow, I believe it will prove to be a variety of this species.

Tasmania, Australia. 422.

429. *Hydroporus interrogationis*, Clk., M.C.—Ovalis, brevissime pubescens, dense æqualiter sat subtiliter punctatus, subopacus, niger, antennis pedibusque testaceis, supra fusco-niger, signaturis magnis testaceis ornatus; corpore subtus densissime æqualiter punctulato, opaco. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

This species is closely allied to *Hydroporus femoralis* (No. 428), but is narrower, and is more ornamented with yellow, and the male characters show some slight differences: the unguiculus of the anterior tarsus, is more thickened in the middle; and the large dilatation of the hind femora takes the form of a tooth in consequence of its sinus externally being angulated. The female has the front tarsi more slender. All these characters vary somewhat in the small series of the two forms before me, and I fancy both may prove to be but one species.

Australia. 423.

430. *Hydroporus wakefieldi*, Sharp, Ent. Mo. Mag. XIII, p. 20.—Oblongovalis, vix pubescens, dense æqualiter sat fortiter punctatus, subopacus, niger, supra

* In addition to them, the following should be referred to the genus: *Hydroporus gravidus*, Clk. (No. 1374 huj. op.) near No. 434; Australia.

plus minusve testaceo-ornatus, antennis pedibusque rufo-testaceis, illis versus apicem plus minusve infuscatis, corpore subtus densissime æqualiter punctato, subopaco. Long. $4\frac{1}{3}$, lat. vix $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi rather broader than in the female; the front ones with a single unguiculus, which bears a tooth at the extreme base, the middle tibiæ are a little curved, and the hind femora have a large triangular dilatation near the extremity. The species though extremely similar to *Hydroporus interrogationis* can scarcely be considered a variety of it, as the sculpture is very distinctly coarser.

New Zealand, (Canterbury). 424.

431. *Hydroporus duplex*, Sharp, Ent. Mo. Mag. XIII, p. 21.—Oblongo-ovalis, vix pubescens, dense æqualiter sat fortiter punctatus, subopacus, niger, vel fuscus, antennis, pedibus prothoracisque lateribus testaceis, clytris obsolete testaceo-ornatis, corpore subtus densissime æqualiter punctato, subopaco. Long. $4\frac{5}{8}$, lat. $2\frac{1}{2}$ m.m.

This species is extremely close to *Hydroporus wakefieldi*, but is a little larger, and more indistinctly ornamented with yellow, and the thorax is a little more rounded at the sides; the male characters are the same as in *H. wakefieldi*, and it is possible that specimens from other localities may prove the two not to be distinct.

New Zealand, (Auckland). 425.

432. *Hydroporus uncifer*, n. sp.—Oblongo-ovalis, brevissime pubescens, dense æqualiter sat subtiliter punctatus, subopacus, niger, supra testaceo fuscoque variegatus, antennis pedibusque testaceis; prothorace clytris angustiore; corpore subtus densissime æqualiter punctulato, fere opaco. Long. 5, lat. $2\frac{3}{4}$ m.m.

The male is larger than the female, and has the front and middle tarsi broadly dilated, the front ones bear each a single claw, which is abruptly curved and has a tooth at the extreme base; the middle tibiæ are a little curved; and the hind femora have near the extremity a large angular dilatation the apex of which is acute and often a little hooked. Though the species is in most respects allied to *H. wakefieldi*, yet it differs by the prosternal process being broader and much less compressed towards the extremity.

New Zealand, (Wellington and Dunedin). 426.

433. *Hydroporus gilbertii*, Clk., M.C.—Oblongo-ovalis, brevissime pubescens, densissime subtiliter punctatus, opacus, ferrugineo-testaceus, clytris minus distincte nigro-lineatis, thorace basi utrinque rugositatibus distinctis; corpore subtus omnium densissime subtilissimeque punctato, opaco. Long. $5\frac{1}{4}$, lat. $2\frac{3}{4}$ m.m.

In the male the front and middle tarsi are rather elongate and moderately broad, the front ones furnished with a single abruptly curved claw, which bears a tooth at the base; the hind femora are dilated towards the extremity and furnished with a sharp hooked tooth. In the female the front tarsi are very slender and compressed, the second and third joints showing a well marked constriction, or neck, at the base.

Australia. 427.

434. *Hydroporus blakei*, Clk., M.C.—Oblongo-ovalis, latiusculus, brevissime pubescens, densius subtiliter punctatus, opacus, ferrugineus; elytris fuscis, signaturis externis lineaque suturali vage ferrugineis; prothorace basi aequali; elytris apicibus subprolongatis, sinuatim truncatis; corpore subtus densius punctato, opaco, coxis posterioribus interne fortius punctatis. Long. $4\frac{1}{8}$, lat. $2\frac{1}{5}$ m.m.

In the male the front and middle tarsi are a good deal dilated, the third joint is divided nearly to the base so that the lobes are elongate and slender; on the front feet there is a single unguiculus, which is short, thick, and sinuate, and has a sharp tooth at the base; the intermediate tibiæ are curved and incrassate, and bear a large angular projection on the middle externally.

Australia and Tasmania. 428.

435. *Antiporus curtulus*, n. sp.—Latus, brevis, omnium brevissime pubescens, densissime subtiliter punctatus, opacus, testaceus, prothorace antè et postè infuscato, elytris nigro-fuscis, sutura, margine externo signaturisque versus latera testaceis; elytris apicibus sub-prolongatis, emarginato-truncatis; corpore subtus densissime subtilissime punctato, opaco. Long. $3\frac{1}{8}$, lat. vix 2 m.m.

I have seen only females, which are very similar to that sex of *Hydroporus blakei*, but the species is readily distinguished by the smaller size and shorter and broader form, the distinct markings of the elytra, and the rather finer and denser punctuation of the under surface.

It is possible that this species may prove to be the *Hydroporus bakewelli*, Clk.

Australia, (Sidney). 429.

I. 38.—Genus *NECTEROSOMA*.

The true fourth joint of the front tarsus is conspicuously exposed at the base of the terminal joint. This character is more conspicuous in the males than in the females, and is frequently accompanied by a great elongation of the terminal

joint. The mesosternal fork is not connected with the intercoxal process of the metasternum.

The species* are Australian and Tasmanian.

It should be noted that the Australian and Tasmanian genus *Sternopiscus* likewise has the front tarsi evidently five-jointed, but it has a very different structure of the mesosternum, (see p. 384).

436. *Hydroporus penicillatus*, Clk., M.C.—(Species pervariabilis)—Brevissime pubescens, supra et infra densissime subtiliter punctatus, subopacus; elytris sæpius longitudinaliter carinatis, sed interdum omnino æqualibus; tarsorum anticorum articulo tertio brevi. Long. 4, lat. $2\frac{1}{4}$ m.m.

The male is usually rather larger than the female, and has the front and middle tarsi moderately dilated, the front tibiæ are slender, and have a slight but distinct notch in the middle of the inner edge, the middle tibiæ are a little curved. The species is excessively variable, in colour, sculpture, and even in outline. Individuals from Tasmania are black, with the head yellow, and the sides of the thorax and the outer margins of the elytra also of that colour, the legs and antennæ are also yellow with the outer portion of the latter infusate: these dark individuals have an acutely elevated carina on the middle of the elytra. Individuals from West Australia present the other extreme; they are entirely pale yellow, with the base of the thorax and some lines on the elytra black, and there is no trace in some of these individuals of any unevenness on the elytra. Intermediate specimens in all these points are found, the variations being apparently rather constant in each locality. The male characters do not vary much, but the Tasmanian individuals of that sex have the front tarsi broader than those from Swan River. The female always has the front tarsi rather broad; each of the three basal joints being as broad as, or rather broader than long.

Tasmania, and Australia. 430.

437. *Hydroporus darwinii*, Bab., M.C.—Ovalis, omnium densissime brevissimeque pubescens, densissimeque punctatus, opacus, sordide rufus, prothorace basi elytrisque signaturis confluentibus nigris; corpore subtus densissime punctato, omnino opaco: tarsorum anticorum articulo tertio elongato, basi tenui. Long. $4\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

The male has the anterior and middle tarsi moderately broad; the front tibiæ are moderately broad, and have a deep notch on the middle of their inner edge,

* In addition to those of which the characters are now given, the following also belong to the genus: *Necterosoma flavicolle*, Macl. (No. 1496), ? = No. 441; Australia.—*Necterosoma vittipenne*, Macl. (No. 1497), ? = No. 436; Australia.

the middle tibiæ are greatly curved. The female has the second and third joints of the front tarsi each longer than broad, and slender at the base. The species much resembles those oval varieties of *Hydroporus penicillatus* in which the elytra are quite even, but is readily distinguished by the differences in the front tarsi, and the more developed sexual characters. The female is broader behind the middle, and is subsinuate at the sides before the extremity.

Australia, (King George's Sound). 431.

438. *Necterosoma schmeltzi*, (Welmcke), n. sp.—Ovalis, haud latus, brevissime pubescens, densissime punctatus, fere opacus, niger, pedibus antennisque rufescentibus, capite anterieus, prothorace lateribus elytrisq̄ue signaturis transversis undulatis testaceis; capite angustulo; prothorace medio haud omnino subtiliter punctato; corpore subtus densissime punctulato, fere opaco. Long $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The male has the front tarsi moderately, the middle ones broadly dilated, the front tibiæ are only moderately stout, and have a moderately deep notch in the middle of the inner edge, the middle tibiæ are a little curved. In the female the front tarsi are slender with the second and third joints elongate. The species is readily distinguished by the colour and markings.

Australia, (Sidney). 432.

439. *Hydroporus undecimlineatus*, Bab., M.C.—Ovalis, brevissime pubescens, densissime punctatus, opacus, rufus, clytris lineis maculisq̄ue interjectis nigris; corpore subtus densissime punctato, opaco. Long. 4, lat. $2\frac{1}{4}$ m.m.

In the male the front and middle tarsi are much dilated, but the third joint of the front ones is longer than broad, the front tibiæ are very thick, and have a large excision in the middle of the inner edge, the middle tibiæ are a little curved. In the female the front tarsi are elongate and slender, the second and third joints having a peculiarly elongate and slender basal portion. The species is very close to *Hydroporus dispar*, and is just intermediate between it and *H. wollastoni*; but is rufous beneath, and has the marks of the elytra more separate than in *H. dispar*, the front tibiæ are not so extremely broad in the male and have the notch less; and in the female the second and third joints of the front tarsi are much more constricted on their basal portion, than in *H. dispar* female. The male is readily distinguished from that sex of *H. wollastoni*, by the thick front tibiæ with very large excavation; the female appears to differ from the corresponding sex of *H. wollastoni* only by the rather more coarsely punctured upper surface.

Australia. (Clyde River). 433.

Hydroporus undecimlineatus, Bab., was stated by its describer to have been found in South America, but I feel no doubt that this locality was given in error.

440. *Hydroporus dispar*, Germ., M.C.—Ovalis, brevissime pubescens, densissime punctatus, opacus, nigricans, antennis, pedibus, capite, thorace elytrisque testaceis, thorace medio latius infuscato, elytris lineis undique confluentibus obscuratis; corpore subtus densissime punctato. Long. $4\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are broad, and the front tibiæ are extremely thick, and have a very large excision in the middle inwardly; the middle tibiæ are a little curved. The front tarsi of the female are elongate and slender.

Australia, (Adelaide). 434.

441. *Hydroporus wollastoni*, Clk., M.C.—Ovalis, brevissime pubescens, densissime punctatus, subopacus, ferrugineo-testaceus, antennis, pedibus, capite thoraceque testaceis, elytris lineis plurimis nigris, ad latera et inter lineas primam et secundam maculis interjectis; corpore subtus densissime punctato, opaco; tarsis anterioribus et intermediis elongatis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are broad; the front tibiæ are moderately broad, but their lower part is not thick, so that the notch on the inner edge appears to make only a shallow excision; the middle tibiæ are a little curved. In the female the thorax forms a more continuous line with the elytra than it does in the male, the surface is duller, and the front and middle tarsi are slender. Though the species varies a good deal, I have not quite been able to connect *H. undecimlineatus*, (No. 439), with it.

Australia. 435.

442. *Necterosoma regulare*, n. sp.—Ovalis, brevior, convexus, omnium brevissime pubescens, subopacus, densissime, sat subtiliter ruguloso-punctatus, testaceus, pectore abdomineque fuscis, thorace antè et postè elytrisque lineis latis nigris; corpore subtus densissime punctato, coxis fortiter rugulosis; prothorace lateribus ante medium obsolete angulatis. Long. $3\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

The male at first sight differs but little from the female; it has however the front and middle tarsi slightly broader, and the front tibiæ have a slight emargination near the extremity, the middle tibiæ also have their lower portion somewhat excised.

Australia, (Port Denison, and North West Australia). 436.

443. *Necterosoma arcuatum*, n. sp.—Ovalis, brevior, sat convexus vix pubescens, opacus, densissime sat subtiliter ruguloso-punctatus, ferrugineus, prothorace antè et postè nigro, elytris lineis nigris; corpore subtus densissime punctato, coxis sat fortiter rugulosis. Long. $3\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are a good deal broader than they are in the female, and the front tibiæ have a slight excision on the inner edge below the middle; the middle tibiæ also have their lower portion excised inwardly. The species is very closely allied to *Necterosoma regulare*, but is less convex, has the sides of the thorax quite simple, and the male characters rather more developed.

Australia. 437.

I. 39.—Genus *MACROPORUS*.

The hind tibia has only the scial punctures on the infero-external aspect; the swimming legs are well developed, their femora being stout, and their postero-external angle sharply defined; the terminal portion of the epipleura is rather broad, and the genicular area is not limited by a raised line. The mesosternal fork does not connect with the intercoxal process of the metasternum.

The six species are found in Australia and Tasmania; they are robust and large insects for the tribe; and have the best developed swimming legs of any Hydroporini.

444. *Hydroporus howittii*, Clk., M.C.—Ovalis, minus latus, antèrius angustatus, nitidus, tenuiter brevissime pubescens, testaceo-ferrugineus, elytrorum sutura plagisque posterius coalescentibus nigris; elytris basi sparsim obsolete, apicem versus dense subtiliter punctatis; coxis posterioribus sat fortiter punctatis. Long. 5½, lat. 3 m.m.

In the male the front and middle tarsi are much dilated; the first joint of the front ones is particularly broad, the second strongly transverse, the third broad and not greatly developed, the claws of the fourth joint are very unequal, the anterior one being much the shorter and very abruptly curved. The female is not quite so shining as the male and has the punctuation of the elytra denser. The species does not appear to be a very variable one, though the colour of the under surface varies from clear unicolorous red, to a red clouded with infuscations here and there.

Tasmania, Australia. 413.

445. *Hydroporus hamatus*, Clk., M.C.—Ovalis, robustus, tenuiter pubescens, dusniti vel opæus, colore variabilis, pedibus antennisque rufis, his versus apicem fuscis, elytris fere æqualiter, subtiliter sat crebre punctatis; coxis posterioribus sat fortiter punctatis; abdomine obsolete punctato. Long. 5½, lat. 3½ m.m.

This species is closely allied to *Hydroporus howittii*, but it is always different in colour, and may be readily distinguished by the more even punctuation of the elytra, the punctures being more distinct at the base, and less dense towards the extremity; the colour is blackish, with the head red, the thorax varying from red to fuscous black, the elytra black, often with the outer margin and two longitudinal stripes yellow, the underside blackish more or less diluted with red. The male has the front and middle tarsi dilated; the third joint of the front one being rather larger in comparison with the basal ones than in *H. howittii*, the claws are less unequal than in *H. howittii*. There are two forms of the female, one with the surface differing but little from that of the male, while the other is dull and more densely punctured and pubescent.

Tasmania and Southern Australia. 414.

446. *Macroporus lateralis*, n. sp. ♀—Ovalis, robustus, tenuiter pubescens, dense punctatus, subopacus, fusco-ferrugineus, capite, pedibus thoraceque rufescentibus, hoc medio late infuscato, elytrorum limbo fusco-testaceo, antennis rufo-fuscis basi rufo; coxis posterioribus sat fortiter punctatis; abdomine obsolete punctato. Long. $5\frac{1}{2}$, lat. $3\frac{1}{2}$ m.m.

The only individual I have seen seems to indicate a species distinct from *H. hamatus*; it is rather larger and is intermediate in appearance between the two female forms of that species; the tarsi are rather differently formed, the terminal joint on the front and middle ones being less elongate than in *H. hamatus*. This individual had been named *H. gardnerii* by the late Mr. Clark.

West Australia. 415.

447. *Hydroporus gardnerii*, Clk., M.C.—Ovalis, robustus, tenuiter pubescens, crebrius sat fortiter punctatus, subnitidus, nigricans, capite thorace, antennis pedibusque rufis, antennis versus apicem, vertice, et thorace anterior et posterior fuscis, elytris margine sordide pallido; coxis posterioribus fortiter punctatis; abdomine evidenter punctato. Long. $6\frac{1}{4}$, lat. $3\frac{3}{8}$ m.m.

The front and middle tarsi are dilated in both sexes; but are broader in the male than in the female, and in the former sex the claws of the front ones are unequal, the anterior one being rather shorter and more curved than the hinder one. There are two forms of the female—a dull one and a shining one. The species is distinguished from *H. hamatus*, by its larger size and coarser punctuation. It varies in colour, but probably never has stripes on the elytra; these are in some cases infuscate yellow, while in others the yellow colour is limited to the side margin. The tarsi are much broader in the female than they are in that sex of *H. hamatus*.

Tasmania, New South Wales, (Adelaide). 416.

448. *Macroporus solidus*, n. sp.—Ovalis, robustus, latus, minus elongatus, tenuissime pubescens, crebre fortiter punctatus, subnitidus, fusco-piceus, capite, thorace, elytris lateribus pedibusque minus læte rufis, antennis fuscis, basi rufo, thorace anteriori et posteriori fusco; coxis posterioribus fortiter punctatis; abdomine sat evidenter punctato. Long. $5\frac{1}{2}$, lat. $3\frac{1}{4}$ m.m.

I have seen but two males of this species, they are shorter in form, and smaller than that sex of *Hydroporus gardnerii*, and the tarsi are not quite so broad, so that I think the specimens indicate a distinct though very closely allied species.

Australia, (King George's Sound). 417.

449. *Macroporus ruficeps*, n. sp.—Ovalis, minus latus, tenuissime pubescens, sat nitidus, crebre evidenter punctatus, piceo-rufus, capite pedibus antennisque rufis, elytris piceis, thorace ad latera et in medio plus minusve dilutiore; coxis posterioribus sat fortiter punctatis; abdomine subobsoleto punctato. Long. $5\frac{1}{4}$, lat. vix 3 m.m.

In the male the front and middle tarsi are broader than in the female, they being in the latter sex rather slender, the claws of the front ones are but little unequal. The species varies a little in colour, size and punctuation. It closely resembles *H. hamatus* (No. 445), but is smaller and more obscure in colour, rather more closely punctured, and with the front and middle tarsi much more slender. I have only seen one form of female, which differs but little from the male except in the tarsal structure.

Australia. 418.

I. 40.—Genus *DERONECTES*.

The ridge on inner face of wing-case is destitute of a ligula; the posterior portion of the epipleura is narrow, and the humeral area is not limited externally by a raised line. The mesosternal fork does not connect with the intercoxal process of the metasternum.

Most of the numerous species* (about 45) inhabit the European and Mediterranean regions, very few North America. They form four groups defined as follows:—

* In addition to these the following should also be included in the genus:—*Hydroporus angulipennis*, Peyr. (No. 1341 *huj. op.*), Group 1; Syria.—*Hydroporus depressicollis*, Ros. (No. 1360), Group 1; Spain.—*Hydroporus dubius*, Aubé (No. 1365), ? = No. 465; Africa.—*Hydroporus fairmairei*, Lep. (No. 1370), ? = No. 456; Europe.—*Hydroporus boristhenicus*, Hoch. (No. 1347), ? = No. 472 var.; Europe.—*Hydroporus inconspiculus*, Lep. (No. 1380), ? = No. 456; Europe.—*Hydroporus infaustus*, Clk. (No. 1384), near No. 494; Mexico.—*Hydroporus lanceolatus*, Walk. (No. 1390); Arabia.—*Hydroporus mæstus*, Walk. (No. 1399); Arabia.—*Hydroporus piochardi*, Regt. (No. 1415), ? No. 493 var.; Syria.—*Hydroporus samsi*, Aubé, (No. 1427), ? No. 472 var.; Spain.—*Hydroporus semiclusus*, Walk. (No. 1430); Arabia.—*Hydroporus subtruncatus*, Fairm. (No. 1438), ? = No. 469; North Africa.—*Hydroporus undecimlinellus*, Fairm. (No. 1445), ? No. 490 var.; North Africa.—*Hydroporus vestitus*, Gyll. (No. 1448), Group I; Siberia.—*Hyphydrus hyperboreus*, Gyll. (No. 1464), ? No. 471 var.; Lapland. Perhaps also *Hydroporus stearinus*, Kol. (No. 1433), Caucasus, may be a *Deronectes*.

Group 1. (Species 450 to 461).

Swimming legs very slender, their tarsi slender and elongate, very distinctly longer than the tibiæ; the latter with the lower face densely punctured; prosternal process narrow, carinate along the middle, often much compressed laterally, never quite flat, its form more or less obscured by fine setæ; elytra not denticulate near the apex; surface of body very dull, the upper one bearing a more or less distinct bloom or tomentum, which is very easily removed by friction; the surface unicolorous, or nearly so, always destitute of any definite marks or pattern; sexual disparities in legs and feet scarcely to be detected, but often very remarkable as to the form of the prothorax.

The species are about twelve in number, and are all found in clear running streams in the European and Mediterranean region.

Group 2. (Species 462 and 463).

Hind coxæ distinctly separated by a partition projecting backwards beyond the coxal cavities; hind tibiæ densely and finely punctured on their infero-external aspect, but allowing the series of punctures near the edge to be seen; prosternal process remarkably broad and flat, without central carina; colour of surface variegate.

The species are only two in number; and both are European.

Group 3. (Species 464).

Hind tibiæ coarsely punctate on the infero-external face, with, however, the marginal series of punctures visible at the upper edge of the punctuation: hind coxal cavities not visibly separated; elytra with a vague yellow pattern; prosternal process not very broad and flat. This species is found in the Canary Islands.

Group 4. (Species 465 to 494).

Hind tibiæ with their infero-external face glabrous, and shining; hind coxal cavities not visibly separated, prosternal process neither large, nor broad and flat, elytra always variegate with yellow or red.

This group comprises the greater number of the species of *Deronectes*, and they will be arranged according to whether the elytra have a minute sharp denticle near the extremity, or are without such denticle. This is not a very good character as there are a few species in which the denticle is very obscure, and some others in which it is distinct in one sex, and less so in the other; if however a careful examination be made the observer will not have much difficulty in deciding to which of the two categories he should refer the individual under examination.

A, elytra with a denticle near the extremity: species 465 to 484.

B, elytra without a denticle near the extremity: species 485 to 494.

GROUP I.

450. *Deronectes longipes*, n. sp.—Oblongo-ovalis, angustulus, depressus, subtus nigricans, supra fuscus, opacus, dense, subtilissime breviterque pubescens, antennis pedibusque rufis, illis articulis terminalibus extrorsum fuscis; prothorace elytris multo angustiore, lateribus sinuatis, basin versus angustatis, angulis posterioribus rectis; elytris obsolete dense punctatis, serie discoidali punctorum impressorum distincta; corpore subtus subtilissime punctato. Long. 4, lat. 2 m.m.

The male has the front and middle tarsi very distinctly broader than in the female, and the fifth to the seventh joints of the antennæ are distinctly longer and thicker than the others, whereas in the female this character can scarcely be observed.

The species is remarkable amongst its allies for the narrow, depressed form, and the absence of larger punctures on the elytra.

Persia. 297.

451. *Deronectes planicollis*, n. sp.—Oblongo-ovalis, sat angustus et depressus, subtus nigricans, supra fusco-rufus, antennis pedibusque rufis, opacus, dense, subtilissime brevissimeque pubescens, subtilissime punctatus, capite thorace elytris punctis majoribus adspersis, sat numerosis; prothorace elytris multo angustiore, lateribus sinuatis, basin versus leviter angustatis, angulis posterioribus rectis; elytris serie discoidali obsoleta. Long. 5, lat. 2½ m.m.

The male has the front and middle tarsi strongly dilated; and the anterior claw of the front feet is much incrassate.

I have seen but a single individual of the species; although closely allied to *H. parvicollis*, Schaum, it is smaller and narrower, and has the thorax less sinuate at the sides, and the anterior claw on the male foot incrassate: the thoracic side margin is very fine, and there is scarcely any trace of impression along the side within it.

Asia Minor. (Coll. Wehncke). 298.

452. *Hydroporus parvicollis*, Schaum, M.C.—Oblongo-ovalis, robustulus, parum depressus, subtus nigricans, supra fusco-rufus, opacus, dense, subtilissime brevissimeque pubescens, antennis pedibusque rufis, illis crassiusculis; prothorace elytris multo angustiore, lateribus sinuatis, basin versus angustatis, angulis posterioribus rectis; capite fortiter punctato; thorace basi fortiter sed subobsolete punctato; elytris subtilissime punctatis, punctisque subtilibus obsolete tantum ad basin distinctis impressis, sulcula discoidali sat distincta. Long. 5, lat. 2¾ m.m.

The only individual I have seen is a typical specimen of Schaum's, it is no doubt a male, and has the front and middle tarsi rather broad.

The species is about the size of *Hydroporus lareynei*, (No. 454), but it is very readily distinguished from it by the narrower head and thorax, the latter having the sides simple without the broad explanate lateral portion.

Asia Minor, (Natalia). 1141.

453. *Deronectes doriae*, n. sp.—Oblongo-ovalis, sat angustus et depressus, nigricans, opacus, dense subtilissimeque pubescens, densissime subtilissimeque punctulatus, punctis majoribus obsoletis; antennis pedibusque rufis; prothorace elytris multo angustiore, lateribus sinuatis, basin versus leviter angustato, angulis posterioribus rectis, posterius intra latus impresso. Long. 4½, lat. 2 m.m.

I do not know the sex of the only two individuals I have seen.

Caucasus, (found by the Marquis Jacques Doria). 307.

454. *Hydroporus lareynei*, Fairm., M.C.—Oblongo-ovalis, subdepressus, subtus nigricans, supra vel rufescens vel fusculus, antennis pedibusque rufis, opacus, dense subtilissime pubescens, subtilissime punctulatus, sed supra punctis majoribus sat numerosis et conspicuis; prothorace elytris paulo angustiore, lateribus sat explanatis, rotundatis, basin versus angustatis, angulis posterioribus obtusis. Long. 5, lat. 2¼ m.m.

The male has the front and middle tarsi strongly dilated, the antennæ elongate, with the intermediate joints thickened, and the thorax gradually and gently narrowed from the middle to the base, while in the female the contraction in front of the base is much greater and more abrupt: this difference in the form of the thorax is so striking, that Reiche considered that sex to be a distinct species, and gave it the name of *Hydroporus coarcticollis*.

Corsica. 299.

455. *Hydroporus opatrinus*, Germ., M.C.—Oblongo-ovalis, nigricans, opacus, pruinoso-pubescens, antennis pedibusque rufescentibus, vel fere nigricantibus; dense subtiliter reticulato-punctatus, supra punctis magnis, numerosis, conspicuis; elytris sulca longitudinali sat distincta; coxis posterioribus punctis majoribus obsoletis; thorace basin versus angustato, angulis posterioribus fere rectis. Long. 5½, lat. 3 m.m.

In the male the thorax is less narrowed at the base than it is in the female, so that the hind angles are distinctly obtuse; the prosternum bears on the middle between the front coxæ an acute tubercle; in the female the thorax is narrower at the base, and the hind angles form a sharp angle which is very nearly a right angle, and there is no prosternal tubercle.

The female seems to be the *Hydroporus hispanicus* of Rosenh., and is considered a distinct species by Leprieur.

Southern Europe; from Geneva to Spain. 301.

456. *Hydroporus mæstus*, Fairm., Ann. Soc. Fr. 1859, p. 272.—Oblongo-ovalis nigricans, opacus, dense minus subtiliter pruinoso-pubescent, dense subtilissime punctatus, et supra in thorace et elytris punctis majoribus plus minusve conspicuis, (sed interdum fere nullis); elytris sine sulca longitudinali; prothorace lateribus basin versus haud vel leviter angustatis, angulis posterioribus leviter rotundatis; corpore subtus densissime reticulato-punctato. Long. 5, lat. $2\frac{3}{4}$, m.m.

The sexual characters are very slight, the male is generally a little smaller than the female, and the sides of the thorax being a little less rounded or contracted behind its angles are more nearly rectangular.

This species varies greatly according to locality; the individuals from Corsica and Majorca at first sight appear quite distinct from those from the Western Pyrenees, as they are smaller, and have the coarse punctuation much reduced, but all the intermediate steps may be found when the specimens from north-western Italy and Sardinia are examined. I believe *Hydroporus fairmairei* and *H. inconspectus*, Lep. (Nos. 1370 and 1380) are varieties of this species.

Europe and Egypt, (Bondy, Paris?; Geneva, Lombardy, South of France, Corsica, Sardinia, Majorca, Malaga, Algeria). 305.

457. *Hydroporus bombycinus*, Lep., Ann. Soc. Fr. 1876, p. cxvii.—Ovalis, vix omnino opacus, densissime subtiliter pruinoso-pubescent, nigricans, dense subtilissime punctatus, punctis majoribus vix conspicuis, vel omnino nullis; prothorace brevissimo, posterius haud angustato, sed angulis posterioribus late rotundatis; corpore subtus subtilissime dense reticulato-punctato; pedibus vel nigricantibus vel flavis. Long. 4 $\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

The thorax appears in the larger specimens to be rather more narrowed towards the front, and these are probably the females.

This species is very close to *Hydroporus mæstus*, but the rounding of the hind angles of the thorax is greater, and the surface is more silky and less opaque, and the minute punctuation is rather different in character, and the coxal lines of the hind coxæ are more approximate, and less divergent in front.

Southern Europe, and Algeria, (Beziers; Lombardy; Andalusia; Bou-Saada). 306.

458. *Hydroporus semirufus*, Germ., M.C.—Oblongo-ovalis, vel rufescens, vel fuscus, vel niger, antennis pedibusque rufis, subtiliter pruinoso-pubescent, dense subtilissime punctatus, et in thorace elytrisque fortiter punctatus; elytris sulca basali

obsoleta; subtus dense reticulato-punctatus, coxis posterioribus interne punctis majoribus conspicuis; prothorace basin versus nullo modo angustato, angulis posterioribus reectis; elytris humeris emarginatis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

I do not see any evident sexual distinction in this species.

Central and Southern Europe; (Black Forest: Grande Chartreuse; Alps; Pyrenees; Reynosa; Italy). 304.

459. *Hydroporus platynotus*, Germ., M.C.—Subquadrato-ovalis, niger, opacus, subtiliter pruinoso-pubescentis, antennis pedibusque rufescentibus, dense subtilissime punctatus et supra, præsertim in elytris, fortiter punctatus; elytris sulca basali longitudinali subobsoleta; subtus dense subtiliter reticulato-punctatus, coxis posterioribus interne punctis majoribus minus, vel vix, conspicuis; prothorace basin versus haud angustato, sed angulis posterioribus subrotundatis. Long. 4, lat. $2\frac{1}{2}$ m.m.

The sexual characters are but slight, the male is rather narrower than the female, and has the middle joints of the antennæ more developed and the thorax a little straighter at the sides.

Central Europe; (apparently confined to Germany). 303.

460. *Hydroporus bicostatus*, Schaum, M.C.—Oblongo-ovalis, nigricans, vel rufescens, opacus, subtilissime pruinoso-pubescentis, thorace elytrisque fortiter crebre punctatis, elytris medio costa longitudinali, elongata, bene elevata, aliaque externa, abbreviata, obsoleta; subtus dense subtiliter reticulato-punctatus, coxis posterioribus punctis majoribus sparsis sat conspicuis; prothorace basin versus haud vel vix angustato, angulis posterioribus haud rotundatis.

Mas, angustior, nigricans. Long. $4\frac{1}{4}$, lat. $2\frac{1}{8}$ m.m.

Fem., latior, rufescens. Long. 5, lat. $2\frac{3}{4}$ m.m.

Besides the difference in colour and stature, the male has the thorax not narrowed towards the base, and has a minute tubercle on the prosternum, while the female is without this tubercle, and has the thorax just a little narrowed from the middle to the base.

Spain and Portugal, but very local; in running streams. 302.

461. *Hydroporus latus*, Steph., M.C.—Latiusculus, minus depressus, subopacus, ferrugineus, vel fusco-ferrugineus, elytris magis fuscis humeris rufescentibus, antennis pedibusque dilute rufis; tenuissime vix perspicue pubescens, corpore subtilissime dense punctulato, sed supra punctis majoribus, profundis, numerosis conspicuis adperso. Long. $4\frac{1}{2}$, lat. $2\frac{5}{8}$ m.m.

In the male the front and middle tarsi are still broader than they are in the

female, and the front ones have the claws longer and stouter; the thorax is not narrowed in front of the base so that its hind angles are free, the base being a little wider than the shoulders of the elytra; in the female the sides are a good deal contracted just in front of the base so that the angles fall within the shoulders of the elytra; in the female there is a short indistinct plica near the outer edge of the elytra at some distance before the apex, and the last ventral segment is a little prominent on each side.

Central Europe; (widely distributed but rare; from Scotland to Italy, and from Dalmatia to La Vendée). 300.

GROUP 2.

462. *Dytiscus duodecim-pustulatus*, Fab., *Hydroporus duodecim-pustulatus*, M.C.—Oblongo-ovalis, sine pubescentia, sub-opacus, testaceo-ferrugineus, thorace anterior et posterior nigricante, elytris fusco-nigris, maculis fere quadratis testaceis ornatis; thorace lateribus valde rotundatis, angulis posterioribus obtusis; corpore subtilissime punctulato. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

Mas, tarsi anterioribus et intermediis bene dilatatis, anterioribus unguiculis majoribus, tibiis anterioribus et intermediis intus leviter curvatis, intermediis angulo apicali interno unco parvo armatis.

This species varies a good deal in colour, the elytra being sometimes nearly entirely yellow while in other individuals the black colour occupies nearly all their surface; the underside also is more or less infuscate.

Central and Southern Europe, (and Algeria ?); extends in the north to Scotland, and south of Sweden, wanting in Finland. 240.

463. *Hydroporus duodecim-maculatus*, Regt. Ann. Soc. Fr. 1877, p. exxxiii.—Oblongo-ovalis, sine pubescentia, testaceo-ferrugineus, capite intra oculos, vertice, thoraceque anterior et posterior nigro-marginatis, elytris nigris, maculis plus minusve conspicuis testaceis ornatis; thorace lateribus valde rotundatis, angulis posterioribus fere rotundatis; corpore subtus plus minusve infuscato. Long. $5\frac{3}{4}$, lat. vix 3 m.m.

Mas, paulo longiore, tarsi anterioribus et intermediis bene dilatatis; tibiis intermediis intus curvatis, angulo apicali interno unco parvo armatis.

Fem., opaca omnium dense subtilissime punctata.

Although very closely allied to *Dytiscus duodecim-pustulatus* the specimens before me of this species differ not only by their more rounded hind angles of the thorax, but also by the sexual characters, the male front claws being shorter, and the anterior tibiae not curved inwardly, while the female differs more in appearance from the male owing to the punctuation of the surface being more obsolete. The colour no doubt varies a good deal.

The above description is made from Corsican individuals. The only specimen I have seen from North Africa differs so much from them, that it may be another species.

Corsica, (E. Revelière); Tangier? 1142.

GROUP 3.

464. *Hydroporus tessellatus*, Aubé, M.C.—Elongato-ovalis, depressiusculus, dense subtilissime pubescens, fere opacus, niger, supra indistincte testaceo-variegatus, antennis pedibusque rufescentibus; thorace lateribus sat rotundatis, angulis posterioribus distinctis, obtusis; corpore dense subtilissime punctulato, thorace basin versus punctis majoribus sat conspicuis. Long. $5\frac{1}{2}$, lat. $2\frac{7}{8}$ m.m.

The male has the front and middle tarsi broad; the claws of the front ones are more developed than in the female and the anterior one is dilated at the base so as to show there an angular projection; in this sex the apex of the elytra is slightly sinuate, while in the female there is a very indistinct tooth near the extremity of each.

Canary Islands. 249.

GROUP 4.

465. *Hydroporus vigilans*, Woll., M.C.—Ovalis, depressiusculus, vix pubescens, vel sat nitidus (σ) vel fere opacus (ρ), capite thoracæque testaceis, plus minusve infuscatis, elytris testaceis sed lineis confluentibus fuscis fere omnino obscuratis; elytris apice vix sinuato; thorace lateribus fortiter rotundatis; subtus niger; corpore dense subtilissime punctato. Long. 5, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are moderately dilated, the claws of the front ones are more developed than in the female; the upper surface of the female is duller than in the male, from the sculpture being more obsolete; in the male there are conspicuous scattered larger punctures on the basal portion of the thorax, but in the female they are very obsolete.

I suspect from Aubé's description of *Hydroporus dubius* (Spec. p. 517) that this species is the same as the *H. vigilans*, Woll., and that the locality given by Aubé (Africa) is erroneous.

Madeira. 248.

466. *Hydroporus luctuosus*, Aubé, M.C.—Elongato-ovalis, minus convexus, omnium subtilissime brevissime pubescens, minus opacus, niger, capite thorace antennis pedibusque fuscis, capitis vertice thoracisque disco dilutioribus, antenn-

arum basi testaceo, elytris signaturis pallidis; his apicem versus denticulo obsoleto; prothoracis angulis posterioribus obtusis nullo modo rotundatis; corpore dense subtilissime punctulato, thoracis basi punctis sparsis magis conspicuis. Long. 5, lat. $2\frac{5}{8}$ m.m.

In the male the front and middle tarsi are a good deal broader than in the female, and the claws of the front tarsi are very slightly more developed.

Southern Europe, (South of France; Italy). 245.

467. *Hydroporus fenestratus*, Aubé, M.C.—Oblongo-ovalis, subtilissime brevissimeque pubescens, sub-opacus, subtus niger, supra testaceus, prothorace marginibus maculisque basalibus elytrisque signaturis nigris; elytris apicem versus denticulo vel acuto (σ), vel obsoleto (ρ), corpore dense subtilissime punctulato, prothorace punctis paucis majoribus præsertim versus basin conspicuis. Long. 5, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are broad, the claws of the front ones slightly more developed than in the female. The female is rather broader in the after body than the male, so that the thorax is narrower in proportion, and this part has also the hind angles more distinctly marked; and the upper surface is more dull.

Southern Europe, (Sicily). 244.

468. *Deronectes scutellaris*, n. sp.—Ovalis, omnium brevissime subtilissimeque pubescens, subnitidus, subtus niger, supra testaceus, elytris lineis maculisque interjectis nigris, prothorace medio late bi-infusato, pedibus plus minusve infuscatis; thorace basin versus latiore; elytris apicem versus denticulatis; corpore dense subtilissime punctulato. Long. $4\frac{2}{3}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are rather broader than in the female; and the claws of the front ones are more developed, and are unequal, the anterior one being sinuate beneath and shorter than the posterior one. In the female the denticle near the apex of each elytron is very prominent, and the thorax is not quite so broad as it is in the male. The apex of the scutellum is left exposed in this species.

Cyprus. 252.

469. *Hydroporus clarki*, Woll., M.C.—Oblongo-ovalis, subtilissime brevissimeque pubescens, subopacus, subtus niger, supra pallide testaceus, prothorace basi utrinque fusco-plagiato; elytris signaturis nigricantibus interruptis et confluentibus, apicem versus denticulo acuto; corpore dense subtilissime punctulato, prothorace punctis majoribus paucis parum conspicuis. Long. 5, lat. $2\frac{2}{3}$ m.m.

The male has the front and middle tarsi broader than in the female, and the claws of the front ones rather more developed, and its thorax is slightly broader and a little more curved at the sides.

Southern Europe, Algeria, and the Canary Islands. (Andalusia, Blidah). 246.

470. *Deronectes amurensis*, n. sp.—Oblongo-ovalis, omnium brevissime subtilissimeque (vix visibiliter) pubescens, subopacus, rufo-testaceus, subtus nigricans; thorace anterior et posterior elytris que lineis plurimis confluentibus subinterruptis nigris; elytris apicem versus denticulo minus conspicuo; corpore dense subtilissime punctulato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are broad, and the unguiculi of the front pair are moderately elongate and slightly thickened, and the interior (or anterior) one is furnished near the base with an obtuse swelling or tooth.

I have seen only a single male of this species, which has the hind angles of the thorax much less rounded than in the corresponding sex of *Dytiscus depressus*, (No. 472); the black lines more completely cover the elytra, and the undersurface is black. Its larger size and broader form readily enough distinguish it from varieties of *Dytiscus assimilis*, (No. 471), with dark undersurface.

Siberia, (Irkutsk). 242.

471. *Dytiscus assimilis*, Payk., *Hydroporus assimilis*, M.C.—Oblongo-ovalis, convexiusculus, subtilissime brevissimeque pubescens, fere opacus, testaceus, prothorace basi (sed vix antice) elytris que lineis haud interruptis nigris, corpore subtus vel ferrugineo vel infusato; elytris apicem versus denticulo acuto; prothorace basi quam apice evidenter latiore; corpore dense subtilissime punctulato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The front tarsi are broad in both sexes, in the male slightly broader and distinctly longer than in the female, and with the claws elongate and comparatively stout, and the interior one dilated towards the base; the middle tarsi are broader in this sex than in the female.

Europe; East Siberia. (Scotland, Alsatia, Nimes, Munich, Gastein). 243.

472. *Dytiscus depressus*, Fab., *Hydroporus depressus*, M.C.—Oblongo-ovalis, brevissime subtilissimeque pubescens, subopacus, testaceus, thorace anterior et posterior nigricante, elytris lineis plus minusve confluentibus nigris, maculis pallidis interruptis ornatis; thorace lateribus rotundatis angulis posterioribus per-obtusis (σ), vel rotundatis φ ; elytris apicem versus denticulo acuto; corpore subtilissime punctulato, subtus suturis plus minusve nigro-ornatis. Long. $4\frac{1}{2}$, lat. $2\frac{5}{8}$ m.m.

Mas, tarsi anterioribus et intermediis latis, anterioribus articulo 2^o fortiter transverso, unguiculis magis elongatis et crassioribus; prothorace basi elytris fere latiore.

Fem., tarsi anterioribus et intermediis sat latis, prothorace basi elytris angustiore.

This species varies greatly in the markings of the upper and under surfaces, and is sometimes nearly entirely pale.

Europe and North America. Ascends in Lapland to 68° 20' (Sahlberg), in the south extends to Munich and Geneva. 241.

473. *Hydroporus læviventris*, Reiche, M.C.—♂ Ovalis, convexiusculus, dense subtilissime pubescens, subtus nigricans (vel obscure ferrugineus), supra testaceus, prothorace basi maculis fuscis, elytris lineis tenuibus maculisque interjectis nigricantibus; prothorace elytris fere latiore, angulis posterioribus per-obtusis fere rotundatis; elytris apicem versus denticulo minuto; corpore dense subtilissime punctato, thorace basin versus punctis majoribus sat conspicuis. Long. 4½, lat. 2⅔ m.m.

I have seen but two (male) individuals of this species, they have the front and middle tarsi strongly dilated, the claws of the front ones elongate, and the anterior one dilated at the base.

Syria. 250.

474. *Hydroporus insignis*, Klug, M.C.—Ovalis, convexus, subtilissime pubescens, opacus, niger, capite ferrugineo, ad oculos infuscato; thorace lateribus obliquis, basi valde rotundato-sinuato; elytris ferrugineo-testaceis, fascia lata transversa in medio sutura maculisque minimis posticis nigris ornatis, apicem versus denticulatis, seriebus suturalibus et discoidalibus punctorum impressorum vix distinguendis; corpore omnium subtilissime punctulato: pedibus posterioribus nigricantibus, anterioribus rufescentibus, femoribus basi obscurioribus. Long. 5½, lat. 3 m.m.

The few specimens I have seen of this species are all I think females.

Sinai. 253.

475. *Deronectes princeps*, n. sp.—Ovalis, convexus, subtilissime pubescens, niger capite dilutiore; thorace lateribus obliquis, basi rotundato-sinuato; elytris basi apicque irregulariter rufescentibus, serie suturali punctorum impressorum profunda; corpore omnium subtilissime punctulato: pedibus nigricantibus, anterioribus paulo dilutioribus, tarsi rufescentibus. Long. 5 m.m., lat. 3 m.m.

Mas, tarsi anterioribus et intermediis dilatatis, anterioribus præsertim latis, unguiculo posteriore valde elongato; thorace basi utrinque minus rotundato,

angulis posterioribus haud rotundatis; elytris haud omnino opacis, apice evidenter sinuatis obsolete denticulatis.

Fem., thorace basi utrinque fortiter rotundato, angulis posterioribus rotundato-obtusis; elytris omnino opacis, apice fortiter denticulatis.

Readily distinguished from *H. insignis*, by the darker colour and the deep sutural stria; M. de Borre's remarks (Ann. Belg., Vol. XIV, p. XIII), as to *H. insignis* Klug, are not really drawn from that species but from the male of the present one.

Sinai. 254.

476. *Deronectes seriatus*, n. sp.—Ovalis, haud latus, convexus, sine pubescentia, opacus, niger, densissime subtilissimeque punctatus, elytris vix ad basin et ultra medium conspicue sanguineo-signatis, serie suturali punctorum impressorum profunda; antennis fuscis. Long. $4\frac{1}{4}$, lat. $2\frac{3}{8}$ m.m.

Mas, tarsi anterioribus et intermediis leviter dilatatis, unguiculis aequalibus; antennis longioribus, articulis intermediis paulo crassioribus.

Although allied by its sculpture to *Deronectes princeps*, this species is very distinct by the small sexual disparity, as well as by its smaller size and comparatively narrower form: the denticulation near the apex of the elytra is not very conspicuous and is similar in the two sexes; the thorax has, besides the basal and apical punctures, some distant conspicuous punctures on the middle, and there is a very short but rather deep central puncture on the middle. The elytra besides the sutural series of punctures, have two other much more obsolete discoidal series. The red marks on the elytra can sometimes be scarcely detected.

Arabia, (Hedjaz, Millingen). 1145.

477. *Hydroporus crotchi*, de Borre, Ann. Soc. Belg. XIV, p. XIII.—(?)Ovalis, convexus, subtilissime pubescens, opacus, niger, antennis tarsisque quatuor anterioribus rufescentibus, elytris vage rufo-variegatis, serie suturali punctorum impressorum profunda; corpore omnium subtilissime punctulato; prothoracis angulis posterioribus nullo modo rotundatis; elytris apicem versus denticulo acuto fortiter prominulo. Long. 6 m.m., lat. $3\frac{1}{2}$ m.m.

The only individual I have is M. de Borre's type example; it is a female, and very similar to the corresponding sex of *Deronectes princeps*, but is readily distinguished from it by the very distinctly defined hind angles of the thorax.

Sinai. 255.

478. *Deronectes arabicus*, n. sp.—Ovalis, subtilissime pubescens, subtus niger, antennis pedibus capite thoraceque rufescentibus, elytris pallide testaceis,

prothorace basi utrinque nigricante, elytris sutura signaturisque in medio nigris; thorace basi lateribusque rotundatis, angulis posterioribus valde rotundatis; elytris apicem versus denticulatis; corpore dense subtilissime punctulato. Long. 5, lat. $2\frac{7}{8}$ m.m.

Mas, tarsis intermediis vix dilatatis, anterioribus sat dilatatis unguiculo posteriore valde elongato, elytris apicem versus denticulo minore.

Jeddah. 256.

479. *Deronectes islamiticus*, n. sp.—Ovalis, minus latus, subtilissime pubescens, subtus niger, antennis pedibus capite thoraceque rufis, elytris pallide testaceis; prothorace basi nigricante, elytris sutura signaturisque antrorsum extensis nigris; prothorace basi rotundato, angulis posterioribus obtusis ♂, vel rotundatis ♀; corpore dense subtilissime punctulato. Long. 5, lat. $2\frac{3}{4}$ m.m.

In the male, the front tarsi are moderately dilated, their posterior claw extremely elongated; the thorax is at the base slightly broader than the elytra, its hind angles obtuse not rounded; the extremity of the elytra is entire. In the female the sides of the thorax are more rounded and contracted behind so that the hind angles are quite rounded; the elytra are furnished near the apex with a distinct tooth.

Readily distinguished from *Deronectes arabicus*, by its narrower form and the greater extension of the black marks of the elytra.

Kurdistan. 257.

480. *Deronectes suavis*, n. sp.—Ovalis, subtilissime pubescens, nigricans, capite testaceo, ad verticem et ad oculos utrinque infuscato, prothorace testaceo sed latus infuscato; elytris fascia basali signaturisque parvis testaceis, apicem versus denticulatis; prothoracis angulis posterioribus per-obtusis; corpore dense subtilissime punctato, sed abdomine magis fortiter punctato; antennis pedibusque testaceis, illis apicem versus his tarsis infuscatis. Long. $4\frac{3}{4}$, lat. $2\frac{2}{3}$ m.m.

The male is not quite so dull as the female and has the front and middle tarsi broader, with the hinder claw of the front ones a good deal elongate.

Greece, (Mount Parnassus). 258.

481. *Hydroporus variegatus*, Aubé, M.C.—(♂) Ovalis, subtilissime pubescens, nigricans, capite testaceo, utrinque infuscato; prothorace in medio fusco, lateribus elytris que fascia basali signaturisque parvis testaceis; elytris apicem versus fortiter denticulatis; prothoracis angulis posterioribus obtusis; corpore dense subtilissime punctato, sed abdomine paulo magis fortiter punctato; antennis pedibusque testaceis, extrorsum obscurioribus. Long. 5, lat. $2\frac{3}{4}$ m.m.

I have seen only males of this species, which is extremely closely allied to *D. suavis* but is rather larger, and is readily distinguished by the denser and finer sculpture of the ventral segments.

I have from Persia a specimen which is either a variety of this species, or else a closely allied species. I have seen no specimen from Armenia, (the locality of Aubé's specimen) and am not quite sure whether this be really his species.

Asiatic Turkey, (Tarsus). 259.

482. *Deronectes indicus*, n. sp.—(♂) Ovalis, subtilissime pubescens, subtus niger, capite thorace, antennis pedibusque rufis, thorace antice et postice nigricante, elytris testaceis signaturis magnis confluentibus fuscis; thorace lateribus obliquis, haud curvatis, angulis posterioribus nullo modo rotundatis, fere rectis; elytris apicem versus fortiter denticulatis, corpore dense subtilissime punctato. Long. $4\frac{3}{4}$, lat. $2\frac{3}{4}$ m.m.

The male has the second and third joints of the front tarsi short, and much dilated, and the claws of these feet very unequal; the hind one being much the longer. I have seen only one individual.

Northern India, (Coll. Bonvouloir). 287.

483. *Deronectes abyssinicus*, n. sp.—Ovalis, convexus, fere sine pubescentia, vix nitidus, niger, capite in medio prothorace versus latera et in medio vage rufis, elytris testaceis, lineis elongatis approximatis, fere integris, nigris; prothoracis lateribus obliquis, angulis posterioribus fere rectis haud rotundatis; corpore dense subtilissime punctulato, prothorace punctis majoribus conspicuis, pedibus rufescentibus posterioribus pieis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In the male the elytra are rather strongly denticulate near the extremity, the front and middle tarsi are but little broader than in the female, but the hinder claw of the front ones is distinctly lengthened.

In this species the outline of the thorax and elytra is very continuous; when the wing-case is taken off, it is seen that the portion forming the humeral angle projects forward very much.

Abyssinia. 260.

484. *Hydroporus carinatus*, Aubé, M.C.—Ovalis, opacus, fere sine pubescentia, ferrugineus, thorace elytris que nigricantibus, illo lateribus, his basi et signaturis variabilibus testaceis: thorace angulis posterioribus omnino rotundatis, elytris costa longitudinali fortiter elevata; corpore dense subtilissime reticulato-punctato, elytris fere impunctatis, obsoletissime rugosis; thorace punctis majoribus obsoletis. Long. $4\frac{3}{4}$, lat. $2\frac{7}{8}$ m.m.

In the male the thorax is broader at the base than it is in the female, the front and middle tarsi are broader than in the other sex, and the claws of the anterior ones are much more developed, the inner one being also rather longer than the outer one.

Southern Europe. (Spain, Guadarrama, Reynosa). 308.

485. *Hydroporus martini*, Fairm., M.C.—Oblongo-ovalis, angustulus, omnium brevissime subtilissimeque pubescens, subopacus; subtus niger, supra minus discrete coloratus, elytris fusco-ferrugineis, basi pallido, prothorace sæpe ferrugineo lateribus dilutioribus, capite, antennis pedibusque testaceis; elytris apicem versus muticis vix sinuatis; corpore dense subtilissime punctato, prothorace basi punctis majoribus conspicuis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi broad, and the claws of the front ones a good deal more developed than in the female.

I have a variety of the male in which the thorax is a good deal broader than usual.

I have no doubt this supposed species will prove to be a mere variation of *H. sardus*, (*H. affinis*, Aubé), from which it differs only in colour; the dark marks of the upper surface cover a larger portion of the surface, and instead of being black are of a ferruginous colour.

Corsica. 247.

486. *Hydroporus sardus*, Har., M.C.—Oblongo-ovalis, omnium subtilissime brevissimeque pubescens, subtus niger, supra testaceus, prothorace parte basali elytrisque signaturis magnis confluentibus, nigricantibus; elytris apice sinuato; prothorace elytris angustiore, lateribus plus minusve curvatis, angulis posterioribus obtusis haud rotundatis; corpore dense subtilissime punctulato, prothorace basin versus punctis majoribus sat conspicuis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi broad, and the claws of the front ones much more developed than in the female, and the sinuosity at the apex of the elytra is not quite so strong, and the thorax is usually broader.

The species is a very variable one in colour, and in some other respects; the black marks on the elytra sometimes extend to within a short distance of the base, and in such individuals are less confluent than they are in others where the black marks are widely absent on the basal part of the elytra, but form a very broad irregular fascia across the middle. Large specimens of the male sex, are broader and have the sides of the thorax more rounded than in other individuals. In this species, as well as in the following one, the apex of the scutellum is very distinctly exposed.

Sardinia. (Chilivani 5, 1879, and Ozieri 10. 10. 1879, Damry). 251.

487. *Hydroporus canaliculatus*, Lac., M.C.—Ovalis, latiusculus, brevissime subtilissimeque pubescens, fere opacus, subtus niger, supra testaceus, elytris lineis angustis minus distinctis fuscis, longitudinaliter subsuleatis; prothorace basin versus transversim subdepresso, basi elytris angustiore, lateribus subrectis, angulis posterioribus rectis haud rotundatis; corpore dense subtilissime punctulato. Long. $4\frac{3}{4}$, lat. $2\frac{5}{8}$ m.m.

In the male the front and middle tarsi are only a little broader than in the female.

Southern and Central Europe, (Spain, Portugal, and France as far north as the Seine, Hildesheim).
263.

488. *Hydroporus steppensis*, Motsch., M.C.—Ovalis, angustulus, elytris dense breviterque pubescentibus, fere opacus; subtus niger, supra testaceus, elytris sutura lineisque vix coalescentibus nigris; prothorace postice latiore, lateribus obliquis angulis posterioribus minus acutis; corpore dense subtilissime punctulato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In the male the front tarsi are rather strongly dilated.

I have seen only three individuals (males in bad condition) of this species; it is closely allied to *H. ceresyi*, but is smaller, and has the hind angles of the thorax less acute.

Kirgisia. 264.

489. *Hydroporus beticus*, Schaum, M.C.—Ovalis, angustulus, elytris tenuiter pubescentibus, fere opacus; subtus niger, supra albido-testaceus, prothorace basi minus distincte nigro-notato; elytris lineis haud vel vix confluentibus nigris; prothorace lateribus subrectis, pone medium haud latiore, angulis posterioribus rectis, nullo modo rotundatis; corpore dense subtilissime punctulato. Long. $4\frac{1}{4}$, lat. 2 m.m.

The male has the front and middle tarsi broader than in the female; in the latter sex the punctuation of the upper surface is almost absent.

This species is rather smaller than *H. ceresyi*; the thorax is straighter at the sides with the hind angles less acute, it has a more distinct transverse impression in the middle in front of the base, and the dark spots near this impression are larger. I am very doubtful whether it be really a distinct species, for I am scarcely able to distinguish certain individuals of a series of a small variety of *H. ceresyi*, found by Van Volxem at Portimaio.

South of Spain, and Algeria. 262.

490. *Hydroporus ceresyi*, Aubé, M.C.—Ovalis, angustulus, elytris dense breviterque pubescentibus, fere opacus; subtus niger, supra testaceus, prothorace vel concolore vel indistincte nigro-notato, elytris sutura lineisque haud confluentibus nigris; prothorace lateribus obliquis, postice latiore angulis posterioribus acutis; corpore dense subtilissime punctulato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{3}$ m.m.

The male has the front and middle tarsi a good deal broader than the female.

The lines on the elytra are often much diminished and are sometimes nearly absent: in other specimens the lines are broader, and then become connected together here and there by spot-like dilatations.

South Europe and North Africa; (South France, Sardinia, Spain, Mogador, Egypt). 261.

491. *Deronectes suffusus*, n. sp.—Ovalis, haud nitidus, subtus niger, supra ex testaceo nigroque coloratus, elytris lineis valde confluentibus nigris; corpore dense subtilissime punctulato, sculptura prothoracis disci parciore et minus subtili; subtus subtilissime reticulato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

Very closely allied to *Deronectes prosternalis*, but not so acuminate behind, with the sculpture of the prothorax not so fine and even, and with the carina of the prosternum less elevated in front.

I have seen only a single individual, in bad condition.

North America, (Coll. Bonvouloir). 270.

492. *Deronectes prosternalis*, n. sp.—Ovalis, breviter sed evidenter pubescens, haud nitidus, subtus niger, supra ex testaceo nigroque coloratus, elytris lineis valde confluentibus nigris; corpore dense subtilissime punctulato, subtus subtilissime reticulato; prosterno ante coxas evidenter carinato-elevato, carina antè abrupa. Long. 44, lat. $2\frac{1}{2}$ m.m.

I see scarcely any external sexual distinctions.

This species is extremely similar to the European *Dytiscus griseostriatus*, (No. 493), but is distinguished by the considerably stronger carination of the prosternum in front of the anterior coxæ. I have examined about a dozen individuals to assure myself of the validity of this character.

North America. 269.

493. *Dytiscus griseostriatus*, de Geer, *Hydroporus griseostriatus*, M.C.—Ovalis, angustulus, evidenter pubescens, sub-opacus, subtus niger, supra testaceus, capite utrinque, prothoracis signaturis elytris que lineis septem elongatis nigris; supra

subtilissime punctatus, subtus opacus, densissime subtilissime reticulatus. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

The sexes are scarcely distinguishable externally.

Northern Europe, and in the Alps and Pyrenees: Sardinia, (Damry); extends as far as 69° North in Finland; Arctic Asia, (Sahlberg); Pankong Valley, Thibet, (Stolickza).

I have an individual from an old collection, indicated as being from North America: and the species is stated by Schaum to exist in Unalashka, and Lake Superior. 227.

494. *Hydroporus striatellus*, Lec., M.C.—Ovalis, sat latus, densius breviter evidenter pubescens, opacus, subtus niger, supra fuscus, capite thorace elytrisque signaturis variabilibus testaceis, antennis pedibusque rufis, plus minusve infuscatis; corpore dense subtilissime punctulato, elytris versus suturam striis impressis distinctis. Long. 4, lat. 2 m.m.

In the male the front and middle tarsi are rather broader than in the female, and the claws of the front ones are more developed, the sides of the thorax are oblique, being not at all contracted behind the middle, so that the hind angles are obtuse but scarcely rounded, while in the female the sides are more curved, and the hind angles quite rounded.

California: Mexico. 266.

I. 41.—Genus *HYDROPORUS*.

The mesosternal fork is connected with the intercoxal process of the metasternum; there is no ligula on the inner face of the wing-case; the posterior portion of the epipleura is narrow, and the genicular area is not limited externally by a raised line.

The species are very numerous, (about 150) and their arrangement in a natural manner by no means easy.* I have adopted nine groups as follows.

* In addition to those of which the characters are here given, the following may with more or less certainty be assigned to the genus:—*Hydrocoptus dauricus*, Motsch. (No. 1331, *luj. op.*)? No. 529 var.; Eastern Siberia.—*Hydrocoptus mixtus*, Motsch. (No. 1332) ? near No. 612; Kirghiz Steppes.—*Hydrocoptus obscuripes*, Motsch. (No. 1333); Eastern Siberia.—*Hydroporus aberrans*, Clk. (No. 1357), gen. dub.; Java.—*Hydroporus basinotatus*, Reiche (No. 1344), near No. 569; Tangiers.—*Hydroporus bifidus*, Say (No. 1346) ? near No. 525; Mexico.—*Hydroporus caliginosus*, Lec. (No. 1348), near No. 553; North America.—*Hydroporus compunctus*, Woll. (No. 1353) near No. 569; Canary Islands.—*Hydroporus contractulus*, Mann. (No. 1354) ? near No. 602; North America.—*Hydroporus cribratellus*, Fairm. (No. 1356), Algeria.—*Hydroporus cyprius*, Regt. (No. 1357) near No. 564; Cyprus.—*Hydroporus decemsignatus*, Clk. (No. 1358), near No. 527; Mexico.—*Hydroporus delectus*, Woll. (No. 1359) ? No. 547 var.; Canary Islands.—*Hydroporus dichrous*, Melsh. (No. 1361), near No. 627; North America.—*Hydroporus discicollis*, Say (No. 1362); North America.—*Hydroporus dorsoplagiatus*, Fairm. (No. 1364), near No. 550; Algeria.—*Hydroporus exilis*, Boh. (No. 1369), gen. dub.; Caffraria.—*Hydroporus gracilis*, Wehneke (No. 1373) near No. 604; Spain.—*Hydroporus habelmanni*, Wehneke (No. 1375); Europe.—*Hydroporus hottentottus*, Har. (No. 1377), gen. dub.; Caffraria.—*Hydroporus humilis*, Klug. (No. 1378) ? No. 569 var.; Sinai.—*Hydroporus ignotus*, Muls. (No. 1379) ? No. 544 var.; France.—*Hydroporus incassatus*, Th. (No. 1381); Sweden.—*Hydroporus kingi*, Clk. (No. 1388), near No. 641; Mexico.—*Hydroporus laccophilinus*, Lec. (No. 1389), North America.—*Hydroporus latebrosus*, Lec. (No. 1391),

	{	Group 1.	
		Hind coxal cavities not quite approximate, wing cases variegate. (North American species), Nos. 495 to 500.	
		Group 2.	
		Hind coxal cavities quite approximate, thoracic side margin generally thickened, tarsi with third joint much lobed, and under surface red. (North American species), Nos. 501 to 521.	
		Group 4.	
		Hind coxal cavities quite approx., thoracic side margin not thickened, under surface nearly or quite black, prosternal process short or moderately long. Nos. 552 to 629.	
Mesial line between coxal processes, not in the least abbreviated at apex behind, <i>vide</i> Plate vii., fig. 48.		{	Group 5.
			Hind coxal cavities quite approximate, prosternal process elongate. No. 630.
	{	Group 6.	
		Hind coxal cavities minutely separated, surface unicolorous, prosternal process small. Nos. 631 to 636.	
	{	Group 7.	
		Hind coxal cavities distinctly separated, surface unicolorous, prosternal process large. Nos. 637 to 639.	
	{	Group 8.	
		Hind coxal cavities very distinctly separated, prosternal process small. Nos. 640 to 644.	
Mesial line between coxal processes more or less abbreviated at hind extremity, <i>vide</i> Plate vii., fig. 49.	{	Group 3.	
		Wing cases variegate. Nos. 522 to 551.	
	{	Group 9.	
		Wing cases not variegate, coxal lobes highly developed. Nos. 645 to 649.	

California.—*Hydroporus lateralis*, Boh. (No. 1392), gen. dub.; Caffraria.—*Hydroporus longulus*, Muls. (No. 1394), near No. 632; France.—*Hydroporus lucasi*, Reiche (No. 1395), near No. 569; Algeria.—*Hydroporus melancholicus*, Motsch. (No. 1398); Kamtschatka.—*Hydroporus monilicornis*, Sahl. (No. 1400), near No. 562; Lapland.—*Hydroporus multiguttatus*, Regt. (No. 1401), near 569; Syria.—*Hydroporus mutatus*, Har. (No. 1402), gen. dub.; Natal.—*Hydroporus niger*, Say (No. 1404); North America.—*Hydroporus notabilis*, Lec. (No. 1405), near No. 628; North America.—*Hydroporus nudatus*, Say (No. 1406), ? near 525; Mexico.—*Hydroporus obtusipennis*, Sahl. (No. 1408); Lapland.—*Hydroporus opacus* Wehncke (No. 1409), ? No. 598 var.; Lapland.—*Hydroporus oppositus*, Say (No. 1410), near No. 513; North America.—*Hydroporus persimilis*, Crotch (No. 1413), near No. 638; North America.—*Hydroporus piceus*, Steph. (No. 1414); England.—*Hydroporus planatus*, Mann. (No. 1416); North America.—*Hydroporus politus*, MacL. (No. 1417) gen. dub.; Australia.—*Hydroporus productus*, Fairm. (No. 1419); Algeria.—*Hydroporus puberulus*, Lec. (No. 1421), ? = No. 1348; North America.—*Hydroporus pulcher*, Motsch. (No. 1423) ? near 522; North America.—*Hydroporus roffi*, Clk. (No. 1424), near No. 527; Mexico.—*Hydroporus rufinasus*, Mann. (No. 1425), near No. 602; North America.—*Hydroporus sabaudus*, Fauv. (No. 1426), near No. 612; Europe.—*Hydroporus sedilloti*, Regt. (No. 1428), near No. 544; Syria.—*Hydroporus sericatus*, Say (No. 1432), near No. 503; Mexico.—*Hydroporus subalpinus*, Th. (No. 1434), near No. 561; Sweden.—*Hydroporus submuticus*, Th. (No. 1435), near No. 601; Sweden.—*Hydroporus subtonsus*, Lec. (No. 1437), near No. 602; North America.—*Hydroporus thoreyi*, Clk. (No. 1442), gen. dub.; Australia.—*Hydroporus derelictus*, Clk. (No. 1443) ? No. 612 var.; Scotland.—*Hydroporus truncatus*, Mann. (No. 1444); North America.—*Hydroporus undecimmaculatus*, Clk. (No. 1446), gen. dub.; Australia.—*Hydroporus viticollis*, Boh. No. 1449), gen. dub.; Caffraria.

GROUP 1.

495. *Hydroporus aulicus*, Aubé, M.C.—Oblongo-ovalis, posterius angustatus, sparsim subtilissime pubescens, nitidulus, brunneo-ferrugineus, elytris fasciis duabus transversis maculaque apicali testaceis; corpore sat crebre et fortiter punctato. Long. 6, lat. 3 m.m.

I have seen only two individuals of this large and remarkable species; they are both in very decayed condition, but appear to be of different sexes, although the distinctions are but slight; in the male the front tarsi are just distinctly broader than in the female, and the fourth joint is a little longer, and its anterior claw is incrassate. In each sex the antennæ are quite slender, but those of the male are distinctly longer than those of the other sex.

The species is remarkable from its large size, and peculiar form, the head being broader than usual, and by its quite distinctly separated hind coxal cavities; the margin of the thorax is very broad.

North America, (from Dejean's collection). 271.

496. *Hydroporus diversicornis*, n. sp.—Ovalis, sat angustus, parcius subtiliter pubescens, sat nitidus, ferrugineus, prothorace antice et postice elytris que sutura signaturisque transversis fuscis; prothorace haud tenuiter marginato; elytris sat crebre et sat fortiter punctatis; coxis posterioribus sat crebre fortiter punctatis, nitidis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

Mas, tarsi anterioribus et intermediis bene dilatatis, antennis majusculis, articulis intermediis crassioribus.

The male is a little larger than the female, and besides the antennal development, has all the legs thicker than in the female. The claws of the front tarsi are almost equal, and differ but little from those of the female.

This species was sent me by Dr. Leconte as being the *H. aulicus*, but it is quite distinct from that remarkable species and connects it with the *H. concinnus* group: the coxal cavities are contiguous, though scarcely absolutely so; the coxal lines are approximate and not bent outwards in front, but at the apex are more divergent.

North America, (Texas). 288.

497. *Hydroporus concinnus*, Lec., M.C.—Ovalis, subtilissime pubescens, nitidulus, fere impunctatus, testaceus, abdomine pectoreque nigricantibus, prothorace anterie et posterius elytris que infuscatis, his fasciis latis, vagis, interruptis testaceis; elytris stria suturali sat distincta; coxis posterioribus sat crebre obsolete punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{7}{8}$ m.m.

The only individual I have seen is no doubt a male, as it has the front tarsi moderately dilated.

The coxal cavities are distinctly not contiguous, and the coxal lines are very little divergent in front.

North America, (Canada, Illinois, Nebraska, fide Crotch). 291.

498. *Hydroporus pulcher*, Lec., M.C.—Oblongo-ovalis, parcius subtiliter pubescens, vix nitidus, obsolete haud dense punctatus, rufescens, subtus infuscatus pectore apice medio dilutiore, supra prothorace (medio excepto) elytrisq; fuscis, his fasciis latis, vagis, interruptis testaceis; elytris stria suturali distincta; coxis posterioribus minus crebre, sat fortiter sed subobsolete punctatis. Long. $3\frac{3}{4}$, lat. vix 2 m.m.

I do not know the sex of the only individual I have seen. The coxal cavities are evidently not quite contiguous; the coxal lines are very little divergent in front.

North America, (Pennsylvania). 289.

499. *Hydroporus integer*, n. sp.—Oblongo-ovalis, subtiliter pubescens, vix nitidus, obsolete punctatus, fuscus, subtus pectore apicem versus, capite, antennis pedibusque, etiam prothorace medio et lateribus rufescentibus, elytris fascia vaga sub-basali signaturisque externis testaceis; coxis posterioribus minus crebre, sat fortiter sed sub-obsolete punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

I do not know the sex of the only individual I have seen. The coxal cavities are evidently not quite contiguous; the coxal lines are more divergent in front than they are in *H. pulcher*, to which species *H. integer* is extremely similar.

North America, (Pennsylvania). 290.

500. *Hydroporus vittatipennis*, Har., M.C.—Ovalis, subtiliter pubescens, nitidulus, testaceus, elytris vittis plurimis elongatis plus minusve confluentibus fuscis, obsolete punctatis; coxis posterioribus obsolete punctatis; prothorace margine laterali tenuissimo. Long. 3, lat. $1\frac{1}{2}$ m.m.

I do not know the sex of the only individual I have seen of this species, the front tarsi are small, their third joint but little developed. The species in most points of its structure appears allied to *H. concinnus*, Lec. (No. 497) although it has the lateral margin of the thorax very fine even in front; the coxal cavities are distinctly not contiguous.

This species was described by Leconte under the name of *H. lineolatus*, but the name has been changed by Harold on account of the prior *H. lineolatus*, Boh.

North America. 292.

GROUP 2.

501. *Hydroporus cimicoides*, n. sp.—Ovalis, latus postice acuminatus, evidenter pubescens, fere opacus, dense fortiter punctatus, ferrugineus, prothorace ex parte elytrisque fuscis, his testaceo-signatis, antennis fuscis basi testaceo; prothoracis margine crasso, duplicato; epipleuris carinatis, corpore subtus fortiter punctato. Long. $4\frac{1}{2}$, lat. $2\frac{5}{8}$.

In the male the front and middle tarsi are broad; the claws of the front ones are short, but the anterior one is evidently shorter than the other: the female has the punctuation of the upper surface more obsolete than in the male, although it is still quite distinct.

North America. 272.

502. *Hydroporus mellitus*, Lec., M.C.—Ovalis, latus, brevis, parcius pubescens, sat nitidus, testaceus, elytris lineis fuscis confluentibus obscuratis, sub-obsolete vix crebre punctatis; prothoracis margine tenuissimo; coxis posterioribus fortiter punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

I have only seen a single specimen in bad condition of this species, and do not know its sex: by its short, broad form, and large head, it recalls *H. cimicoides* from which it differs by its minute size, and the delicate lateral margin of the prothorax and the smooth ventral segments; I think however it will prove to be really allied to the species in question, and anticipate the discovery of intermediate forms. The prosternal process seems similar, and the epipleuræ also approximate those of the larger species, but I cannot speak very confidently, as the individual besides being badly preserved is immature.

North America; (New England, Vermont, fide Crotch). 296.

503. *Hydroporus undulatus*, Say, M.C.—Ovalis, sat latus, evidenter pubescens, ferrugineus, elytris fuscis, testaceo-signatis, prothorace anterieus et posterius plus minusve infuscato, antennis extrorsum fuscis; prothorace sat tenuiter marginato: subtus fortiter punctatus, coxarum punctis densis. Long. 4, lat. $2\frac{1}{4}$ m.m.

The male has the front and middle tarsi rather strongly dilated, the claws of the front ones quite short; its upper surface is a little shining, and is rather finely but closely punctured, while in the female the upper surface is quite dull and obsoletely punctured.

North America; (Cambridge, Pennsylvania). 273.

504. *Hydroporus lobatus*, n. sp.—Ovalis, minus latus, evidenter pubescens, ferrugineus, antennis extrorsum elytrisque fuscis; crebre æqualiter sat fortiter

punctatus; subtus fortiter punctatus, coxarum punctis densis. Long. $4\frac{1}{3}$, lat. vix $2\frac{1}{2}$ m.m.

I have seen only two individuals of this species, they are males in bad condition and have the front tarsi not very broad, their claws short. Though very close to *H. undulatus*, they appear to me to indicate a distinct species, for they are rather smaller and narrower, the punctuation of the upper surface is rather coarser, and the front tibiæ and tarsi are narrower than in the corresponding sex of *H. undulatus*; the elytra have no distinct markings. It is more similar in colour to *H. lynceus* (No. 506), but it is very much more elongate, and the punctuation and pubescence of the upper surface are more developed.

North America. 274.

505. *Hydroporus scrutator*, n. sp.—Ovalis, dense subtiliter pubescens, opacus, obsolete punctatus, ferrugineus, prothorace antèrius et posteriùs elytrisqùe fuscis, his signaturis indistinctis rufis, stria suturali minus distincta; prothorace sat crasse marginato; coxis posterioribus fortiter fere dense punctatis; antennis extrorsum fuscis. Long. 4, lat. $2\frac{3}{8}$ m.m.

I do not know the sex of the only two individuals I have seen; they have the front tarsi rather slender.

Ega? Although the specimens are labelled Ega, I believe them to be North American. 295.

506. *Hydroporus lynceus*, n. sp.—Ovalis, sat latus, brevior, evidenter pubescens, rufus, elytris fuscis vage rufo-signatis, prothorace in medio vix obscuriore, antennis tenuibus extrorsum fuscis, prothorace sat tenuiter marginato; subtus fortiter punctatus. Long. $3\frac{1}{4}$, lat. $2\frac{1}{8}$ m.m.

The male has the front and middle tarsi a good deal broader than in the female, the front claws short; the upper surface in the male is a little shining and is distinctly and closely, but not densely nor coarsely, punctured; in the female it is quite dull and the punctuation is very obsolete.

The species is of much shorter form than *H. undulatus* (No. 503), and the tarsi of each sex are more slender.

North America, (Mus. Murray). 1144.

507. *Hydroporus peltatus*, n. sp.—Ovalis, sat latus, convexus, postice acuminatus, brevissime pubescens, subnitidus, læte rufo-testaceus, elytris nigricantibus, conspicue testaceo-signatis, prothorace sat tenuiter marginato, lateribus oblique rectis, nullo modo rotundatis; elytris crebre sat fortiter punctatis, coxis posterioribus abdomineqùe basi utrinque fortissime punctatis. Long. 4, lat. vix. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi a little broader than in the female; there is extremely little difference in the sculpture of the two sexes.

This species seems to be a very distinct one, the thorax has the sides without any curve, the pubescence of the upper surface is shorter than in the allies, the sexual differences are slight, and the coxal lines at the apex are a good deal turned outwards. The colour is bright, the yellow markings on the elytra are extensive, but are much broken up by longitudinal interruptions of the dark colour.

Canada, (Coll. Murray). 1143.

508. *Hydroporus clypealis*, n. sp.—Ovalis, sat latus, tenuiter 'haud dense pubescens, ferrugineus, prothorace antèrius et posteriùs elytrisqùe nigricantibus, his testaceo-signatis; prothorace tenuiter marginato; coxis posterioribus fortiter vix dense punctatis. Long. 4, lat. $2\frac{1}{4}$ m.m.

In the male the front and middle tarsi are moderately dilated, and the claws of the anterior ones are a good deal more developed than in the female, and are unequal, the front one being a good deal thicker and shorter than the hind one: the upper surface is quite shining, the punctuation of the elytra being distinct and not dense, while in the female the surface is quite dull and the sculpture obsolete.

The male of this species is easily distinguished from that of *Hydroporus undulatus* (No. 503), but the females are very similar; the antennæ are nearly entirely red, however, in the present species, and the punctuation of the hind coxæ is coarser and not so dense.

North America, (Massachusetts). 275.

509. *Hydroporus anticus*, n. sp.—Ovalis, rufo-testaceus, prothorace basi medio maculaque in margine anteriore elytrisqùe nigricantibus, his signaturis conspicuis testaceis; prothorace tenuiter marginato; coxis posterioribus fortiter minus dense punctatis. Long. 4, lat. $2\frac{3}{8}$ m.m.

I have seen only females of this species, they have the upper surface dull and its punctuation obsolete. The coxal lines are in this insect distinctly curved outwards at the extremity.

North America, (Pennsylvania, Louisiana). 276.

510. *Hydroporus consimilis*, Lec., M.C.—Ovalis, minus latus, evidenter pubescens, dense punctatus fere opacus, læte ferrugineus, prothorace antèrius et posteriùs elytrisqùe nigricantibus, his signaturis conspicuis testaceis; prothorace tenuiter marginato; elytris dense minus profunde punctatis; coxis posterioribus fortiter, fere dense punctatis. Long. $4\frac{1}{4}$, lat. vix $2\frac{1}{2}$ m.m.

I have seen but a single individual, which is a male and has the front and middle tarsi strongly dilated, the claws of the front ones quite small.

This is very closely allied to *Hydroporus undulatus*, (No. 503), but has the antennæ nearly entirely red, the punctuation of the upper surface denser, and the prothoracic margin even a little finer. The coxal lines are not divergent at the extremity.

North America, (Lake Superior). 277.

511. *Hydroporus eruditus*, n. sp.—Ovalis, minus latus, evidenter pubescens, dense punctatus, ferrugineus, antennis extrorsum elytrisque fuscis, his signaturis obsoletis, prothorace sat crasse marginato; elytris stria suturali bene distincta; coxis posterioribus dense sat fortiter punctatis. Long. $4\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m.

The male has the front and middle tarsi moderately dilated; its surface is very nearly opaque and is densely and finely punctured; the female is very dull and has the sculpture of the upper surface quite obsolete.

North America, (Philadelphia). 278.

512. *Hydroporus republicanus*, n. sp.—Ovalis, sat convexus, minus elongatus, ferrugineus, supra plus minusve infuscatus, prothorace tenuiter marginato, coxis posterioribus fortiter crebre sed haud dense punctatis. Long. 4, lat. $2\frac{1}{2}$ m.m.

The male is shining and has the upper surface rather coarsely and not densely punctured, and the fine pubescence scanty, its front tarsi are only slender; the female is dull, and has the upper surface more infuscate, its punctuation fine and almost obsolete, the pubescence almost dense and the tarsi very slender.

I have only seen one male and one female of this species, though they are very dissimilar to one another I think there is no doubt they are the sexes of one species. The species is rather smaller and shorter than *Hydroporus undulatus*, (No. 503), and the punctuation of each sex on the upper surface is more distinct than in the corresponding sex of that species; the front tarsi are much more slender, and the punctuation of the under surface is more scanty. The coxal lines are distinctly divergent in front, but not at the apex.

North America. 279.

513. *Hydroporus proximus*, Aubé, Spec. p. 483.—Ovalis minus convexus, sat nitidus, parce pubescens, ferrugineus, thorace antice macula fusca, basi elytris infuscato-ferrugineis, his signaturis vagis obscurioribus; elytris sat fortiter et sat crebre punctatis; coxis posterioribus fortiter haud dense punctatis. Long. $3\frac{1}{2}$, lat. vix 2 m.m.

The only two specimens I have seen are no doubt males, though the front tarsi are but slender. The coxal lines are very nearly parallel in this species.

North America. (ex Mus. Dejean.) 280.

514. *Hydroporus vitiosus*, Lec., M.C.—Ovalis, sat elongatus, fere depressus, parce pubescens, sat nitidus, ferragineus, prothorace basi elytris que obscurioribus, his signaturis rufis vagis, sat crebre sed vix fortiter punctatis, coxis posterioribus sat fortiter et sat crebre punctatis. Long. $3\frac{5}{8}$, lat. vix 2 m.m.

The only individual I have seen is no doubt a male, though the front tarsi are quite slender; according to Crotch the female is "very closely punctate."

The species is closely allied to *H. proximus*, but is more elongate and depressed, and has the punctuation of the hind coxæ less, and the coxal lines more divergent at their apex.

North America. 281.

515. *Hydroporus vittatus*, Lec., M.C.—Ovalis, parcius tenuiter pubescens, nitidulus, testaceus, prothorace antice et postice elytris que fuscis, his vittis duabus longitudinalibus testaceis, sat crebre subtiliter punctatis; prothorace tenuiter marginato; coxis posterioribus sat fortiter fere sparsim punctatis. Long. 4, lat. $2\frac{1}{4}$ m.m.

The only individual I have seen is a male, it has the front and middle tarsi moderately dilated, and the claws of the front ones unequal, the anterior being a little shorter and thicker. The coxal lines are a little divergent both in front and at the extremity.

North America; (Fort Laramie). 283.

516. *Hydroporus sericeus*, Lec., M.C.—Ovalis, minus elongatus, testaceus, prothorace antice et postice elytrorum que vittis fuscis; prothorace omnino tenuiter marginato; coxis posterioribus dense sub-fortiter punctatis. Long. 4, lat. $2\frac{1}{2}$ m.m.

The only individual I have seen is a female, the upper surface bears a dense fine yellow pubescence, and the sculpture is quite obsolete. The coxal lines are scarcely divergent at the apex.

North America, (Lake Superior; Illinois sec. Crotch). 284.

517. *Hydroporus dimidiatus*, Har., M.C.—Ovalis, densius brevissime pubescens, opacus vel subopacus, testaceus, elytris lineis hinc inde præsertim ante apicem dilatatis et conjunctis nigris; densius subtilius punctatis; prothorace margine haud tenui; coxis posterioribus dense fortiter punctatis. Long. 4, lat. $2\frac{1}{4}$ m.m.

The male is very finely and densely, but quite distinctly punctured, and is a little shining; while the female is on the upper surface very densely and finely punctured and quite dull. The male has the front and middle tarsi a little dilated, the claws on the former thicker than in the female.

In this species the coxal lines are rather strongly divergent at the apex.

North America, (Texas; Fort Laramie sec. Crotch). 286.

518. *Hydroporus striato-punctatus*, Melsh., M.C.—Ovalis, sine pubescentia, sat nitidus, ferrugineus, thorace elytrisque infuscatis, illo medio lateribusque rufescentibus, elytris signaturis humerali et apicali testaceis; coxis posterioribus profunde grosse punctatis; elytris plagis duabus elongatis punctorum profundorum. Long. 3, lat. 1½ m.m.

I do not know the sex of the individual described, which is badly preserved, and the only one I have seen; the species will be easily recognized by its peculiar punctuation; the third joint of the anterior tarsi is well developed and rather elongate; the lateral margin of the thorax is moderately broad, and the epipleurae of the elytra although nearly impunctate, have their posterior portion less slender, than in most of the allies, and it is this character that has induced me to place the species near *H. cimicoides* and *H. undulatus*.

North America; (middle United States). 293.

519. *Hydroporus hybridus*, Aubé, M.C.—Ovalis, convexiusculus, parce subtilius pubescens, sat nitidus, hete ferrugineus, prothorace basi medio elytrisque fuscis, his signaturis magnis rufis; prothorace omnino tenuiter marginato; elytris minus crebre et minus fortiter punctatis; coxis posterioribus nitidulis fere grosse punctatis. Long. 3½, lat. 2 m.m.

The four specimens I have seen have the front tarsi slender. In this distinct species the coxal lines are much sinuate.

North America. (Texas; Western and Southern States sec. Crotch). 294.

520. *Hydroporus mixtus*, Lec., M.C.—Ovalis, sat elongatus, parcius pubescens, nitidulus, rufo-testaceus, elytris obscurioribus signaturis magnis rufo-testaceis, fortiter sat crebre punctatis; prothorace minus tenuiter marginato; coxis posterioribus fortiter sat crebre punctatis. Long. 4½, lat. 2¼ m.m.

I have seen only one good individual of this species; the coxal lines are rather curved in front, and at the apex are distinctly divergent.

North America. (Nebraska). 282.

521. *Hydroporus solitarius*, n. sp.—Ovalis, dense brevissime subtilissimeque pubescens fere opacus, rufo-testaceus, elytris fuscis, signaturis testaceis; prothorace margine haud tenui; elytris dense subtilissime punctatis, stria suturali obsoleta; coxis posterioribus dense fere subtiliter punctatis. Long. 4, lat. 2½ m.m.

The only individual I have seen is a male, and has the front and middle tarsi rather strongly dilated.

North America, (Massachusetts). 285.

Group 3.

The numerous species of this group may be tabulated as follows:—

- A. (Species 522 to 527.) Middle coxæ rather widely separated, (in the first three species the base of the thorax is but little produced over the elytra, in the second three it is conspicuously so produced). New World species only.
- B. (Species 528.) Coarsely punctured and yet distinctly shining beneath; no thoracic impression, middle coxæ very closely approximate.
- C. (Species 529 to 533.) Thorax with a short lateral impression, upper surface but little convex; under surface dull, but as it were smooth, little punctate.
- D. (Species 534 to 536.) Thorax with an abbreviated lateral stria; body dull beneath, being finely coriaceous, and with a coarse punctuation more or less developed; form convex: outline of thorax and elytra continuous.
- E. (Species 537 to 540.) No thoracic impression; beneath somewhat coarsely punctured, but still distinctly shining: outline of thorax and elytra very discontinuous.
- F. (Species 541 to 548.) Thoracic stria more or less abbreviated in front and behind; body shining beneath, size quite small, (about 2 m.m. long).
- G. (Species 549 to 551.) Thoracic stria entire and very distinct; form depressed, surface shining beneath.

A.

522. *Hydroporus eximius*, Motsch., M.C.—Ovalis, latiusculus, opacus, nigricans, supra testaceus, capite rufescente, prothorace anterior et posterior elytrisque signaturis nigris; elytris fere impunctatis, seriebus suturali et discoidali punctorum impressis, hac minus distincta, versus suturam subdepressis; corpore subtus opaco, impunctato, ruguloso; prosterni processu lato, medio fortiter carinato, apice acuminato. Long. 4¾, lat. 2¾ m.m.

This species is more elongate and less rotund than *Hydroporus addendus*, and with the base of the thorax narrower than the elytra.

I have seen only a single specimen. The species is allied to *H. mexicanus* (No. 527), but is readily distinguished by its colour and the sub-carinate disc of the elytra.

California. 224.

523. *Hydroporus addendus*, Crotch, Tr. Am. Ent. Soc. IV, p. 393.—Ovalis, latus, sine pubescentia, opacus, rufescens, elytris testaceis nigro-signatis; prothorace anterius et posterius nigricante; elytris seriebus punctorum rudimentalibus; corpore subtus opaco, impunctato, rugis irregularibus; prosterni processu lato, obtuso. Long. $4\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m.

The four individuals I have seen of this species show me no sexual distinctions.

California. 223.

524. *Hydroporus funereus*, Crotch, Tr. Am. Ent. Soc. IV, p. 392.—Ovalis, elongatus, minus evidenter pubescens, nigricans, supra plus minusve rufo-signatus; pedibus fuscis, antennis testaceis extrorsum infuscatis; corpore dense subtiliter punctato, subtus rugis irregularibus obsoletis; prothorace versus latera subrugoso, elytris seriebus punctorum interne distinctis externe obsoletis. Long. $5\frac{1}{4}$, lat. 3 m.m.

I have seen only one individual which has the front tarsi broad, but the claws small; I do not know its sex.

California. 267.

525. *Hydroporus æquinoctialis*, Clk., M.C.—Ovalis, sat angustus, subtilissime pubescens, fere opacus, nigricans, thorace lateribus et in medio testaceis, elytris signaturis parvis minus discretis testaceis, capite in medio indistincte fusco, pedibus antennisque fuscis, his basi testaceo; prothorace lateribus leviter curvatis, basi elytris angustiore, angulis posterioribus sat obtusis; corpore dense subtilissime punctato, prothorace minus æquali utrinque subrugoso, elytris seriebus punctorum impressorum sat profundis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The individual described is a female.

Mexico. 265.

526. *Hydroporus libens*, n. sp.—Ovalis, brevis, convexus, niger, sine pubescentia, vertice, thoracis medio elytrisque prope basin obscure testaceo-signatis, antennis testaceis versus apicem fusco-maculatis, pedibus anterioribus et intermediis fuscis; corpore obsolete punctato, quasi subkevigato, haud omnino opaco, capite thoraceque subnitidis, hoc basi utrinque longitudinaliter ruguloso; elytris seriebus suturali aliisque discoidalibus minus distinctis punctorum impressorum. Long. 4, lat. $2\frac{1}{3}$ m.m.

In this species the punctuation of the wing-cases and undersurface is excessively obsolete and dense, on the head and thorax it is not so dense and they are distinctly shining; the rough sculpture at the base of the thorax on each side has amongst it one longer stria which reaches more than half way to the front of the thorax.

The only individual I have seen has the front and middle tarsi slender and is perhaps a female.

City of Guatemala, (G. C. Champion, 1879). 1146.

527. *Hydroporus mexicanus*, n. sp.—Ovalis, latiusculus, convexus, fere opacus, niger, prothorace elytrisque plus minusve obscure sanguineo-maculatis, antennis obscure rufis, versus apicem fusco-maculatis, pedibus nigris, anterioribus vix rufescentibus; capite prothoraceque dense subtiliter sed distincte punctatis; hoc basi utrinque ruguloso, lateribus oblique subrectis, angulis posterioribus rotundato-obtusis; elytris omnium densissime vix conspicue punctulatis, seriebus suturali aliisque externis minus distinctis valde abbreviatis punctorum impressorum; corpore subtus opaco, coxis posterioribus rugulosis. Long. 5, lat. 3 m.m.

This species varies a good deal in colour, in some specimens the dark red spots have a considerable extension, while sometimes they are nearly absent. The male differs but little from the female, but the claws of its front tarsi are more elongate.

Hydroporus Roffi, Clk., is an allied species with a more finely punctured thorax.

Mexico. 457.

B.

528. *Dytiscus halensis*, Fab., *Hydroporus halensis*, M.C.—Ovalis, sat latus, subopacus, dense brevissime pubescens, supra testaceus, prothorace in medio nigro-signato, elytris lineis sex maculisque interjectis nigris; antennis pedibusque testaceis, illis articulis versus apicem his tarsis fusciscentibus; pectore nigro; corpore supra vix perspicue punctulato, subtus fortiter punctato. Long. 4½, lat. 2½ m.m.

Mas, tarsis anticis et intermediis latioribus, anterioribus unguiculis longioribus æqualibus; abdomine nigro, apice medio ferrugineo.

Fem., abdomine ferrugineo.

This is a very variable species, and the variations occur in accordance with locality: the sculpture of the upper and undersurfaces varies a good deal as does also the colour and markings. A remarkable variety is found in Corsica, in it the black marks on the head and thorax are very distinct, and those on the elytra form blotches rather than lines, and the male has a small sharp tooth on the inner claw of the front tarsus. A very large race is found in Sardinia. And in Algeria there occurs another remarkable form in which the thorax is entirely black except at the sides.

Europe. Britain, Belgium, France, Germany, Turkey, Italy, Spain, Egypt, Algeria, Sardinia, Corsica; Madeira sec. Wollaston: (said to have been found in Lapland by Sanmark). 222.

C.

529. *Dytiscus alpinus*, Payk., *Hydroporus alpinus*,* M.C.—Elongato-ovalis, sine pubescentia, subopacus, subtus niger, supra testaceus, elytris nigro-lineatis; prothorace angulis posterioribus obtuse rectis, utrinque striga sublaterali valde abbreviata, basi versus angulos posteriores leviter rugulosa; corpore subtus impunctato. Long. 5, lat $2\frac{2}{3}$ m.m.

Mas, tarsis anterioribus et intermediis leviter dilatatis, elytrorum apicibus simplicibus.

Fem., elytrorum lateribus versus apicem angulariter prominulis, apicibus subtruncatis.

Lapland and Norway: extends to $68^{\circ} 10'$ according to Sahlberg; Arctic Siberia. 238.

530. *Hydroporus duodecimlineatus*, Lec., M.C.—Ovalis, sine pubescentia, subopacus, subtus niger supra testaceus, elytris nigro-lineatis; prothoracis angulis posterioribus fere rectis, utrinque striga sublaterali valde abbreviata; corpore supra et infra fere impunctato. Long. 4, lat. $2\frac{1}{2}$ m.m.

Mas, tarsis anterioribus et intermediis bene dilatatis, elytrorum apicibus simplicibus.

Fem., elytrorum lateribus versus apicem obtuse prominulis, apicibus emarginatis.

This species is very closely allied to *Dytiscus alpinus*, but is smaller and of a less elongate form; it should in my opinion be considered a distinct species till intermediate specimens are found.

North America; (Lake Superior). 239.

531. *Hydroporus davisii*, Curt., M.C.—Oblongo-ovalis, sine pubescentia, subopacus, subtus nigricans, supra testaceus, vertice plaga obliqua utrinque prothoraceque medio plus minusve infuscatis, elytris lineis et maculis plus minusve distinctis nigris, punctis sparsis minus distinctis: prothorace angulis posterioribus obtuse rectis, utrinque striga sublaterali anterieus et posterius abbreviata; corpore subtus fere impunctato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

In the male the front and middle tarsi are a good deal dilated, and the claws of the front ones are more elongate than in the female.

This species varies much as to distinctness of the lines and markings, and also as to the colour of the under surface.

Europe: in very clear waters: Finland, Scotland, Pyrenees, Reynosa, Albertville, Germany, Austria, Illyria. 231.

* *Hyphidrus borealis*, Gyll., is considered to be a variety of this species; but *Hydroporus borealis*, Aubé, is a synonym of *H. davisii*.

532. *Hyphydrusseptentrionalis*, Gyll., *Hydroporus septentrionalis*, M.C.—Oblongovalis, sine pubescentia, subtus nigricans, supra testaceus; clytris lineis et maculis plus minusve interruptis et confluentibus nigris, punctis sparsis minus distinctis; prothorace angulis posterioribus obtusis, utrinque striga sublaterali antè et postè abbreviata; coxis posterioribus fortiter sed subobsolete et parce punctatis. Long. $3\frac{1}{2}$, lat. vix 2 m.m.

The external distinctions between the sexes are extremely slight.

This species varies in the markings of the upper surface, and also by the greater or less distinctness of the scattered punctures of the upper surface. The under surface is occasionally of an obscure ferruginous colour. In the only North American individual I have seen, the black colour is very conspicuous, but in form and the peculiar punctuation of the coxæ, the individual agrees exactly with European individuals.

Europe. North America. In clear streams; Sweden, Finland, Scotland, Siberia, Germany, Austria, Dauria, (sec. Mäklin), Savoy, Grande Chartreuse, Northern Spain, (Cangas d'Onis). Lake Superior. 230.

533. *Hyphydrus rivalis*, Gyll., *Hydroporus rivalis*, M.C.—Latus, subrotundatus, sine pubescentia, subopacus, fere impunctatus; subtus nigricans, supra testaceus, prothoracis disco plus minusve obscuriore, elytris lineis elongatis sæpe confluentibus nigricantibus, prothorace angulis posterioribus perobtusis, utrinque striga sublaterali antè abbreviata. Long. 3, lat. 2 m.m.

The front and middle tarsi are in the male rather broader than in the female.

This species varies extremely in colour and marking, and has sometimes a few fine punctures on the thorax. The under surface is sometimes obscurely ferruginous in colour. A very remarkable variety from the Guadarrama, entirely pale beneath and with the markings of the elytra obliterated, was described by me as a distinct species under the name of *Hydroporus alienus*. A variety from Lapland, (H. sanmarki, Sahl.) is rather more shining than those of continental Europe, and the lines of the elytra are very distinct. North American individuals, (*Hydroporus obesus*, Leconte), are a form in which the characteristics of this Lapland variety are even more exaggerated. There is thus an extreme difference between the Guadarrama individuals and the North American ones, but no line of demarcation can be traced between them when series from other localities are examined.

Europe and North America. Lapland, Sweden and Finland, (ascending to $68^{\circ} 50'$ according to Sahlberg), Arctic Siberia, (Jenisei between $69^{\circ} 30'$ and 72° Sahlberg.) Scotland, England, Germany, Illyria: France, (Rouen, Metz, Pyrenees); Guadarrama. California. 229.

D.

534. *Dytiscus lepidus*, Oliv., *Hydroporus lepidus*, M.C.—Species pervariabilis. Ovalis, convexus, posterius acuminatus, nigricans, prothoracis lateribus testaceis, antennis pedibus elytris que colore variabilibus, his semper picturatis; prothorace versus latera striola indistincta; corpore subtus evidenter coriaceo, coxis posterioribus, sparsim subobsolete punctatis. Long. 3, lat. 1½ m.m.

This is a most variable species, the elytra are sometimes largely black, with the lateral border and some very irregular waved marks yellowish; at other times they are yellow, with the suture, a large transverse patch on the middle, and a humeral dot black; all variations occur between these extremes; the punctuation varies very much, from a rather close but somewhat indistinct sculpture, to an obsolete one in which the elytra appear nearly smooth. *Hydroporus rufulus*, Aubé, is founded on individuals in which the general colour is obscure reddish, the marks of the elytra being ill-defined. The smoother and paler forms occur only in the southern part of the area of distribution of the species. The sexes are scarcely distinguishable.

Hydroporus optatus, Wehncke, is I consider a variety of this species.

Western Europe and Northern Africa; widely distributed but apparently wanting in Eastern Europe. Scotland, England, France, Spain, Portugal, Corsica. 320.

535. *Hydroporus formosus*, Aubé, M.C.—Oblongo-ovalis, convexus, posterius acuminatus, crebre distincte punctatus, tenuiter pubescens, nigricans, antennis, pedibus, prothoracis lateribus elytris que testaceis, his sutura, fasciis transversis undatis maculaque humerali nigris; prothorace utrinque striola indistincta; corpore subtus subopaco, minus distincte coriaceo, coxis posterioribus abdomineque basi utrinque fortiter punctatis. Long. 3½, lat. 2 m.m.

This species is extremely similar to some of the varieties of *Dytiscus lepidus*, but is a little more elongate and is readily distinguished by the coarse punctures of the under surface: a large series of specimens might possibly I think show it to be an extreme form of that variable species. The sexes appear to be scarcely distinguishable.

Algeria, Tangiers, Tripoli. 321.

536. *Hydroporus escheri*, Aubé, M.C.—Oblongo-ovalis, convexus, sat nitidus, sat crebre et subtiliter punctatus, tenuissime pubescens, nigricans, antennis pedibusque testaceis, prothorace rufo, anterius et posterius nigricante, elytris maculis vel signaturis testaceis; thorace utrinque striola minutissima; corpore subtus sat evidenter coriaceo, coxis posterioribus fortiter punctatis: abdomine saepius rufescente. Long. 3½, lat. 2 m.m.

Mas, antennis articulis intermediis dilatatis.

This species is very similar to *Hydroporus formosus*, but has the thorax red across the middle. It varies in the extent of the black marks on the elytra. The Algerian *H. Leprieuri* (Reiche, Ann. Fr. 1864, p. 235) is, I consider, a variety of this species.

Southern Europe, (Sicily, Corsica), Algeria. 322.

E.

537. *Dytiscus lineatus*, Fab., *Hydroporus lineatus*, M.C.—Ovalis, convexus, posterius acuminatus, parce subtiliter punctatus, evidenter pubescens, testaceus, prothorace anterior et posterior elytris que infuscatis, his lineis indistinctis margineque exteriore testaceis; corpore subtus nitido, coxis posterioribus fortiter punctatis. Long. 3, lat. $1\frac{3}{4}$ m.m.

Mas, tibiis anterioribus intus versus basin angustatis, tarsis anterioribus et intermediis evidenter dilatatis.

This species varies in the distinctness of the lines on the elytra, which are sometimes nearly obliterated. In Corsica there occurs a small dark form, in which the male characters are less developed than usual: in the examples from the Continent of Europe, the basal joint of the middle tarsus is conspicuously dilated, but in the small Corsican form it is only very slightly so. I have however seen some specimens (also I believe from Corsica) which appear intermediate in these respects. The male of this species is not quite so dull on the upper surface as the female.

Europe; Corsica; common in Continental Europe; extends in Finland to 68° North, according to Sahlberg. 323.

538. *Hydroporus vicinus*, Aubé, M.C.—Ovalis, convexus, posterius acuminatus, parce subtiliter punctatus, evidenter pubescens, supra fusco-testaceus limbo dilutiore; subtus testaceus, nitidus, coxis posterioribus fortiter punctatis. Long. $3\frac{1}{4}$, lat. $1\frac{3}{4}$ m.m.

Mas, sat nitidus, evidenter punctulatus, tarsis anterioribus et intermediis latis.

Fem., opaca, obsolete punctata, tarsis anterioribus et intermediis sat latis.

This species though very closely allied to *Dytiscus lineatus*, is more obscure in the colour of its upper surface, and appears to me really distinct; the distinctions of the sexes being undoubtedly different.

Tangiers. 324.

539. *Hydroporus genei*, Aubé, M.C.—Ovalis, convexus, posterius acuminatus, subtiliter punctatus, evidenter pubescens, subnitidus, ferrugineus, prothoracis basi elytris que infuscatis, his macula basali limboque laterali irregulari pallidis; corpore subtus nitido, coxis posterioribus fortiter punctatis. Long. $3\frac{1}{4}$, lat. $1\frac{3}{4}$ m.m.

This species varies somewhat in the marks of the elytra; and the breast is in some individuals blackish; also the punctation of the hind coxæ is not quite so coarse in the Russian individuals as in the Algerian. I can see no distinct sexual characters.

Algeria, Greece, Southern Russia, Sardinia, Corsica. 325.

540. *Hydroporus meridionalis*, Aubé, M.C.—Ovalis, sat angustus et convexus, nitidus, subtiliter parce pubescens, parce obsolete punctatus, fuscus, prothoracis lateribus elytrisque dilutioribus, his lineis confluentibus, basi sæpius abbreviatis, fuscis; corpore subtus nitido, coxis posterioribus parèssime obsolete punctatis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{3}$ m.m.

This species much resembles *D. flavipes* (No. 547), but has no trace of any impression near the sides of the thorax. I see no evident sexual characters.

Southern Europe and Algeria, Persia. 326.

F.

541. *Dytiscus granularis*, Lin., *Hydroporus granularis* M.C.—Ovalis, parum convexus, parce subtiliter punctatus et pubescens, vix nitidus, nigricans, elytris versus latera lineis longitudinalibus duabus testaceis, interna ad basin dilatata, externa lata minus discreta; antennis pedibusque rufis vel fuscis; prothorace versus latera stria impressa profunda sæpius elongata; corpore subtus nitido, coxis posterioribus et metasterni medio sparsim sat fortiter punctatis. Long. $2\frac{1}{3}$, lat. vix $1\frac{1}{2}$ m.m.

Mas, tarsis anterioribus et intermediis leviter dilatatis, anterioribus unguiculis paulo elongatis et inæqualibus; tibiis posterioribus dilatatis intus setoso-pectinatis.

This species varies a good deal in colour, the lines of the elytra are sometimes broad, ill-defined and confluent, and in extreme cases the whole of the external portion of each elytron is broadly ferruginous.

Europe. This is a rather common species in Central Europe, and extends in the North to 63° (Sahlberg). 312.

542. *Hydroporus bilineatus*, Sturm, M.C.—Elongato-ovalis, parum convexus, parce subtiliter punctatus et pubescens, nigricans, elytris versus latera lineis longitudinalibus duabus testaceis, externa lata et sæpius linea fusca divisa, pedibus rufis, antennis fuscis basi rufo, prothorace versus latera stria impressa abbreviata, extus eadem testaceo; corpore subtus nitido, coxis posterioribus parce obsolete punctatis. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ m.m.

Mas, sat evidenter punctatus; tarsis anterioribus fortiter dilatatis, unguiculis inæqualibus valde elongatis.

Fem., minus nitida, subtilius punctata.

This species differs from *Dytiscus granularis* by the more elongate form and different sexual distinctions, as well as by some other minor characters.

Bedel states by error that this species is the male of *Dytiscus granularis*.

Europe. Rarer than *D. granularis*, and not extending so far to the North: absent from Britain and Scandinavia. 313.

543. *Hydroporus nigritarsis*, Sahl. n. sp.—Elongato-ovalis, parum convexus, parce subtiliter punctatus et pubescens, nigricans, elytris externe testaceis, sutura late irregulariter nigra, parte testacea linea fusca vaga vix divisa; pedibus rufis, tarsis posterioribus obscuris, antennis fuscis basi rufo; prothorace versus latera stria impressa abbreviata, extus eandem testaceo; corpore subtus sat nitido, coxis posterioribus parce obsolete punctatis. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ m.m.

The only character I can point out to distinguish this species from *H. bilineatus*, is that the elytra have their external portion broadly testaceous, instead of having the two yellow lines of *H. bilineatus*. I do not know the male: so I cannot say whether the sexual characters will prove it to be a good species or not.

Northern Siberia. 314.

544. *Hydroporus varius*, Aubé, M.C.—Ovalis, sat convexus, parce subtilissime punctatus et pubescens, sat nitidus, niger, prothoracis lateribus pedibusque testaceis, antennis fuscis basi testaceo, elytris nigro testaceoque variegatis, signaturis irregularibus; thorace utrinque stria impressa plus minusve abbreviata; pectore parcius sat distincte punctato. Long. $2\frac{1}{3}$, lat. $1\frac{1}{3}$ m.m.

Mas, tarsis anterioribus leviter dilatatis, unguiculis vix elongatis.

This species varies greatly in size and in the markings of the elytra; sometimes the elytra are yellow with the suture broadly black, the basal portion of this band being narrower than the middle; behind the middle this sutural band sends off a prolongation on each side; the shoulder has a black mark which is connected along the base with the sutural band, and towards the side there is a large irregular dark mark; these markings become confluent at different points so as to give rise to a great variety of patterns, and sometimes the elytra are nearly entirely black.

Hydroporus bihamatus (Chev. Rev. Zool. 1861, p. 149), is founded on small Algerian individuals of this species; and *H. ignotus*, Muls. (Ann. Soc. Linn. Lyons, VII., p. 305), appears to be a similar variety.

Southern Europe, and Algeria. 315.

545. *Hydroporus læticulus*, n. sp.—Ovalis, convexus, parce subtilissime punctatus et pubescens, sat nitidus, niger, antennarum basi, prothoracis lateribus, pedibus elytris-que testaceis, his plaga irregulari suturali, macula humerali signaturisque externis

nigris; prothorace utrinque striola impressa; pectore parce punctato. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ m.m.

Mas, tarsi anterioribus fortiter dilatatis, unguiculis elongatis, vix inæqualibus.

This species resembles entirely the larger specimens of *H. varius* in which the black marks of the elytra are least extensive, and is so far as I can see distinguished only by the front tarsi of the male. I have seen only two individuals.

Algeria. 316.

546. *Hydroporus fractus*, n. sp.—Oblongo-ovalis, angustulus, depressus, parce subtilissime punctatus et pubescens, sat nitidus, fuscus, antennis, prothoracis lateribus, pedibus elytris que testaceis, his signaturis irregularibus fuscis; prothorace utrinque striola impressa; pectore parcius obsolete punctato. Long. $2\frac{1}{2}$, lat. $1\frac{1}{8}$ m.m.

This is very closely allied to the smallest specimens of *Hydroporus varius*, but is smaller, narrower, more parallel and depressed, and the dark colour is much more dilute.

I have seen only four individuals. I think they are all males, and have the front tarsi moderately broad.

South Europe, and Algeria; (Beziers, Stazzano, Bone). 317.

547. *Dytiscus flavipes*, Oliv., *Hydroporus flavipes*, *M.C.*—Oblongo-ovalis, sat convexus, parce subtilissime punctatus, tenuiter pubescens, subnitidus, nigricans, antennarum basi, pedibus, prothoracis lateribus elytrorumque lineis plus minusve interruptis et confluentibus testaceis; prothorace versus latera striola minuta; pectore fere impunctato. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ m.m.

This species varies much as to the marks on the elytra, which sometimes form four nearly regular lines, and are sometimes much broken up and diminished. The male has the front tarsi a little dilated but the claws are quite small.

Europe and Northern Africa, (Smyna, sec. Bedel), absent from Northern Europe. 318.

548. *Dytiscus pictus*, Fab., *Hydroporus pictus*, *M.C.*—Ovalis, brevis, convexiusculus, parce subtiliter punctatus, tenuiter pubescens, sat nitidus, fuscus, capite prothoracisque lateribus dilutionibus, elytris testaceis, sutura latius maculaque versus latus nigris; prothorace versus latera utrinque striola parva; pectore nitido fortiter punctato. Long. $2\frac{1}{3}$, lat. vix $1\frac{1}{2}$ m.m.

Mas, tarsi anterioribus evidenter dilatatis, unguiculo anteriore incrassato; tibiis posterioribus evidenter dilatatis, intus pectinato-setosis.

The lateral spot of the elytra is sometimes confluent with the large sutural mark.

Europe. Widely distributed and common, from $66^{\circ} 22'$ north, (according to Salzlberg), to the Pyrenees. 319.

G.

549. *Dytiscus crux*, Fab., *Hydroporus crux*, M.C.—Ovalis, sat brevis et convexus, latiusculus, fere impunctatus et pubescens, testaceo-castaneus, capite fusco, prothorace nigricante, lateribus ferrugineis, elytris sutura fasciaque lata irregulari in medio nigricantibus, antennis pedibusque rufis; prothorace versus latera stria impressa integra; corpore subtus obsolete punctato, sublævi. Long. $2\frac{5}{8}$, lat. $1\frac{3}{4}$ m.m.

This species varies a good deal in the markings of the elytra; behind the broad central fascia there is generally a smaller second irregular band, which is sometimes nearly confluent with the median one. I see no characters by which I can distinguish the sexes.

Southern France, and Northern Italy. (Nice, Spezia, Tuscany, Liguria). 309.

550. *Hydroporus sexguttatus*, Aubé, M.C.—Ovalis, minus convexus, fere angustus, sparsissime obsoleteque punctatus et pubescens, testaceo-castaneus, capite fusco, prothorace nigricante lateribus ferrugineis, elytris pictura variabili, sutura fasciisque latis irregularibus transversis plus minusve extensis et coalescentibus nigricantibus, antennis pedibusque rufis, illis apicem versus sæpe infuscatis; prothorace versus latera stria impressa, integra; corpore subtus nitido, obsolete punctato. Long. $2\frac{5}{8}$, lat. $1\frac{1}{2}$ m.m.

This species is distinguished from the preceding one by its smaller size and narrower, less rounded form; the colour is variable, often the black of the elytra occupies most of the area, leaving a basal interrupted fascia, and four large spots towards the extremity pale. I see no sexual characters.

Corsica, Sardinia, Monte Cristo. 310.

551. *Hydroporus jucundus*, Perris, Abcill., VII, p. 7.—Ovalis, sat elongatus, subdepressus, minus latus, impunctatus, vix nitidus, testaceo-castaneus, capite rufofusco, prothorace nigricante, lateribus ferrugineis; elytris fascia mediali irregulari fusca; antennis pedibusque rufis, illis crassiusculis; prothorace versus latera stria impressa integra; corpore subtus nitido, sublævi. Long. $2\frac{3}{4}$, lat. $1\frac{1}{2}$ m.m.

The male has the antennæ beyond the middle thicker than in the female. The species is closely allied to *D. crux*, (No. 549), and *H. sexguttatus*, but is more elongate and depressed, has the dark markings on the elytra more reduced, and the antennæ thicker.

Western Pyrenees. (Eaux bonnes). 311.

GROUP 4.

552. *Hydroporus occultus*, n. sp.—Oblongo-ovalis, angustulus, nitidus, lævis, piceus, antennis pedibusque rufis; prothorace fere impunctato; elytris parce subtilissime punctatis; coxis posterioribus sparsim subtiliter punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

This species may be placed not very far from *Hyphydrus memnonius*, (No. 558); but it is a very distinct species, and has the prosternal process more developed than in the *H. melanarius* allies.

I have seen but a single individual, which is probably a male, the basal joint of the intermediate tarsus being rather large.

Algeria, (Coll. Ott). 400.

553. *Hydroporus occidentalis*, n. sp.—Oblongo-ovalis, brevius tenuiter parciusque pubescens, sub-opacus, niger, antennis pedibusque fusco-rufis; prothorace medio latius sublævi, limbo minus discrete punctato; elytris sat crebre subtiliter punctatis, punctis apicem versus obsoletis; coxis posterioribus sparsim, subtiliter punctatis. Long. $3\frac{1}{3}$, lat. $1\frac{3}{4}$ m.m.

Very closely allied to *Hydroporus longicornis*, but the extremely scanty pubescence is rather more visible, and the punctuation of the elytra is closer, and the antennæ and legs darker in colour. I have seen only one individual.

North America, (Lake Labache, British Columbia). 398.

554. *Hydroporus longicornis*, Sharp, Ent. Mo. Mag. VI, p. 84.—Oblongo-ovalis, fere sine pubescentia, niger, antennis pedibusque rufis, illis gracilibus extrorsum sæpius infuscatis; prothorace medio sublævi, basi sat crebre punctato, lateribus antrorsum minus angustatis; elytris parce subtiliter punctatis; coxis posterioribus parce minus fortiter punctatis. Long. $3\frac{3}{4}$, lat. $1\frac{3}{4}$ m.m.

This species is closely allied to *Hydroporus melanarius*, but is rather narrower and more elongate, and has the elytra more finely punctured, and the thorax is rather differently formed, and the antennæ more elongate; it seems to vary in the surface, being sometimes shining, and sometimes quite dull. The sexes are very difficult to distinguish.

Europe, (Finland, Scotland, Wales, Savoy,). 397.

555. *Hydroporus melanarius*, Sturm, M.C.—Oblongo-ovalis, fere sine pubescentia, niger, vel piceus, antennis pedibusque rufis; prothorace minus punctato, medio latius sublævi, basi fere sparsim punctato; elytris parce punctatis, punctis apicem versus obsoletis; coxis posterioribus parce minus fortiter punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

This is a variable species in size and sculpture, and even in form : some individuals are quite dull, and others shining ; the more shining individuals are usually more convex and more distinctly, but not more closely punctured ; generally the elytra and thorax form an almost continuous outline, but in the more convex individuals this outline is a little more interrupted. The sexes are difficult to distinguish, but the basal joint of the front and middle tarsi is distinctly larger in the male. *Hydroporus monticola*, Sharp, was described from small, dull, and finely punctured individuals of this species.

Northern Europe, and Arctic Siberia ; from 67° 20' North (Sahlberg) to Geneva.

556. *Hydroporus cantabricus*, n. sp.—Ovalis, latiusculus, fere sine pubescentia, sat nitidus, piceus, vel ferrugineus ; antennis pedibusque rufis ; prothorace disco sparsim subtiliter punctato, limbo distincte punctato ; elytris crebre evidententer punctatis ; coxis posterioribus sparsim fortiter punctatis. Long. 3½, lat. vix 2 m.m.

This species comes very close indeed to some of the more shining varieties of *Hydroporus melanarius*, but I have not been able to connect it with them at present ; the elytra have the punctures more numerous, and their junction with the thorax forms a less indistinct angle, the colour, (especially of the head and thorax), is paler in all the specimens.

Europe, (Reynosa). 395.

557. *Hydroporus insularis*, n. sp.—Oblongo-ovalis, sat convexus, fere sine pubescentia, piceus, prothorace lateribus late dilutioribus, antennis pedibusque rufis ; abdomine pectoreque nigris ; prothorace medio sublævi, limbo minus punctato ; elytris sat crebre subtiliter punctatis ; coxis posterioribus sparsim fortiter punctatis. Long. 3¾, lat. 2 m.m.

Mas, pernitidus, tarsis anterioribus et intermediis articulo basali magno.

Fem., omnino opaca.

This species is much smaller than *Hyphydrus memnonius*, and is more finely punctured, in other respects it is extremely similar ; of the few specimens I have seen all the females are opaque : the basal joint on the intermediate tarsus of the male is larger than in *Hydroporus revelierei*.

Corsica. 393.

558. *Hyphydrus memnonius*, Nicol., *Hydroporus memnonius*, M.C.—Oblongo-ovalis, minus convexus, fere sine pubescentia, piceus, prothorace lateribus late dilutioribus, antennis pedibusque rufis, illis sat elongatis, abdomine pectoreque nigris ; prothorace antrorsum minus angustato, medio sparsim subtiliter, limbo

conspicue punctato; elytris sat crebre et fortiter punctatis; coxis posterioribus sparsim punctatis. Long. 4, lat. $2\frac{1}{8}$ m.m.

Mas, nitidus, evidenter punctatus, tarsis anterioribus et intermediis articulo basali majusculo.

Fem., (a) ut in mare punctata et nitida.

(b) omnino opaca, subtiliter punctata.

This species varies a good deal in size, and even in relative width, and the male tarsi also differ in their amount of dilatation. The two forms of the female are very dissimilar.

Europe, from 67° North, (Sahlberg) to Italy. 394.

559. *Hydroporus revelierei*, n. sp.—Oblongo-ovalis, minus convexus, fere sine pubescentia, supra piceus, prothorace lateribus late dilutioribus; abdomine pectoreque nigris, antennis pedibusque rufis; prothorace medio sublævi, limbo minus punctato; elytris sat crebre subtiliter punctatis; coxis posterioribus sparsim fortiter punctatis. Long. 4, lat. 2 m.m.

Mas, pernitidus, tarsis anterioribus et intermediis articulo basali sat magno.

Fem., (a) ut in mare nitida et punctata.

(b) subopaca.

This species is extremely similar to *H. insularis* (No. 557), but is a little larger, and the basal joints on the front and middle tarsi of the male are smaller: while the female appears usually to resemble the male in sculpture, and even its second form departs but little from the male. It is rather smaller and more depressed than *Hyphydrus memnonius*, more finely punctured, and the females are different, for one of the two forms of this sex quite resembles the male and the second departs from it comparatively little.

This species is named in honour of M. Eugene Revelière, of Porto Vecchio, to whom we are very largely indebted for our knowledge of the Coleoptera of Corsica.

Corsica. 1152.

560. *Hydroporus teres*, n. sp.—Ovalis, parum convexus, tenuiter pubescens, niger, antennis pedibus elytrisque rufis; prothorace parum punctato, disco lævigato; elytris parum crebre, subtiliter punctatis, punctis versus apicem obsoletis; coxis posterioribus sat fortiter punctatis; abdomine segmento ultimo apice crebre confuse punctato. Long. $3\frac{1}{2}$, lat. vix 2 m.m.

The species seems rather similar in size and form to *Hyphydrus pubescens*, (No. 568) but the impunctate middle portion of the thorax requires it to be placed near *Dytiscus nigrita*, from which it is readily distinguished by its larger size, and by the red antennæ and wing-cases.

I have seen only a single individual, and although it is not in good condition, it appears to me to be certainly a distinct species.

Syria, (Dr. Millingen). 1150.

561. *Dytiscus nigrita*, Fab., *Hydroporus nigrita*, M.C.—Ovalis, latiusculus, minus convexus, breviter tenuius pubescens, minus nitidus vel opacus, niger vel piceus, antennis pedibusque rufis illis basi excepto plus minusve infuscatis; prothorace medio punctis paucis minutis; elytris minus crebre et fortiter punctatis, punctis versus apicem obsoletis; coxis posterioribus fortiter punctatis; abdomine apice impunctato. Long. 3, lat. $1\frac{5}{8}$ m.m.

This is a variable species in size and colour, and even somewhat in sculpture; specimens occur in which there are to be seen a few distinct punctures on the last ventral segment, and these individuals are generally narrower and have darker legs and antennæ, but intermediate specimens occur. I do not see any characters to distinguish the sexes. According to Sahlberg and Wehncke, *Hydroporus subalpinus*, Th. (No. 1,434, huj. op.), is not distinct from this species, but I cannot myself give an opinion on the point.

Europe, from Finland, ($63^{\circ} 40'$, Sahlberg), to the Guadarrama. 389.

562. *Hydroporus brevis*, Sahl., M.C.—Breviter ovalis, sat latus et convexus, nitidus, breviter tenuius pubescens, niger, antennis pedibusque rufis; prothorace disco punctis paucis sparsis, basi utrinque fortius punctato; elytris sat crebre et fortiter punctatis; coxis posterioribus fortiter punctatis; abdomine apice fere impunctato. Long. $2\frac{1}{2}$, lat. $1\frac{1}{3}$ m.m.

The much smaller size, and the more shining surface should prevent this species from being mistaken for a variety of *Dytiscus nigrita*, Fab. I see no sexual characters.

Europe. Apparently confined to the north, ascending in Lapland and Finland to 68° north. Arctic Siberia, (Jenisei), Sahlberg. 388.

563. *Hydroporus obscurus*, Sturm., M.C.—Ovalis, minus latus, sat convexus, vix nitidus, breviter tenuius pubescens, fusco-rufus, capite, antennarum basi pedibusque dilutioribus, pectore nigricante; prothorace medio late impunctato, basi sat evidenter punctato; elytris sat fortiter minus crebre punctatis; coxis posterioribus fortiter punctatis; abdomine apice haud punctato; antennis brevibus. Long. $2\frac{7}{8}$, lat. $1\frac{1}{2}$ m.m.

I can see no sexual characters in this small but distinct species.

Northern and central Europe, and Arctic Siberia; North America; ascends in Finland to 68° north according to Sahlberg. Jenisei, Sahlberg. The North American habitat is given on the authority of two individuals from the late Andrew Murray's collection. 387.

564. *Hydroporus discretus*, Fairm., M.C.—Ovalis, breviusculus, minus convexus, subtiliter pubescens, subnitidus, niger, antennis pedibusque rufis, illis extrorsum fusciscentibus; thorace elytrisque crebre, æqualiter, sat subtiliter punctatis; coxis posterioribus crebre fortiter punctatis. Long. 3, lat. $1\frac{5}{8}$ m.m.

The sexual differences are extremely slight. I find it so difficult to distinguish between certain specimens of this and the *H. corsicus* and *H. neuter*, that I think they may prove all one species.

Europe, from Scotland to Alsasia, (Cantabrian mountains). 386.

565. *Hydroporus corsicus*, Wehncke, Berl. Ent. Zeit. XV, p. 163.—Ovalis, sat convexus, subtiliter pubescens, nitidus, niger, antennis pedibusque rufis, illis vix fusciscentibus; thorace elytrisque crebre æqualiter distincte punctatis; coxis posterioribus crebre, fortiter punctatis. Long. $3\frac{3}{8}$, lat. $1\frac{3}{4}$ m.m.

This species is very close to *Hydroporus neuter*, but is rather narrower and more oblong, and generally has the punctuation of the elytra rather coarser and less close. I see no sexual distinctions.

Corsica. 385.

566. *Hydroporus neuter*, Fairm. Faun. Fr. p. 205.—Ovalis, sat convexus, crebrius subtiliter pubescens, nitidus, niger, antennis pedibusque rufis, illis vix fusciscentibus; thorace elytrisque æqualiter, subtiliter fere dense punctatis; coxis posterioribus crebre fortiter punctatis; abdomine nitido, medio parce subtilissime punctato. Long. $3\frac{3}{8}$, lat. $1\frac{3}{4}$ m.m.

There seems to be scarcely any difference between the sexes. The species seems to be variable, and is very closely allied to *H. discretus* (No. 564), but it is usually larger and more finely punctured, but some specimens of the two forms approach very closely to one another.

A specimen sent me by M. Fairmaire, labelled "neuter, Paris," seems to be a variety of this species with the ventral segments in the middle rather more closely punctured.

Europe; (Pyrenees, Savoy). 384.

567. *Hydroporus fuscipennis*, Kies., M.C.—Ovalis, sat convexus, subnitidus, crebrius evidenter pubescens, crebre, æqualiter, minus subtiliter punctato, niger, pedibus obscure rufis, antennis gracilibus, fuscis basi rufo, capite elytrisque fuscis; coxis posterioribus fortiter, sat crebre punctatis, abdomine evidenter punctulato, segmento ultimo distincte punctato; tarsi anterioribus articulo tertio (præsertim in femina) sat elongato. Long. $3\frac{1}{2}$, lat. $1\frac{7}{8}$ m.m.

In this species the tarsi of the male are distinctly broader than they are in the female, the species is extremely similar to *Hyphydrus pubescens*, (No. 568) but is rather more coarsely punctured above, has the antennæ rather more slender, and the third joint of the tarsi not so small.

North Europe; (Sweden, Finland, Germany). Russian North America. Ascends to 68° 20' according to Sahlberg. 383.

568. *Hyphydrus pubescens*, Gyll., *Hydroporus pubescens*, M.C.—Ovalis, sat convexus, minus nitidus, crebrius pubescens, æqualiter, subtiliter fere dense punctatus, niger, pedibus obscure rufis, antennis fuscis basi rufo, elytris fusco-brunneis, humeris sæpe dilutioribus; coxis posterioribus sat crebre, fortiter punctatis, abdomine segmento ultimo argute profundeque punctato; tarsis anterioribus articulo tertio parvo. Long. 3½, lat. 1½ m.m.

This is a variable species in size and colour; in the more southern part of its area it has frequently the elytra broadly pale at the shoulders.

It has been thought that this species is the *Dytiscus melanocephalus*, Marsh. (*Hydroporus melanocephalus*, Steph.), but as the descriptions leave this quite doubtful, I have not thought it advisable to disturb the generally accepted decision which considers Gyllenhal the first describer of the species. It has also been stated that the species intended by Gyllenhal under the name *H. pubescens* was not this but *Hydroporus discretus*, Fairm. (No. 564); Gyllenhal's description however applies better to the present species than to any other, and there is therefore no sufficient ground for changing the name.

Europe; one of the most abundant of the European Dytiscide: Algeria, Northern Persia; ascends in Finland to 67°, (Sahlberg); Germany, Britain, France, Corsica, Sardinia, Spain, Italy, Greece. 382.

569. *Hydroporus lituratus*, Brullé, M.C.—Ovalis, sat convexus, minus elongatus, sat nitidus, tenuiter haud dense pubescens, subtiliter sat crebre punctatus, niger, pedibus antennisque testaceis, his apicem versus fuscis, elytris fuscis, vel fusco-testaceis, basi lateribusque plus minusve late et irregulariter testaceis; coxis posterioribus sat crebre et fortiter punctatis; abdomine segmento ultimo indistincte punctato. Long. 3½, lat. 2 m.m.

This is a very variable species in colour, and even in sculpture and pubescence, and its dark varieties approach very closely to *Hyphydrus pubescens*, but the present insect has the last segment of the hind body always much more indistinctly punctured; the sexes are very difficult to distinguish.

Bedel assigns to this species the trivial name of *tessellatus* Drapiez.

Europe; Northern Africa; Persia; Arabia; (Scotland, England, France, Corsica, Spain, Cyprus, Sinai, Northern Persia, Jeddah). 381.

570. *Hydroporus ineptus*, n. sp.—Ovalis, sat convexus, densius subtiliter pubescens, dense subtiliterque punctatus, niger, antennis pedibusque fuscis, illis basi rufo, elytris brunneo-obscuris, basi vix dilutiore, plus minusve obsolete fusco-lineatis vel signatis, coxis posterioribus crebre subtiliter punctatis; abdomine segmento ultimo sat evidenter punctato. Long. $3\frac{3}{4}$, lat. $2\frac{1}{8}$ m.m.

This species is smaller and more finely punctured than *Dytiscus planus*, (No. 575), and has the legs and antennæ darker; it is very similar to the darker varieties of *H. lituratus*, but has the elytra much more densely and finely punctured. The specimens I have seen are all in very bad condition.

Syria. 380.

571. *Hydroporus errans*, n. sp.—Ovalis, sat convexus, sat nitidus, crebrius pubescens supra æqualiter subtiliter fere dense punctatus, niger, pedibus antennisque obscure rufis, elytris fuscis, humeris indiscrete dilutioribus; coxis posterioribus dense fortiter punctatis, abdomine segmento ultimo confuse punctato. Long. $3\frac{1}{4}$, lat. 2 m.m.

This species is extremely similar to *Hyphydrus pubescens*, (No. 568), but is rather larger, the basal portion of the third front tarsal joint is less reduced, and the punctuation of the apical ventral segment is indistinct; these characters bring it very near to some small varieties of *Dytiscus planus*, (No. 575), but it does not quite attain the size of the smallest individuals of that species, and has the hind coxæ more coarsely punctured. The much greater development of the punctuation and pubescence, as well as the scarcely variegate elytra, readily distinguish it from *H. lituratus*. The few individuals I have examined show no sexual differences.

Canary Islands. 459.

572. *Hydroporus antidotus*, n. sp.—Ovalis, sat convexus, crebre subtiliter punctatus, subtiliter pubescens, nitidus, niger, antennis pedibusque rufis, elytris rufo-obscuris; coxis posterioribus sat crebre subtiliter punctatis; abdomine segmento ultimo argute punctato. Long. $3\frac{1}{8}$, lat. 2 m.m.

This species is very similar to *Hyphydrus pubescens*, (No. 568), but is rather larger, and the upper surface is more finely punctured, and the antennæ, legs and wing-cases are of a reddish colour, and the punctuation of the hind coxæ is much finer. From *H. lituratus* it is readily distinguished by the different colour, and more finely punctured coxæ.

I have seen only a single individual, but after carefully comparing it with the varieties of *Hyphydrus pubescens*, and *Hydroporus lituratus*, feel no doubt it represents a distinct species; I do not know the sex of this specimen, its front and middle tarsi are very slender.

Syria. (Dr. C. Millingen). 1149.

573. *Hydroporus maurus*, n. sp.—Ovalis, convexus, subtiliter sed evidententer pubescens, dense subtiliter punctatus, nitidus, niger, antennis pedibusque fuscis, illis basi rufescente; coxis posterioribus crebre sat fortiter punctatis; abdomine segmento ultimo satis pubescente, dimidio apicali indistincte punctato. Long. $2\frac{2}{3}$, lat. 2 m.m.

This species is distinguished from *Dytiscus planus*, (No. 575), by its smaller size, black colour, and rather finer punctuation: it is equally similar to *Hyphydrus pubescens*, (No. 568), but is darker in colour, more finely punctured, has the third joint of the front tarsi larger, and the apical ventral segment indistinctly punctured. The sexes seem scarcely distinguishable.

Southern Europe: (Spain, Guadarrama, Grenada). 379.

574. *Hydroporus inscitus*, n. sp.—Ovalis, gracilis, minus convexus, subtiliter pubescens, crebre subtiliter punctatus, subnitidus, niger, antennis, pedibus, thoracis margine laterali elytrisque testaceis, his hic inde irregulariter infuscatis; coxis posterioribus sat crebre parum fortiter punctatis; abdomine segmento ultimo subtiliter punctato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

This species is allied to *Dytiscus planus*, (No. 575), but is more slender, more finely punctured and pubescent, and less dark in colour. It more resembles *Hydroporus nigriceps*, (No. 576) in colour, but the fine punctuation and pubescence readily distinguish it therefrom.

I have seen only a single female.

Mesopotamia (Dr. C. Millingen). 1148.

575. *Dytiscus planus*, Fab., *Hydroporus planus*, M.C.—Ovalis, minus convexus, evidententer pubescens, dense subtiliter punctatus, subnitidus, niger, elytris fuscis, circa humeros sæpe dilutioribus, pedibus rufescentibus, antennis fuscis basi rufo; coxis posterioribus crebre sat fortiter punctatis; abdomine segmento apicali satis pubescente, dimidio apicali dense punctato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{3}$ m.m.

The sexes are not easy to distinguish, but the male has the front tarsi distinctly broader than they are in the female. The species varies much in size, and a good deal in colour; it may always be distinguished from *Hyphydrus pubescens*, (No. 568), by the larger third joint of the front tarsi, and the different sculpture of the apical ventral segment.

Europe, one of the commoner species; from $60^{\circ} 50'$ in Finland, (Sahlberg) to the Guadarrama and Corsica. 378.

576. *Hydroporus nigriceps*, Schaum, M.C.—Ovalis, minus convexus, dense evidententerque pubescens, dense subtiliterque punctatus, niger, antennis pedibusque

testaceis, elytris signaturis basalibus et externis pallidis; coxis posterioribus crebre sat fortiter punctatis; abdomine segmento apicali densius pubescente, sed margine summo nudo denseque rugoso punctato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi broader than the female. The species is extremely closely allied to *D. planus*, but the yellow marks at the base of the elytra are distinct and definite and there is a little difference in the sculpture and pubescence of the last ventral segment. The species appears to be variable according to locality; the individuals from Andalusia have the pubescence less white and conspicuous than those from the South of France; a variety from Corsica, (*H. bonnairei*, Fairm.) is remarkable from the very conspicuous pubescence; I have however only seen a single specimen of it.

Southern Europe, Corsica; Northern Africa, (Andalusia, Algeria). 377.

577. *Hydroporus brucki*, Wehneke, Deutsch. Ent. Zeit. 1875, p. 234.—Ovalis, minus, convexus, evidenter pubescens, crebre vix fortiter punctatus, niger, capite rufescente medio late infuscato, prothorace lateribus anguste testaceis, basi lateribusque plus minusve vage testaceis, antennis pedibusque rufis, coxis posterioribus fortiter punctatis; abdomine segmento apicali minus dense pubescente apice dense punctato. Long. $4\frac{1}{3}$, lat. $2\frac{1}{3}$ m.m.

I have only seen two individuals in bad condition of this species; it appears to be extremely closely allied to *Dytiscus planus* (No. 575).

South Eastern Europe; (Crimea). 376.

578. *Hydroporus limbatus*, Aubé, M.C.—Oblongo-ovalis, sat convexus, evidenter sed haud dense pubescens, nitidus, fortiter punctatus, niger, capite rufescente medio late infuscato, prothoracis lateribus, elytris signaturis basalibus et marginalibus, antennis pedibusque testaceis; coxis posterioribus fortiter profundeque punctatis; abdomine segmento apicali haud pubescente, fortiter sed haud dense punctato. Long. $4\frac{1}{3}$, lat. $2\frac{1}{3}$ m.m.

The sexual characters appear very slight. The species is allied to *Dytiscus planus* (No. 575), but is more coarsely punctured, and the upper surface is more variegated; it varies in size and form, to a considerable extent, some individuals being nearly similar in these respects to *D. planus*, while others are narrower and more convex; the yellow markings at the base and outer margin of the elytra also vary in their extent and definition.

Corsica, Sardinia and south of Spain. 375.

579. *Hydroporus analis*, Aubé, M.C.—Ovalis, sat convexus, crebrius evidenter pubescens, sat nitidus, niger, capite anterius et in vertice rufescente, prothorace

marginibus anguste ferrugineis, elytris nigro-fuscis, guttis sat numerosis testaceis, pedibus rufis, antennis fusco-testaceis, basi testaceo; elytris crebrius subtiliter sed evidenter punctatis; coxis posterioribus crebrius sat fortiter punctatis; abdomine dense sed subobsolete punctato, fere opaco. Long. $3\frac{3}{4}$, lat. 2 m.m.

This species resembles *Hyphydrus pubescens* (No. 568) but the elytra have yellow spots which almost form a transverse band at the base and in front of the middle, and there are other such spots near the apex at the sides, and the ventral segments are densely punctured; the third joint of the front tarsus is quite small. I am not able to see any sexual characters.

Corsica, Sardinia. 409.

580. *Hydroporus decipiens*, Sharp, Ann. Soc. Belg. XV, p. 113.—Ovalis, evidenter pubescens, sat nitidus, niger, elytris fusco-nigris ad basin signaturis testaceis, pedibus rufis, antennis fusco-testaceis, basi testaceo; elytris crebrius subtiliter sed evidenter punctatis; coxis posterioribus crebrius sat fortiter punctatis; abdomine dense sed subobsolete punctato, fere opaco. Long. 4, lat. $2\frac{1}{4}$ m.m.

Closely allied to *Hydroporus analis* but more elongate and with the colour of the upper surface less variegate, the testaceous markings of the elytra being limited to their base; the third joint of the front tarsus is very small; by this the species may be distinguished from *Dytiscus planus* (No. 575) to which it has a great similarity; the dense sculpture of the ventral segments distinguishes it from *Hyphydrus pubescens* (No. 568). I have seen but three individuals, and notice no sexual characters.

Spain, (Guadarrama, Mouchique). 410.

551. *Hydroporus venator*, n. sp.—Ovalis, sat convexus, subtilissime pubescens, subopacus, niger, pedibus sordide rufis, antennis fusco-rufis, basi rufo; elytris fuscis, basi indistincte rufescente, omnium dense subtilissime punctatis; coxis posterioribus dense subtiliter punctatis; abdomine subtiliter haud dense punctato, sub-nitido. Long. $3\frac{1}{2}$, lat. 2 m.m.

This species resembles *Hyphydrus pubescens* (No. 568), but may be distinguished at a glance by the extremely fine punctuation of the elytra; in this character it resembles *Dytiscus marginatus* (No. 582), but the smaller size, more obscure colour, and less densely punctured undersurface will not allow it to be mistaken for a variety of that species: the punctuation on the two basal ventral segments at the sides is here comparatively coarse and distinct, while in *D. marginatus* it is obsolete. According to the few specimens before me, the red or yellow marks on the basal portions of the wing-cases show a good deal of variation in the extent of their development, they consist of two or three irregular dashes or spots, with a

greater or less development in the longitudinal direction ; the external or humeral one may be extended far backwards along the edge of the wing-case.

Mediterranean region, (Tangier, Andalusia). 411

582. *Dytiscus marginatus*, Duft., *Hydroporus marginatus*, M.C.—Ovalis, minus convexus, dense subtilissime pubescens et punctatus, subopacus, niger, capite antice et in vertice thoracisque lateribus rufis, elytris testaceis medio latius fusco, pedibus antennisque rufis, his apicem versus fuscis: coxis posterioribus abdomineque omnium dense subtilissime punctatis, opacis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are a good deal broader than in the female. The species is very easily distinguished by its sculpture; it varies considerably in the colour of the upper surface, the infuscation of the elytra and thorax being sometimes very much less in extent, and sometimes indeed almost absent, so that the upper surface appears nearly entirely yellow: while the other extreme in which the upper surface is nearly entirely dark seems to occur more rarely.

Central and Southern Europe: from the south of England to Spain, and Italy. 412.

583. *Hydroporus sibiricus*, Sahl., n. sp.—Oblongus, convexus, sparsim sed conspicue pubescens, fortiter punctatus, fulvo-testaceus, thorace in medio elytrisque fuscis: prothorace antrorsum angustato, angulis posterioribus fere retrorsum spectantibus, basi lateribusque fortiter, medio sparsim punctato; elytris sat crebre, conspicue punctatis; coxis posterioribus punctis magnis, profundis. Long. 4, lat. $2\frac{1}{2}$ m.m.

Mas, nitidus, elytris fortiter punctatis, tarsi anterioribus et intermediis fortiter dilatatis, illis unguiculis elongatis.

Fem., opaca, elytris conspicue sed minus fortiter punctatis.

The colour varies in the amount of infuscation, especially beneath.

Siberia, (Irkutsk; Jenisei 69 —70 30'; August, 1876, Sahlberg). 374.

584. *Hydroporus despectus*, n. sp.—Ovalis, sat convexus, tenuiter pubescens, niger, supra fuscus, sat nitidus, pedibus obscure rufis, antennis fuscis basi rufo; prothorace limbo sat punctato, disco angustius fere impunctato; elytris sat fortiter punctatis; coxis posterioribus sat crebre et fortiter punctatis; abdomine (basi excepto) sparsim subtiliter punctato. Long. 4, lat. vix $2\frac{1}{2}$, m.m.

Though this and the four following species do not offer any striking characters, and are not easy to distinguish, I think they will all prove distinct. A

knowledge of the sexes of each, so that the tarsi may be compared, is essential before a trustworthy conclusion can be arrived at.

North America, (Canada). 373.

585. *Hydroporus perplexus*, n. sp.—Ovalis, sat convexus, tenuiter pubescens, niger, vix nitidus, pedibus fusco-rufis, antennis fusco-nigris, basi rufescente; prothorace limbo minus fortiter, disco sparsim subtiliter punctato; elytris sat crebre et subtiliter punctatis; coxis posterioribus sat crebre et fortiter punctatis; abdomine, basi excepto, minus crebre fere obsolete punctato. Long. $4\frac{1}{8}$, lat. $2\frac{1}{4}$ m.m.

The two specimens I have seen appear to be males, they have the front tarsi moderately strongly dilated, with the claws simple.

North America, (California). 372.

586. *Hydroporus rusticus*, n. sp.—Oblongo-ovalis, evidenter pubescens, nigricans, supra vix dilutior, pedibus rufo-fuscis, antennis fuscis basi minus late rufo; prothorace limbo minus fortiter, disco omnino sparsim subtiliter, punctato; elytris sat crebre et subtiliter punctatis; coxis posterioribus crebre fortiter punctatis; abdomine (basi excepto) minus crebre subobsolete punctato. Long. 4, lat. $2\frac{1}{8}$ m.m.

This species is very similar to *Hydroporus tartaricus*, Lec., (*H. nigellus*, Mann.) (No. 597) but is rather larger, and the disc of the thorax is not quite so destitute of punctures.

North America, (Nevada). 371.

587. *Hydroporus tenebrosus*, Lec., M.C.—Ovalis, minus convexus, evidenter pubescens, subtus nigricans supra fusco-niger, pedibus rufescentibus, antennis fuscis basi rufo; prothorace limbo sat fortiter, disco subtiliter punctato; coxis posterioribus fortiter punctatis; abdomine (basi excepto) minus crebre subobsolete punctato. Long. $4\frac{1}{8}$, lat. $2\frac{1}{4}$ m.m.

Mas, supra sat nitidus, subtiliter sed evidenter punctatus, tarsis anterioribus et intermediis bene dilatatis, illis unguiculis muticis.

Fem., opaca obsolete punctata.

This species has the hind coxæ more coarsely, but the ventral segments less distinctly, punctured than in the preceding species.

The specimen sent me by Dr. Leconte is rather larger and of paler colour than the other individuals I have described. *H. sub-pubescens* is perhaps also this species;

and *H. lutulentus*, Lec. (Proc. Ae. Phil. 1855, p. 293), is stated by Crotch to be the same as *H. tenebrosus*.

North America, (? British Columbia or California). 370.

588. *Hydroporus hirtellus*, Lec., Ann. Lye. V, p. 208.—Ovalis, evidenter pubescens, minus nitidus, subtus nigricans, supra fusco-niger, capite anterior et in vertice prothoracisque lateribus vage rufescentibus, pedibus antennisque fusco-rufis, his basi rufo; prothorace limbo crebre sed haud fortiter, disco sparsim subtiliter, punctato; elytris minus nitidis, subtiliter punctatis; coxis posterioribus crebre sat fortiter punctatis; abdomine evidenter sat crebre punctato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The only individual I have seen is a female, and the male might perhaps prove the species more allied to *H. modestus* (No. 627), than to the preceding species. The resemblance to the European *Dytiscus planus* (No. 575) is considerable, but the form is here narrower, and the punctuation considerably finer.

A specimen of this species was named for me by Leconte; otherwise I should not have recognized it from description.

North America, (California). 369.

589. *Hydroporus astur*, n. sp.—Ovalis, convexiusculus, nitidulus, fore sine pubescentia, abdomine pectoreque nigris, capite thoraceque rufescentibus, hoc basi apiceque fuscis, elytris testaceis, fortiter crebre punctatis, antennis pedibusque rufis, illis brevibus versus apicem infuscatis; prothorace limbo crebre, medio indistinctius punctato; coxis posterioribus sat crebre punctatis, abdomine segmento apicali sparsim punctato apice haud punctato, subacuminato. Long. $3\frac{1}{2}$, lat. $1\frac{7}{8}$ m.m.

I have seen but one individual of this very distinct species, which bears some resemblance to *Hyphydrus marklini*, (No. 396); it appears to be a female.

Europe, (Posada de Valdeon, Cantabrian Mountains). 368.

590. *Hydroporus alticola*, n. sp.—Ovalis, minus depressus, tenuiter pubescens, vix nitidus, sat crebre et fortiter punctatus, niger, antennarum basi fusco; coxis posterioribus crebre evidenter punctatis; abdomine segmento apicali obsolete punctato, sed apice summo distincte punctato. Long. $3\frac{5}{8}$, lat. vix 2 m.m.

The sexes are difficult to distinguish. The elytra in this species sometimes show one or two pale spots, and some of these are occasionally diffused so as to much dilute the colour of the wing-cases. The species may be readily distinguished from *Hydroporus nivalis*, by its less elongate more convex form, its duller surface and rather coarser, and more scantily punctured elytra, with the pubescence considerably less.

Europe; Alps, and Eastern Pyrenees. (Macugnaga, Val Bevero; Albertville, Monte Viso, Pic de Carlite, Tyrol). (Sierra Nevada, Spain, a variety or distinct species). 367.

591. *Hydroporus nivalis*, Heer, M.C.—Oblongo-ovalis, subdepressus, tenuiter sed evidenter pubescens, sat nitidus, crebrius sat subtiliter punctatus, niger, pedibus fuscis, antennarum basi fusco-rufo; coxis posterioribus crebre evidenter punctatis, abdomine segmento apicali obsolete punctato sed apice summo distincte punctato. Long. $3\frac{1}{4}$, lat. 2 m.m.

The sexes are difficult to distinguish. The colour of the elytra sometimes becomes paler than the rest of the surface, but never leaves marks or spots.

Europe. An Alpine species found from Styria to the Pyrenees: Styria, Austrian Alps, Lago Pinter, Hautes Pyrenees. Found once in Finkund, 64° North, according to Sahlberg. 366.

592. *Hydroporus signatus*, Mann., M.C.—Oblongo-ovalis, minus convexus tenuiter pubescens, sat nitidus, abdomine pectoreque nigris, supra fusculo, prothorace lateribus rufescentibus, elytris signaturis humeralibus, maculaque indistincta apicali testaceis, pedibus rufis, antennis fusco-rufis basi dilutiore; prothorace ante basin transversim depresso, limbo subobsolete punctato, disco fere impunctato; elytris sat crebre, distincte punctatis; coxis posterioribus sat crebre evidenter punctatis. Long. $3\frac{1}{4}$, lat. $1\frac{2}{3}$ m.m.

The distinctions between the sexes seem to be extremely slight.

North America, (Hermit Lake, Mt. Wn. N.H.). 365.

593. *Hydroporus longiusculus*, Har., M.C.—Oblongo-ovalis, minus convexus, tenuiter pubescens, minus nitidus, abdomine pectoreque nigris, capite fusco-rufo, prothorace fusco, limbo evidenter, disco sparsim obsolete, punctato, elytris fusco-ferrugineis, sat crebre et fortiter punctatis; antennis pedibusque rufescentibus; coxis posterioribus minus crebre subobsolete punctatis. Long. 4, lat. 2 m.m.

I have seen but one or two specimens in bad condition of this species.

North America, (Unalaska). 364.

594. *Hydroporus pyrenæus*, Wehncke, Berl. Zeit. XV, p. 163.—Oblongo-ovalis, minus pubescens, nitidus, subtus nigricans, supra paulo dilutior, pedibus rufo-obscuris, antennis fuscis basi rufo; prothorace angulis posterioribus obtusis, disco lævi, limbo minus distincte punctato; elytris parcius sat fortiter punctatis, coxis posterioribus parce minus fortiter punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

This species is closely allied to *Hydroporus morio* (No. 598), but is rather narrower and more elongate, more shining, and with the thoracic punctuation considerably less. I think the type sent me by Herr Wehncke is a male, the tarsi are not quite so broad as in *Hydroporus morio*, and the claws of the front ones are not dentate, but slightly elongate.

Europe: (Pyrenees). 362.

595. *Hydroporus glabriusculus*, Aubé, M.C.—Oblongo-ovalis, convexiusculus, parcius sed evidenter pubescens, nitidus, niger, capite vix dilutiore, antennis pedibusque fusco-rufis, illis basi late rufo; prothorace antrorsum minus angustato, angulis posterioribus haud obtusis, sparsim punctato; elytris sat crebre minus subtiliter punctatis; coxis posterioribus sparsim evidenter punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

In each sex the front and middle tarsi are broad, but in the male they are distinctly broader than in the female. The species is extremely similar to *H. acutangulus*, Thoms., but has the punctuation and pubescence less close, and the thorax not so broad behind.

A specimen from North America (Massachusetts), I believe may be considered a variety of this species: it has the punctuation and pubescence scarcely less close, and the legs and antennæ redder, the head and sides of the elytra more dilute in colour.

Eastern Siberia, Angara, Lapland. 361.

596. *Hydroporus acutangulus*, Thoms., Vet. Ac. hand. 1854, p. 202.—Oblongo-ovalis, convexiusculus, evidenter pubescens, nitidus, niger, pedibus fusco-rufis, antennarum basi late rufo, capite humerisque paulo dilutioribus; prothorace antrorsum angustato, subtiliter, (in disco parcius) punctato; elytris crebre subtiliter punctatis; coxis posterioribus sat crebre evidenter punctatis. Long. vix 3, lat. $1\frac{1}{2}$ m.m.

The front tarsi are rather broad in the female, and still broader in the male.

Lapland and Siberia. 360.

597. *Hydroporus tartaricus*, Lec., M.C.—Ovalis, parcius sed evidenter pubescens, nigricans, pedibus fusco-nigris, antennarum basi minus late rufo; prothorace anterius angustato, basi subtiliter punctato, medio fere impunctato; elytris parcius distincte punctatis, pubescentia bene conspicua; coxis posterioribus sparsim punctatis. Long. $3\frac{2}{3}$, lat. 2 m.m.

The male has the front and middle tarsi broader than the female, they being slender in the latter sex; the claws of the front ones are but little unequal, the anterior one being stouter but scarcely shorter. The species is allied to *Hydroporus morio*, but is larger and more regularly oval in form, and has the punctuation of the thorax a good deal finer. According to Schaum, *Hydroporus geniculatus* Thoms. is synonymous with this species, but Thomson says the anterior claw of his species is dentate, and I should be rather inclined to consider that it will prove to be a variety of *H. morio*. *H. nigellus*, Mann. (Bull. Mosc. 1853, III, p. 163) is assigned as a synonym to this species on the authority of Crotch.

Russian America. (Siberia; Sahlberg). 359.

598. *Hydroporus morio*, Dej., M.C.—Ovalis, parcius sed evidenter pubescens, niger, pedibus fuscis vel fusco-rufis, antennarum basi minus læte rufo; prothorace anterius angustato, basi fortiter punctato, disco sub-elevato sparsim subtiliter punctato; elytris parcius distincte punctatis; coxis posterioribus sparsim minus profunde punctatis. Long. $3\frac{1}{2}$, lat $1\frac{3}{4}$ m.m.

Mas, tarsis anterioribus et intermediis magis dilatatis, illis unguiculis majoribus, anteriore medio angulatim dilatato.

Fem., (a.) ut in mare nitida.

(b.) opaca.

This species usually is represented in catalogues under the name of *Hydroporus melanocephalus*, Marsh., Steph.; but as the descriptions of the authors referred to almost certainly were not made from this species, it is better to adopt the name proposed by Dejean and brought into general use in the Munich Catalogue.

Europe; Siberia; North America. (Finland 69° north, Sahlberg; Scotland; Riesengebirge; Pyrenees & Schaum; White Mountains, New Hampshire). 358.

599. *Hydroporus gyllenhalli*, Schiodte, Dan. El. p. 434.—Oblongo-ovalis, convexiusculus, nitidus, fere glaber, fortiter punctatus, castaneo-piceus, pectore abdomineque nigris, pedibus antennisque rufis; prothorace disco sat erebre evidenter punctato; coxis posterioribus sparsim evidenter punctatis. Long. $3\frac{1}{2}$, lat. 2 m.m.

I can see no sexual distinctions in this species, all the specimens I have examined have the tarsi rather broad.

Europe; (Sweden, Finland, Scotland, basin of the Seine, Reynosa, Cantabrian Mountains.) 357.

600. *Hydroporus notatus*, Sturm, M.C.—Oblongus, parcius punctatus et pubescens, subtus nigricans, pedibus rufis, antennis rufescentibus, basi rufo; capite permagno, rufescente, medio fusco-umbroso; thorace fusco-nigro lateribus rufescentibus, basi punctis sparsis, magnis, medio fere impunctato; elytris fuscis, basi lateribusque vage rufescentibus, parcius minus fortiter punctatis; coxis posterioribus fortiter punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

The male has the front and middle tarsi broader than in the female. The species is closely allied to *Dytiscus tristis* (No. 602), but no doubt distinct.

Europe. (Germany, and Southern Scandinavia). 356.

601. *Hydroporus elongatulus*, Sturm, M.C.—Oblongus, minus angustus, vix erebre pubescens, nigricans, pedibus rufis, antennis fusco-rufis, basi dilutiore, capite elytrisque rufo-fuscis, illo anterius dilutiore; prothorace basi fortiter punctato

medio sublævi; elytris sat crebre et fortiter punctatis; coxis posterioribus sat crebre punctatis. Long. $3\frac{1}{2}$, lat. $1\frac{2}{3}$ m.m.

The male has the front tarsi a little broader than the female. This form is rather larger and broader than *Dytiscus tristis*, and has the elytral punctuation and pubescence rather stronger, but I think it will scarcely prove to be a distinct species.

Europe. (Sweden; Finland; Germany; France, the Somme, Bedel). 355.

602. *Dytiscus tristis*, Payk., *Hydroporus tristis*, M.C.—Oblongus, parcius pubescens, sat nitidus, nigricans, antennarum basi pedibusque rufis, elytris capiteque fusco-rufis, hoc anterius dilutiore; prothorace basi fortiter punctato, medio sublævi, elytris sat subtiliter parcius punctatis; coxis sat crebre, fortiter punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

The sexes in this species are scarcely distinguishable, the male having the tarsi only very little broader than in the female.

It is doubtful whether *Hydroporus varians*, Lec., be distinct from this species or not. My two specimens from Massachusetts are rather less elongate, still less pubescent, and rather more strongly punctured above, but with the hind coxæ rather less punctured. *Hydroporus ruficapillus*, Mann., from Sitkha, can scarcely be considered more than a variety of *Dytiscus tristis*, Payk.; it is slightly more elongate, has the surface dull, and the pubescence still less.

Northern Europe; Siberia; North America. (Sweden; Finland, 69° north, Sahlberg; Scotland; basin of the Seine; Alsatia; Germany). 354.

603. *Hydroporus neglectus*, Schaum, M.C.—Oblongus, angustulus, minus pubescens, vix nitidus, subtus nigricans, capite anterius rufo, elytris fusco-rufis, prothorace fusco, hoc elytris angustiore, medio parcissime punctato; elytris sparsim subtiliter punctatis; antennis gracilibus fusco-rufis, basi dilutiore; coxis posterioribus sparsim sat fortiter punctatis; tarsorum anticorum articulo 3° elongato. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

Mas, tarsi anterioribus et intermediis latioribus, illis unguiculis inæqualibus anteriore crassiore, apice fisso.

Northern and Central Europe. (Sweden, Finland, England, basin of the Seine, Germany). 353.

604. *Hydroporus scalesianus*, Steph., M.C.—Oblongo-ovalis, parcissime pubescens, nitidulus, ferrugineus, elytris plus minusve fuseescentibus, abdomine pectoreque nigricantibus; prothorace medio impunctato; elytris parcius vix fortiter punctatis; coxis posterioribus punctis paucis magnis; tarsorum anticorum articulo 3° elongato. Long. 2, lat. 1 m.m.

Mas, tarsi anterioribus et intermediis paulo latioribus, illis unguiculis elongatis et crassis, apicibus fissis, anteriore paulo longiore.

Northern Europe. (Sweden; Finland; England; the Somme, France; Germany). 352.

605. *Hydroporus angustatus*, Sturm, M.C.—Oblongo-ovalis, elongatus, evidenter pubescens, subtus nigricans, supra fusco-ferrugineus, capite thoraceque magis rufis, pedibus rufis, antennis gracilibus fuscis, basi rufo; prothorace sparsim, basi crebrius punctato; elytris crebre evidenter punctatis; coxis posterioribus sat crebre et fortiter punctatis; tarsorum anticorum articulo tertio elongato. Long. 3, lat. $1\frac{1}{2}$ m.m.

Mas, tarsi anterioribus fortiter (præsertim art. 3^o) dilatatis, unguiculis incrassatis apice tenuibus, anteriore longiore; tibiis intermediis intus sinuatis, tarsi evidenter dilatatis; tibiis posterioribus medio latioribus, dimidio apicali angustiore intus densius brevissime asperato-setoso.

This is a very distinct little species with remarkably developed male characters.

Northern and Central Europe; Siberia. (Sweden, Finland, Britain, France, Germany). 351.

606. *Hyphydrus umbrosus*, Gyll., *Hydroporus umbrosus*, M.C.—Ovalis, sat convexus, evidenter pubescens, fere opacus, niger, capite, elytris pedibusque fusco-rufis, antennis fuscis, basi rufo; thorace in disco minus crebre punctato, elytris sat distincte punctatis; coxis posterioribus sparsim fortiter punctatis; pedibus crassiusculis. Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ m.m.

The male is difficult to identify, the front tarsi being broad in each sex, but they are broader in the male; the claws are small and simple. There appears to be two forms of the species, one more elongate and brighter coloured than the other, but I am unable to find any certain specific characters to distinguish them. Both of these forms have the apical ventral segment more distinctly punctured than is the case in the allied species.

Northern and Central Europe; Siberia. (Sweden; Finland to 68° 30' North, Sahlberg; Britain, France, Germany). 350.

607. *Hyphydrus striola*, Gyll., *Hydroporus striola*, M.C.—Ovalis, sat convexus, parcius pubescens, subopacus, subtus nigricans, supra fuscus, capite fusco-rufo, prothoracis lateribus anguste elytris que signaturis externis et basali vage testaceis, pedibus sordide rufis, antennis fuscis basi rufo; prothorace sat fortiter minus crebre punctato, elytris parce punctatis; coxis posterioribus sparsim obsolete punctatis. Long. $3\frac{1}{4}$, lat. $1\frac{2}{3}$ m.m.

The male has the tarsi distinctly dilated, but the two claws of the front ones are nearly similar.

I see nothing to distinguish this from *Hydroporus vittula*, Er., except that the specimens I have examined are very slightly smaller and narrower, and have the punctuation and pubescence very slightly more feeble.

Northern Europe, Siberia. (Sweden and Finland, 68° North, Sahlberg ; Jenisei). 349.

608. *Hydroporus vittula*, Er., M.C.—Ovalis, sat convexus, sat crebre pubescens, subopacus, subtus nigricans supra fuscus, capite fusco-rufo, prothoracis lateribus anguste elytrisque signaturis externis et basali vage testaceis, pedibus sordide rufis, antennis fuscis basi rufo ; prothorace sat fortiter minus crebre punctato, elytris sat crebre et distincte punctatis ; coxis posterioribus sparsim obsolete punctatis. Long. $3\frac{1}{4}$, lat. $1\frac{2}{3}$ m.m.

The male has the tarsi distinctly dilated, but the two claws of the front ones are nearly similar ; it has also a very slight difference in sculpture from the female. The species is closely allied to *H. incognitus* (No. 611), but is smaller and narrower, has the head and the sides of the thorax more obscure in colour, and the hind coxæ less distinctly punctured. It is still closer to the preceding species, of which indeed I expect it will prove a variety.

Northern Europe ; Eastern Siberia ; North America. (Sweden, Finland, Britain, France, Germany, Angara ; British Columbia). 348.

609. *Hydroporus humeralis*, Aubé, M.C.—Oblongo-ovalis, minus convexus, crebre subtiliter pubescens, subtus niger, supra fuscus, prothorace lateribus, elytrisque basi signaturisque externis testaceis, capite fusco, vertice epistomateque rufescentibus, pedibus rufis, antennis fuscis, basi rufo ; prothoracis disco æqualiter punctato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{3}$ m.m.

Mas, crebre evidenter punctato, subopaco, tarsi anterioribus et intermediis dilatatis, illis unguiculis longioribus, vix inæqualibus (? anteriore paulo longiore).

Fem., per-opaca, omnino obsolete punctata.

I have seen only one male (in very bad state) of this species : the sexual disparity is very marked, the difference in sculpture extending to the under as well as the upper surface.

North America. (Russian America and British Columbia). 347.

610. *Hydroporus ionicus*, Mill., M.C.—Ovalis, elongatus, convexus, sat nitidus, crebre pubescens, distincte punctatus, subnitidus, subtus niger, supra fuscus, capite prothoraceque lateribus rufis, illo vertice utrinque fusco, elytris basi signaturisque externis testaceis, pedibus rufis, antennis rufo-fuscis basi rufo ; coxis posterioribus sparsim punctatis. Long. 4, lat. 2 m.m.

Mas, tarsi anterioribus leviter dilatatis unguiculis vix inæqualibus.

This species differs from *H. incognitus* by the larger size and more elongate form, and by the longer tarsi, as well as by the more distinctly marked elytra, and some slight differences of sculpture and pubescence. The sexes, as in *H. incognitus*, are very difficult to distinguish.

Southern Europe and Algeria, (Pyrenees, Tuscany, Corsica, Algeria). 346.

611. *Hydroporus incognitus*, Sharp, Ent. Mo. Mag. VI, p. 84.—Ovalis, sat convexus, subnitidus, minus dense pubescens, subtus niger, supra fuscus, capite prothoraceque lateribus rufis, illo vertice utrinque fusco, elytris basi vage testaceo, sat evidenter punctatis, pedibus rufis, antennis rufo-fuscis basi rufo; coxis posterioribus sparsim punctatis. Long. $3\frac{3}{4}$, lat. vix 2 m.m.

Mas, tarsi anterioribus leviter dilatatis unguiculis vix inæqualibus.

This species is broader than *Dytiscus palustris*, has the markings of the elytra more indistinct, the surface less opaque, the pubescence more scanty, and the tarsi slender, the sexes being only to be discriminated by a very careful examination: the prosternal process, likewise, is more slender.

Central Europe, (Britain, Belgium France, Savoy). 345.

612. *Dytiscus palustris*, Linn., *Hydroporus palustris*, M.C.—Oblongo-ovalis, sat convexus, evidenter pubescens, subtus niger, supra fuscus, capite prothoraceque lateribus rufis, illo vertice utrinque fusco, elytris basi, signaturisque externis testaceis, pedibus rufis, antennis fuscis basi rufo; coxis posterioribus subobsolete punctatis. Long. $3\frac{3}{4}$, lat. vix 2 m.m.

Mas, subopacus, elytris minus distincte punctatis, tarsi anterioribus et intermediis dilatatis, illo unguiculis inæqualibus, anteriore crassiore et brevior.

Fem., paulo magis opaca, et indistinctius punctata.

This is a variable species in size, in the markings, and even in punctuation and pubescence. In the mountains of Scotland I have found a reddish form with the markings nearly obliterated.

Europe; Corsica; Sardinia, (Lapland; Finland to 69° North, Sahlberg; Britain, France, Geneva; Germany; Lithuania; Styria). 344.

613. *Hydroporus vagepictus*, Fairm., M.C.—Oblongo-ovalis, evidenter pubescens, niger, supra fuscus, capite, prothoraceque lateribus rufescentibus, illo fusco-notato, elytris basi lateribusque vage testaceis, sat distincte punctatis, pedibus rufis, antennis fusco-rufis, basi rufo; coxis posterioribus parce subobsolete punctatis. Long. 4, lat. 2 m.m.

Mas, subopacus, sat distincte punctatus, tarsi anterioribus et intermediis fortiter dilatatis, illis unguiculis inæqualibus, anteriore crassiore et magis curvato.

Fem., opaca subobsolete punctata.

This species is extremely closely allied to *Dytiscus palustris*, but is rather larger, and has the elytra less distinctly marked with yellow, and the disparity between the sexes greater, the punctuation being more different in the two sexes, and the male tarsi broader. It is I believe a subalpine species.

Europe, (Pyrenees and Cantabrian mountains). 343.

614. *Dytiscus erythrocephalus*, Linn., *Hydroporus erythrocephalus*, M.C.—Ovalis, convexus, subnitidus, evidenter pubescens, nigricans, elytris fuscis basi lateribusque dilutioribus, pedibus capiteque rufis, hoc fusco-notato, antennis rufo-fuscis, basi rufo; prothoracis limbo fortiter disco subtiliter punctato; elytris coxisque posterioribus fortiter punctatis. Long. 4, lat. 2 m m.

Mas, tarsi anterioribus et intermediis dilatatis.

Fem., tarsi anterioribus et intermediis angustulis.

Fem. var. opaca, obsolete punctata.

The obsoletely punctured form of the female was considered a distinct species by Aubé and others, (*H. deplanatus*, Gyll.)

Central and Northern Europe; Siberia, (Sweden; Finland, to 68° North, Sahlberg; Britain; France; Germany; Portugal, Van Volxem, this locality requires confirmation). 341.

615. *Dytiscus rufifrons*, Duft., *Hydroporus rufifrons*, M.C.—Oblongo-ovalis, convexus, subnitidus, parcius pubescens, nigricans, elytris fuscis basi sæpe dilutiore, antennis pedibusque rufis, illis versus apicem infuscatis, capite anteriori rufescente; prothorace limbo fortiter disco subtiliter punctato; elytris coxisque posterioribus fortiter punctatis. Long. 5, lat. 2½ m.m.

Mas, tarsi anterioribus et intermediis leviter dilatatis.

The male differs only from the female by the rather slight dilatation of the four anterior feet.

Northern Europe. (Sweden; Finland, to 68° North, Sahlberg; Scotland, England, Northern France, Belgium, Germany). 340.

616. *Hydroporus rubripes*, Sahl., Not. fem. XIV, p. 151.—Oblongo-ovalis, sat convexus, crebre evidenter punctatus, parcius tenuiter pubescens, sat nitidus, nigricans, pedibus antennisque rufis, his versus apicem infuscatis; prothorace angulis posterioribus obtusis, disco lævi limbo evidenter punctato; coxis posterioribus parcius subobsolete punctatis. Long. 4½, lat. 2½ m.m.

I am acquainted with the male only of this species, it has the front and middle

tarsi broad, and the unguiculi of the former moderately long, the anterior one being a little shorter than the posterior.

Europe. (Finland, 68° 55' North, Sahlberg). 339.

617. *Hyphydrus lapponum*, Gyll., *Hydroporus lapponum*, M.C.—Oblongo-ovalis, sat convexus, tenuiter pubescens, fusco-niger, (limbo sæpe dilutiore), antennis, pedibus capiteque rufescentibus, hoc fusco-notato, antennis apicem versus, plus minusve infuscatis; prothorace elytris evidenter angustiore angulis posterioribus obtusis, limbo punctato, disco lævi; corpore subtus obsolete punctato. Long. 4 $\frac{3}{4}$, lat. 2 $\frac{1}{2}$ m.m.

Mas, fere opacus, subtiliter punctatus, tarsis anterioribus latis, unguiculis elongatis, fere simplicibus et æqualibus.

Fem., per-opaca, obsolete punctata, tarsis latiusculis.

Northern Europe and Siberia. (Sweden; Finland, to 69° North, Sahlberg). 338.

618. *Hydroporus fortis*, Lec., M.C.—Oblongo-ovalis, convexus, dense subtilissime punctatus, evidenter pubescens, niger, pedibus fuscis, antennis elongatis fuscis, basi rufo; corpore subtus fere opaco, coxis posterioribus crebre sed obsolete punctatis; abdomine fere dense punctato; prosterni processu latiusculo, sat compresso, medio haud carinato, anterieus leviter tuberculato-prominulo. Long. 6 $\frac{1}{2}$, lat. 3 $\frac{1}{2}$ m.m.

Mas, tarsis anterioribus et intermediis fortiter dilatatis, illis unguiculis elongatis, tenuibus, basi haud curvatis.

I have seen only a single specimen of this very distinct species, for which I know no near ally.

North America. 337.

619. *Hydroporus americanus*, Aubé, M.C.—Oblongo-ovalis, convexiusculus, crebrepunctatus et pubescens, fusco-rufus, pedibus capiteque rufis; coxis posterioribus sparsim fortiter punctatis; abdomine tantum basi utrinque fortiter sparsim punctato; prosterni processu anterieus nullo modo prominulo. Long. 4, lat. 2 $\frac{1}{4}$ m.m.

Mas, subnitidus, elytris evidenter punctatis, tarsis anterioribus vix dilatatis.

Fem., opaca, elytris minus fortiter punctatis.

Aubé's unique type of this species is a small, very red, and rather strongly punctured individual.

North America; (Massachusetts). 336.

620. *Hydroporus dichrous*, Melsh., M.C.—Oblongo-ovalis, evidenter pubescens, crebre subtiliter punctatus, nigricans, pedibus capite thoraceque rufis; elytris fuscis.

prothorace antèrius in medio obsolete punctato; coxis posterioribus sparsim sat distincte punctatis; abdomine tantum basi utrinque punctato; prosterni processu antèrius depressiusculo, haud prominulo. Long. 4, lat. $2\frac{1}{8}$ m.m.

The male seems to differ from the female only by the moderately dilated front tarsi; the sculpture of the thorax in this species is more diminished than in its close allies.

North America, (Detroit, Michigan). 335.

621. *Hydroporus inornatus*, n. sp.—Ovalis, sat convexus, evidenter pubescens, crebre subtiliter punctatus, subtus nigricans, supra fusco-niger, limbo dilutiore, pedibus rufis, antennis fuscis, basi rufo; coxis posterioribus sparsim sat distincte punctatis; abdomine crebre, evidenter punctato; prosterni processu angustulo, antèrius depressiusculo et subprominulo. Long. $3\frac{2}{3}$, lat. $2\frac{1}{8}$ m.m.

Mas, tarsi anterioribus evidenter dilatatis, unguiculis fere simplicibus.

This species has the ventral segments much more distinctly punctured than has the following species, (*Hydroporus niger*). I do not know the female.

North America, (Massachusetts). 334.

622. *Hydroporus niger*, Say, M.C.—Ovalis, sat convexus, minus elongatus evidenter pubescens, subtus nigricans, supra fusco-rufus, pedibus rufis, antennis fuscis, basi rufo; thorace subtiliter æqualiter punctato, elytris crebre distincte punctatis; coxis posterioribus sparsim sat distincte punctatis; abdomine sparsim obsolete punctato, sed basi utrinque punctis majoribus; prosterni processu angusto, vix marginato, sat compresso, antèrius depressiusculo et subprominulo. Long. $3\frac{2}{3}$, lat. 2 m.m.

Mas, tarsi anterioribus fortiter dilatatis, unguiculis fere simplicibus.

I do not know the female of this species.

North America, (Massachusetts). 333.

623. *Hydroporus latifrons*, n. sp.—Oblongo-ovalis, minus latus, evidenter pubescens, subtiliter punctatus, nigricans, pedibus rufis, capite, thoracis elytrorumque lateribus rufescentibus, antennis rufo-fuscis basi rufo; subtus nitidus, coxis posterioribus obsolete punctatis, abdomine tantum basi utrinque punctato; prosterni processu haud compresso, versus apicem carinato. Long. $4\frac{1}{4}$, lat. $2\frac{1}{8}$ m.m.

Mas, tarsi anterioribus et intermediis bene dilatatis.

Rather narrower than *H. modestus* (No. 627), with the punctuation of the upper surface a little more distinct, the prosternal process flatter, and the male tarsi not quite so broad. I do not know the female.

North America. 331.

624. *Hydroporus rufilabris*, n. sp.—Oblongo-ovalis, fere depressus, evidenter pubescens, subtilissime punctatus, subnitidus, nigricans, capite antierius, pedibus prothoracisque lateribus rufis, antennis fuscis, basi rufo; subtus nitidus, coxis posterioribus obsolete punctatis, abdomine tantum basi utrinque punctato; prosterni processu leviter compresso, medio sat carinato. Long. 4, lat. $2\frac{1}{2}$ m.m.

Mas, tarsi anterioribus leviter dilatatis.

This species is allied to *H. modestus*, (No. 627), but is readily distinguished by the smaller size, and by the much slighter differences between the sexes.

North America, (Texas; a pair of this species I received from Belgrave as *H. rufilabris*, Zimm.) 330.

625. *Hydroporus ruficeps*, Aubé, M.C.—♀Oblongo-ovalis, sat convexus, evidenter pubescens, obsolete punctatus, opacus, nigricans, antennis pedibus capiteque rufis, thoracis elytrorumque limbo rufescente; subtus sat nitidus, coxis posterioribus crebre evidenter punctatis, abdomine polito, tantum basi utrinque punctato, limbo rufescente; prosterni processu vix compresso, sed medio longitudinaliter distincte elevato. Long. $4\frac{3}{4}$, lat. $2\frac{2}{3}$ m.m.

I have seen of this species only females; they may be readily distinguished from that sex of *H. modestus* (No. 627), by the more punctured hind coxæ; they have the prosternal process a little less compressed, and show several other small differences.

North America, (Massachusetts). 329.

626. *Hydroporus axillaris*, Lec., M.C.—♂Elongato-ovalis, convexus, densius subtiliter pubescens et punctatus, subopacus, nigricans, antennis pedibusque rufo-obscuris, elytris fuscis limbo dilutiore; prosterni processu fortiter compresso, coxis posterioribus omnino obsolete punctatis, abdomine distinctius, segmento apicali dense punctato. Long. 5, lat. $2\frac{1}{2}$ m.m.

A single typical specimen from the cabinet of Dr. Leconte, is all I have seen of this species; though it is deprived of its tarsi, I have no doubt it is a male. It is different in form from *H. modestus*, being narrower in front, and may very readily be distinguished by the more punctate ventral segments.

North America. 328.

627. *Hydroporus modestus*, Aubé, M.C.—Oblongo-ovalis, fere depressus, evidenter pubescens, obsolete punctatus, nigricans, prothoracis lateribus elytrorumque limbo laterali dilutiore, pedibus rufis, antennis basi rufo, apice fusco; subtus nitidus coxis posterioribus omnino obsolete punctatis, abdomine polito, tantum basi utrinque punctato, lateribus sæpius rufo-maculatis; prosterni processu leviter compresso, medio evidenter carinato-elevato. Long. 5, lat. $2\frac{2}{3}$ m.m.

Mas, subtilissime punctatus, fere opacus; tarsi anterioribus et intermediis fortiter dilatatis, illis unguiculo anteriore leviter incrassato, intus sinuato.

Fem., omnino opaca, fere impunctata.

North America, (Carolina, Massachusetts, Michigan). 327.

628. *Hydroporus arcticus*, Thoms., M.C.—Elongato-ovalis, convexus, crebre pubescens, obsolete punctatus, subopacus, nigricans, pedibus rufis, capite rufescente medio fusco, prothoracis elytrorumque lateribus indistincte rufescentibus, antennis fuscis basi rufo; subtus sat nitidus, coxis posterioribus sparsim obsolete punctatis; abdomine tantum basi utrinque punctato; prosterni processu vix compresso, medio sat distincte carinato. Long. 5, lat. $2\frac{1}{2}$ m.m.

Mas, tarsi anterioribus et intermediis fortiter dilatatis, unguiculis anterioribus ad basin abrupte curvatis, fere æqualibus, crassiusculis.

Lapland; Arctic Siberia, (ascending to 69° North, according to Sahlberg). 332.

629. *Hydroporus kolstromi*, Sahl., Not. fenn. XIV, p. 145.—Oblongo-ovalis, elongatus, sat nitidus sparsim sed distincte pubescens, niger, capite, prothoracis lateribus, elytris pedibusque testaceis; prothorace parvo, elytris angustiore, lateribus leviter curvatis, marginibus crebre punctatis, disco sublævigato; elytris elongatis, crebre, fere fortiter punctatis. Long. $5\frac{1}{4}$ m.m.

This species is nearer to *Dytiscus dorsalis* than to any other, but is very distinct, it is more elongate in form, and the head wants the complete curved impression over the labrum peculiar to *D. dorsalis*. On the other hand its prosternal process, and the shoulders of the elytra, and the very discontinuous outline of the thorax with the elytra bring it near the insect mentioned. I have seen only a single individual, unfortunately in bad preservation; it appears to be a male; the front and middle tarsi are moderately broad; the claws are wanting in this specimen.

Lapland. I believe the individual of this remarkable species from which the above description is made is the only one yet known; it was found by Kolstrom, and kindly communicated to me by its talented describer, Dr. John Sahlberg. 1157.

GROUP 5.

630. *Dytiscus dorsalis*, Fab., *Hydroporus dorsalis*, M.C.—Oblongo-ovalis, evidenter pubescens et punctatus, colore variabilis, supra sæpius nigricans, capite, prothoracis lateribus elytrisque signaturis externis rufescentibus; prothorace transverso, basi quam elytris evidenter angustiore, crebre punctato, basin versus utrinque impresso; antennis fusco-rufis, basi rufo, tenuibus; pedibus crassiusculis; corpore subtus rufo, plus minusve infuscato, abdomine crebre punctato. Long. $4\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

Mas, sat nitidus, tarsis anterioribus et intermediis fortiter dilatatis, illis unguiculis inæqualibus, anteriore crassiore, ultra medium subdentato, apice tenui.

Fem., opaca, tarsis articulo tertio elongato.

This species varies a good deal in colour, and especially in the extent of the marks on the elytra.

Northern Europe, and Siberia, (Sweden; Finland to 68° 10' North, Sahlberg; Britain, France, Germany). 342.

GROUP 6.

631. *Hydroporus kraatzii*, Schaum, M.C.—Ovalis, convexus, breviter tenuius pubescens, subopacus, niger, antennis pedibusque rufis; capite latissimo; prothorace disco convexiusculo, crebre punctato; elytris crebre obsolete punctatis; coxis posterioribus sat fortiter punctatis; tibiis tarsisque anterioribus latis. Long. 3, lat. 1 $\frac{3}{4}$ m.m.

This species is readily distinguished from *H. celatus*, by the broader head and more obsoletely punctured elytra; I am unable to see any sexual characters.

Europe, (Germany). 391.

632. *Hydroporus celatus*, Clk., M.C.—Ovalis, haud elongatus, breviter tenuius pubescens, subnitidus vel fere opacus, niger, antennis pedibusque rufis; capite magno; prothorace disco subtiliter punctato, elytris crebre minus fortiter punctatis, punctis apicem versus obsoletis; coxis posterioribus fortiter punctatis; tibiis tarsisque anterioribus latis. Long. 3 $\frac{1}{4}$, lat. 1 $\frac{7}{8}$ m.m.

This is a variable species; in Britain some of the specimens are duller and more distinctly punctured than others, and in some the elytra are rufescent towards the extremity, and there is also a good deal of difference in size; all the specimens have the legs and antennæ clear red. The Piedmont specimens are smaller and more shining, and have the thorax rather less punctured, and the antennæ somewhat infuscate, but I do not think they are thus distinguished in a definite manner. The few specimens I have seen from the Pyrenees, are even more polished than the Piedmont variety. I do not see any sexual characters, the tarsi being broad in all the specimens.

Europe, (Britain; Seine; Pyrenees; Macugnaga). 390.

633. *Hydroporus nevadensis*, n. sp.—Oblongo-ovalis, elongatus, tenuissime pubescens, nitidus, niger, antennis pedibusque rufo-testaceis; prothorace medio impunctato; elytris crebre distincte punctatis, punctis ad apicem obsoletis; coxis posterioribus fortiter punctatis. Long. 3 $\frac{1}{2}$, lat. 1 $\frac{7}{8}$ m.m.

The sexes of this species are not easy to distinguish, the differences in the form of the tarsi being but small, the male however has the basal joint of the intermediate feet distinctly broader than it is in the other sex.

The species is very closely allied to *Hydroporus celatus*; indeed although its elongate form and polished surface render it at first sight very dissimilar from the Northern forms thereof, yet from the Pyrenean race it is distinguished, so far as I can see, only by its considerably more elongate form. The specimens found, show very little variation except that the punctuation of the wing-cases is finer in some of them than it is in others.

Europe. Found by me at an elevation of 6,000 or 7,000 feet, in a small rivulet of very cold clear water, in the Grand Valley of Sierra Nevada, Southern Spain. July 17th, 1879. 1151.

634. *Hydroporus regularis*, n. sp.—Oblongo-ovalis, sat elongatus, breviter tenuius pubescens, sat nitidus, nigricans, antennis pedibusque rufis, illis crassiusculis; prothorace lateribus minus obliquis, medio sublævi, limbo evidententer punctato; elytris crebre sat fortiter punctatis; coxis posterioribus parce punctatis; tibiis tarsisque anterioribus latis. Long. $3\frac{3}{8}$, lat. $1\frac{1}{8}$ m.m.

Variat. colore superno plus minusve dilutiore, aliquando castanescente.

This species greatly resembles the narrower and more oblong forms of *Hydroporus celatus*, but it has the thorax differently shaped at the sides, so that a rather more considerable angle is formed at the junction with the elytra; the punctuation of the elytra also is closer. The sexes are not easily distinguished.

Corsica. 392.

635. *Hydroporus obsoletus*, Aubé, M.C.—Ovalis, depressiusculus, nitidus, sine pubescentia, abdomine pectoreque nigricantibus, supra testaceo-ferrugineus, capite thoraceque medio obscurioribus, antennis pedibusque rufis; prothorace medio lavigato, basi utrinque versus latus depresso, et fortiter punctato; elytris sparsim evidententer punctatis; coxis posterioribus sparsim obsolete punctatis. Long. 4, lat. 2 m.m.

I see no sexual characters in this species. The individuals from Spain and Portugal, are rather larger, darker in colour, and have the punctuation on the elytra finer than those from more northern localities.

Europe. (Britain, France, Corsica, Spain, Portugal). 401.

636. *Hydroporus ferrugineus*, Steph., M.C.—Oblongo-ovalis, latiusculus, deplanatus, fere sine pubescentia, minus nitidus, abdomine pectoreque nigris, capite magno, rufo, prothorace elytrisque ferrugineis, illo lateribus hoc basi signaturisque vagis externis dilutioribus; antennis pedibusque rufis, prothorace basi utrinque

impresso, disco sparsim, limbo fortius punctato, elytris crebre distincte punctatis; coxis posterioribus evidenter punctatis; tarsis articulo 3^o magno. Long. 4, lat. 2 m.m.

There seems to be scarcely any distinction between the sexes of this species.

Europe. In springs among moss on mountains, (Britain, Geneva, Piedmont, Savoy, Tyrol, Styria). 363.

GROUP 7.

637. *Hydroporus picicornis*, Sahl., Not. fenn. XIV, p. 152.—Oblongo-ovalis, fere sine pubescentia, niger, subnitidus, antennis pedibusque fuscis, illis basi rufo; prothorace medio levigato, basi crebre subtiliter punctato; elytris subtiliter punctatis; coxis posterioribus parce punctatis. Long. 2 $\frac{7}{8}$, lat. 1 $\frac{5}{8}$ m.m.

I have seen but a single individual of this species; it is without doubt a male; it has the front tibiæ excised at the base inwardly, and the tarsi broad and parallel, with the third joint more developed than in *Hydroporus melanarius* (No. 555) and its immediate allies; the lobes of this joint are however much shorter than they are in the species allied to *H. morio* (No. 598); and the general form and the absence of pubescence point out an affinity with *H. melanarius*. The prosternal process is very largely developed; and in the structure of the coxal articulation the species is allied to *H. collaris* Lec.

Europe and Siberia, (Finland, Sahlberg). 399.

638. *Hydroporus collaris*, Lec., *Hydroporus stagnalis*, M.C.—Subovalis, sine pubescentia, nitidus, rufescens, abdomine pectoreque nigricantibus; prothorace crasse marginato, medio late lævi, basi sat crebre punctato; elytris sparsim subtiliter punctatis; prosterni processu magno, subplano, ad latera evidenter marginato, medio nullo modo carinato; coxis posterioribus sparsim punctatis. Long. 3 $\frac{2}{3}$, lat. 2 m.m.

The only individual I have seen is probably a male; the front and middle tarsi are broad, and have the third joint well developed; the front tibiæ are excised at the base inwardly. Though very different in appearance from *Hydroporus picicornis* Sahl. the two species seem closely allied structurally.

North America, (Lake Superior). 402.

639. *Hydroporus oblitus*, Aubé, M.C.—Ovalis, sine pubescentia, nitidus, rufo-castaneus, abdomine pectoreque nigricantibus, antennis pedibusque rufis; prothorace latius lævi, basi sat discrete punctato; elytris coxisque posterioribus sparsim punctatis. Long. 3 $\frac{1}{2}$, lat. 1 $\frac{2}{3}$ m.m.

The male has the front and middle tarsi rather strongly dilated, and the front tibiæ excised at the base inwardly: the only female individual I have seen is dull and opaque, but distinctly punctured, its front tibiæ are not excised. Though very closely allied to *Hydroporus collaris*, the species is quite distinct.

North America, (United States). 403.

GROUP 8.

640. *Hydroporus terminalis*, n. sp.—Ovalis, angustulus, minus convexus, sine pubescentia, subnitidus, abdomine pectoreque nigris, supra fusco-testaceus, pedibus sordide rufis, antennis fuscis basi testaceo; prothorace valde transverso, inconspicue punctato; elytris crebre subtiliter punctatis, punctis versus apicem magis conspicuis; coxis posterioribus sat evidentè punctatis. Long. 3, lat. $1\frac{1}{2}$ m.m.

The front tarsi in the male are rather broader than in the female. This species is extremely similar to *Hydroporus vilis*, Lec., but is a little narrower, the antennæ are darker in colour, the punctuation is rather more conspicuous, and all the tarsi are smaller.

North America, (California). 404.

641. *Hydroporus vilis*, Lec., M.C.—Ovalis, minus convexus, sine pubescentia, subnitidus, abdomine pectoreque nigris, supra fusco-testaceus, antennis pedibusque rufis; prothorace obsolete punctato; elytris minus crebre subtiliter punctatis; coxis posterioribus obsolete punctatis. Long. 3, lat. $1\frac{2}{3}$ m.m.

I am scarcely able to distinguish the sexes of this species.

North America, (California, Utah). 405.

642. *Hydroporus latebrosus*, Lec., M.C.—Ovalis, minus convexus, latiusculus, sine pubescentia, subnitidus, abdomine pectoreque nigris, supra fusco-testaceus, antennis pedibusque sordide rufis; elytris sparsim subtilius punctatis; prosterni processu angusto; coxis posterioribus obsolete punctatis; abdomine segmento ultimo fere impunctato. Long. $3\frac{1}{2}$, lat. 2 m.m.

The two individuals before me are I think male and female, though extremely similar to one another. The species is extremely close to *H. vilis*, but is larger and relatively very much broader. A specimen has been determined for me by Leconte, otherwise I should not have recognized the name from description.

North America, (California). 406.

643. *Hydroporus hardyi*, n. sp.—Ovalis, minus convexus, latiusculus, sine pubescentia, subnitidus, abdomine pectoreque nigris, antennis pedibusque rufis; elytris

sparsim subtilissime punctatis; prosterni processu latiusculo; coxis posterioribus subtiliter punctatis; abdomine segmento ultimo confertim subtiliter punctato. Long. 4, lat. $2\frac{1}{4}$ m.m.

I have seen only one individual of this, the largest species of the group, it is rather larger than our European *H. lituratus* (No. 569).

North America, (California, found by Mr. Hardy). 407.

644. *Hydroporus belfragei*, n. sp. —Oblongo-ovalis, depressus, sine pubescentia, subnitidus, ferrugineus, abdomine pectoreque nigris, elytris ferrugineo-testaceis; ubique parce obsoleteque punctatus. Long. 3, lat. $1\frac{1}{2}$ m.m.

I have seen but a single individual of this distinct species, though allied to *H. vilis* (No. 641), it is more depressed, brighter coloured, and has the prosternal process rather more elongate, and distinctly carinate along the middle near the apex.

North America, (Texas, sent by Belfrage). 408.

GROUP 9.

645. *Hydroporus difformis*, Lec., M.C.—Oblongo-ovalis, elongatus, sine pubescentia, sat nitidus, piccus, supra dilutior, antennis pedibusque rufis; elytris crebre parum subtiliter, distincte punctatis, punctis apicem versus paulo crebrioribus; corpore subtus nitido, sublævi, abdominis lateribus strigulosis. Long. $5\frac{1}{2}$, lat. 3 m.m.

I have seen only a single individual of this large and remarkable species, which by its appearance calls to mind the estriate *Copelati*; the specimen is probably a female.

The species seems to be very peculiar, and will no doubt prove generically distinct, meanwhile it appears best placed near *H. oblongus*, from which it differs by the rather widely separated middle coxæ, the very large prosternal process, which is elevated at the sides and along the middle, and terminates in front as a strongly elevated projection; the metasternum is broadly but obscurely depressed in the middle in front; and the coxal lines are but little turned outwards near the extremity. The highly developed coxal lobe, with very rounded extremity quite protects the articular cavity, as in *H. oblongus*.

North America, (Georgia, Boston). 268.

646. *Hydroporus oblongus*, Steph., M.C.—Oblongo-ovalis, elongatus, sine pubescentia, nitidus, niger, supra fusco-castaneus, antennis pedibusque rufescentibus, elytris sparsim distincte, apicem versus crebrius punctatis; corpore subtus fere impunctato. Long. 5, lat. $2\frac{1}{3}$ m.m.

The male has the front and middle tarsi a little dilated, and the inner claw of the front foot longer and thicker than the outer; joints 3-7 of the antennæ are slightly stouter than in the female.

I am not quite sure that the North American specimens may not prove a distinct species, but I have not specimens of this rare species sufficient to judge from. Leconte has called this North American form *H. conoideus*.

Northern Europe, Siberia, and North America. (Sweden; Finland, to 66° 20' North, Sahlberg; Britain, Germany, Canada, Lake Superior, Vancouver's land). 221.

647. *Hydroporus lugubris*, Aubé, M.C.—Oblongo-ovalis, elongatus, sine pubescentia, sat nitidus, nigricans, elytrorum epipleuris clypeoque anterioribus dilutioribus, antennis pedibusque ferrugineis; prothorace subtilissime sparsim punctulato, elytris sparsim conspicue punctatis; coxis posterioribus evidenter elongato-punctatis; prosterni processu evidenter tricarinato. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

South America, (Monte Video). 226.

648. *Hydroporus copelatoides*, n. sp.—Oblongo-ovalis, elongatus, sine pubescentia, sericeo-subopacus, nigricans, antennis pedibusque rufescentibus, corpore supra sparsim subtiliter punctato, subtus fere impunctato, punctis elytrorum subelongatis; prosterni processu medio fortiter carinato. Long. $4\frac{2}{3}$, lat. $2\frac{3}{8}$ m.m.

This species bears much resemblance to the European and North American *Hydroporus oblongus*, but the prosternal process is more carinate along the middle.

Chili. 225.

649. *Hydroporus advena*, n. sp.—Ovalis, sine pubescentia, sat nitidus, niger, supra fusco-testaceus, prothoracis macula magna discoidali elytrorumque sutura angustissime nigricantibus; thoracæ subtilissime punctulato, elytris sat crebre et sat fortiter punctatis, punctis subelongatis; corpore subtus nitido fere impunctato; coxis intermediis sat distantibus, prosterni processu apicem versus latiore; pedibus antennarumque basi testaceis. Long. $2\frac{3}{4}$, lat. $1\frac{1}{2}$ m.m.

In the male the front and middle tarsi are a little dilated.

South Africa, (Cape Town). 228.

I. 42.—Genus *CELINA*.

Scutellum large, exposed ; front and middle tarsi five-jointed, the three basal joints broader than the two apical, the third emarginate or sublobed, the fourth smaller than the others, the fifth elongate ; swimming legs slender and feeble ; body terminating in a spine.

This genus is represented by seven species,* all very rare in collections ; and very similar to one another ; the appearance and size is that of narrow, suboblong Hydropori. They are peculiar to the warm parts of the New World, one species extending to the United States of North America.

650. *Celina aculeata*, Aubé, M.C.—Suboblonga, elongata, nitida, glabra, rufo-castanea, elytris paulo obscurioribus ; antennis testaceis, elongatis, articulo singulo latitudine distincte longiore ; prothorace versus margines evidenter, disco subtilissime, punctato ; elytris crebre et distincte fere æqualiter punctatis, serie punctorum majorum fere nullo ; corpore apice longius mucronato. Long. 5, lat. 2½ m.m.

Mas, tarsis anterioribus et intermediis fortiter dilatatis ; tibiis intermediis intus curvatis, medio incisura parva, parte basali tenui, apicali lata.

South America, (Brazil). 596.

651. *Celina mucronata*, n. sp.—Suboblonga, sat elongata, nitida, glabra, castanea, capite thorace pedibusque rufis ; antennis testaceis, mediocriter elongatis ; prothorace margine anteriore serie punctorum, antequam basin utrinque punctato ; elytris basi parce, apice crebre punctatis, serie punctorum discoidali distincta. Long. 4¼, lat. 2½ m.m.

Mas, tarsis anterioribus et intermediis fortiter dilatatis ; tibiis intermediis latis, simplicibus.

This species is not quite so elongate in form as the preceding one, and is readily distinguished by the different punctuation of the elytra, and the simple intermediate tibiæ of the male. I have seen but one specimen.

South America, (Constantia, June, 1850, Sahlberg). 597.

652. *Celina longicornis*, n. sp.—Suboblonga, sat elongata, nitida, glabra, rufo-castanea ; antennis testaceis, elongatis ; prothorace versus margines punctato ;

*And also by the following three, unknown to me : *Celina grossula* Lec. (No. 1209) ; North America.—*Hydroporomorpha parallela* Bab. (No. 1336) near No. 652 ; Brazil.—*Hydroporus latipes* Brullé (No. 1393) ; Corrientes.

elytris crebre fere æqualiter punctatis, serie discoidali punctorum fere nulla. Long. $4\frac{1}{2}$, lat. 2 m.m.

Mas, tarsis anterioribus et intermediis fortiter dilatatis; tibiis intermediis intus curvatis, medio incisura parva, parte basali tenui, apicali lata.

This species is also very closely allied to *Celina aculeata*, but is less elongate, and the base of the thorax is more thickly punctured in the middle. The mucro at the extremity of the body is here quite short, but I am not sure but that is partly owing to the retraction of the ædeagus.

South America, (Santa Rita, September, 1850, Sahlberg). 598.

653. *Celina picea*, n. sp.—Suboblonga, elongata, angustula, pernitida, glabra, picea, pedibus rufis; antennis haud elongatis testaceis; prothorace paululum punctato; elytris parce punctatis, sed punctis ad apicem paulo crebrioribus, serie punctorum discoidali distincta; corpore apice breviter mucronato. Long. $4\frac{1}{2}$, lat. 2 m.m.

Mas, tarsis anterioribus et intermediis bene dilatatis; tibiis intermediis abrupte curvatis, medio incisis.

The thorax in this species is quite without punctuation in the middle at the base, and even the anterior marginal punctures become obsolete in the middle. The bending of the male middle tibia is so extreme, that the basal portion is nearly at right angles with the apical portion.

South America, (Petropolis, March, 1850, Sahlberg). 559.

654. *Celina crassicornis*, n. sp.—Suboblonga, sat elongata, angustula, nitida, glabra, picea, pedibus rufis; antennis testaceis, brevibus, crassiusculis, articulis penultimis latitudine longitudine fere æquali; prothorace paululum punctato; elytris parce subtiliter punctatis, sed punctis ad apicem paulo crebrioribus, serie punctorum discoidali sat distincta. Long. 4, lat. vix 2 m.m.

Mas, incognitus.

This species is closely allied to *Celina picea*, and it possibly may be only the female thereof, but it is less elongate, and has the antennæ shorter and thicker, and the punctuation of the elytra is rather finer.

South America, (Petropolis, March, 1850, F. Sahlberg). 600.

655. *Celina bonvouloiri*, n. sp.—Suboblonga, elongata, angustula, nitida, glabra, rufescens, elytris paulo obscurioribus; prothorace paululum punctato; elytris parce subtiliter punctatis, ad apicem fere impunctatis, stria discoidali distincta. Long. 4, lat. $1\frac{1}{2}$ m.m.

Mas, tarsis anterioribus et intermediis fortiter dilatatis; tibiis intermediis curvatis, medio incisura parva, parte basali tenui, apicali lata.

This species has the antennæ rather long and slender; the punctuation of the upper surface is less than in the other species. I have seen but a single individual.

Cayenne, (coll. de Bonvouloir). 601.

656. *Celina angustata*, Aubé, M.C.—Suboblonga, elongata, angustula, subdepressa, nitida, glabra, rufo-testacea, elytris paulo obscurioribus; antennis sat elongatis; prothorace paululum punctato; elytris sparsim, sat subtiliter punctatis, punctis apicem versus subtilioribus sed vix crebrioribus, stria discoidali sat distincta. Long. $3\frac{3}{4}$, lat. $1\frac{2}{3}$ m.m.

Mas, tarsi anterioribus et intermediis sat dilatatis; tibiis intermediis curvatis, medio incisura parva, parte basali tenui, apicali lata.

This species is smaller than any of the others, and has the prosternal process distinctly narrower. I have seen but a single specimen in Dejean's collection; an individual in the collection of the Brussels Museum, labelled "*Hyd. xantholoma Chev. Pernambuco*," scarcely differs however except by its more castaneous colour, and slightly coarser punctuation of the elytra so that I consider it only a variety of this species.

South America, (Cayenne, Pernambuco); North America, (United States). 602.

I. 43.—Genus *METHLES*.

Scutellum concealed, base of thorax acuminate and produced in the middle. Front and middle tarsi five-jointed, subcylindrical, the basal joints being without dilatation, and without clothing beneath, the third not at all bilobed. Swimming legs very feeble; extremity of body spinose.

Three species are included in this distinct and peculiar genus; they have the size and form of small *Hydropori*; but the body being acuminate or spinose at the apex, they look still more like *Celinae*.

The species are found in tropical Africa, Madagascar, Mesopotamia, and Egypt.

657. *Methles spinosus*, n. sp.—Rufescens, glaber, sat nitidus, capite thoraceque lævibus, elytris sparsim sat fortiter punctatis; subtus fere impunctatus; prothorace lateribus leviter rotundatis, angulis posterioribus obtuse rectis. Long. 3, lat. $1\frac{1}{2}$ m.m.

Head large impunctate. Thorax impunctate, the base pointed in the middle, the hind angles closely applied to the shoulders of the elytra, the sides but slightly

rounded. Elytra narrow and elongate, rounded at the sides, narrowed and acuminate behind, sparingly punctured, the punctures more distinct towards the extremity than at the base; abdomen terminated by a long pointed spine directed backwards and upwards.

Egypt—a single specimen, (probably from the neighbourhood of Cairo) sent by Dr. Millingen. 603.

658. *Methles rectus*, n. sp.—Rufescens, sat nitidus, glaber, capite thoraceque fere impunctatis; elytris sparsim sat fortiter punctatis; subtus fere impunctatus; prothorace lateribus rectis, angulis posterioribus rectangulis. Long. $3\frac{1}{8}$, lat. $1\frac{1}{2}$ m.m.

Closely allied to the preceding species, but rather larger and with the thorax quite straight at the sides; the mucro terminating the body is much shorter, but this may perhaps not be a specific character.

Mesopotamia, also a discovery of Dr. Millingen's. 604.

659. *Methles punctipennis*, n. sp.—Suboblongus, sat nitidus, glaber, capite thoraceque fere impunctatis, hoc tamen versus latera punctis paucis; elytris crebre fortiter punctatis; corpore subtus fere impunctato; thorace lateribus paululum rotundatis, angulis posterioribus obtuse rectis. Long. $3\frac{1}{8}$, lat. $1\frac{1}{2}$ m.m.

Very similar indeed to the other two species, but with much more distinct punctuation on the elytra.

Tropical Africa, (Lagos, Ashantee). 605.

III. 3.—Tribe COLYMBETIDES.

Last abdominal stigma of small or moderate size; outline of eye in front invaded by the free margin of the clypeus, so that it is notched or emarginate not circular; size moderate, 20 m.m. of length being attained by only three or four species.

Posterior femora with aggregated ciliae arranged in a linear group at the postero-external angle.	{ Upper and inner edge of first ventral plate without transverse folds or grooves: size rather below the average, rarely attaining 10 m.m. of length.	} AGABINI. (<i>Vide</i> p. 491.) } GENERA, 54 to 60. (<i>Vide</i> p. 561.)
Posterior femora without aggregated ciliae at the postero-external angle.		

II. 10.—Group AGABINI.

No stigmatic rugæ; that is to say, the semi-membranous piece bordering the inner edge of the first ventral plate is smooth; wing of the metasternum reaching, when the elytra are closed, as far outward as the margin of the epipleura. Hind femur on the under surface with a group of ciliæ more or less developed, and situate quite close to the hind margin at the outer part of the femur. Side piece of the fourth and following ventral segments rather broad, (the length of the fourth being only about twice its breadth).

The character by which a member of this group may be most readily recognised is the group of ciliæ at the angle of the hind femur. Ten genera are included in the Agabini and they may readily be discriminated by the following table:

Posterior tarsi with their claws nearly or quite equal, and with the hind margins of their joints but little lobed or produced on the outer side.	{ Coxal lines present, distinct. Palpi with the terminal joints undilated. Wing of metasternum variable in size but always distinctly wedge-shaped, never linear. Wing of metasternum quite slender and linear, deflexed on the outside of front portion of the hind coxa. Epipleuræ after middle of length quite narrow.	{ Palpi with their terminal joint dilated; that of the labial very large and subquadrate. }	} HYDROTRUPES. (Vide p. 492.)
		{ Coxal lines very deep and nearly straight.	} AGABINUS. (Vide p. 548.)
		{ Coxal lines fine, sinuate.	} AGABUS. (Vide p. 493.)
		{ Epipleuræ continuing rather broad after the middle of wing-case.	} PLATAMBUS. (Vide p. 548.)
		{ Swimming legs short and stout; thorax slightly margined at sides; upper surface convex; size large (12 m.m. long.)	} ILYBIOSOMA. (Vide p. 537.)
		{ Swimming legs rather slender; thorax margined at sides; upper surface rather flat; size rather small (8 m.m. long.)	} PLATYNECTES. (Vide p. 538.)
		{ Thorax not margined at sides.	} LEURONECTES. (Vide p. 546.)
		{ Hind coxa very large.	} AGAMETRUS. (Vide p. 547.)
		{ Hind coxa small.	} METRONECTES. (Vide p. 492.)
	Posterior tarsi with their claws decidedly unequal; and with the lower part of the hind margin of their joints, on the outer face, produced or lobed.		} ILYBIUS. (Vide p. 550.)

I. 44.—Genus *HYDROTRUPES*.

Labial palpi very short and stout, their terminal joint subquadrate.

660. *Hydrotrupes palpalis*, n. sp.—Late ovalis, parum convexus, nitidus, subtus ferrugineus, pectore nigricante, supra senescens, capite antrosum prothoracisque lateribus ferrugineis, antennis crassiusculis pedibusque rufis; capite thoraceque reticulatis, hoc margine laterali crasso, elytris crebre sat subtiliter punctatis, punctis seriatis fere nullis; corpore subtus fere lævigato: tibiis anterioribus et intermediis extus conspicue spinosis. Long $4\frac{2}{3}$, lat. $2\frac{2}{3}$ m.m.

I have seen only one individual of this peculiar insect, the appearance of which suggests at the same time *Hydrovatus* and *Agabus*: the specimen is a male, and though the front and middle tarsi cannot be said to be incrassate yet the three basal joints bear beneath some glandular clothing. The numerous spines at the sides and apex of the front and middle tibiæ are conspicuously developed. The very short and thick labial palpi, will readily allow the species to be identified. The outline of the thorax and elytra is completely continuous.

North America, (California; coll. Wehneke.) 931.

I. 45.—Genus *METRONECTES*.

Coxal lines and coxal border very obsolete, almost absent; antennæ and palpi short and stout; hind coxæ but little developed, short, the anterior border but little arched; wings of metasternum large.

The unique species inhabits Corsica.

661. *Agabus aubei*, Perris, Abeille, VII, p. 6.—Ovalis, minus convexus, nitidus, niger, antennis palpis pedibusque rufis, femoribus piceis, supra obsolete reticulatus, elytris punctis seriatis magnis; prothorace cum elytris minus continuo, lateribus leviter rotundatis, angulis posterioribus obtusis; antennis brevibus, incrassatis. Long. 6-7, lat. $3\frac{2}{3}$ m.m.

The male distinctions are in this species extremely slight; there is scarcely any incrassation of the front and middle tarsi, and only the two basal joints are furnished beneath with a small patch of short glandular hairs.

The thickened antennæ and palpi of this species cause it to be very easily recognized.

Corsica. 832.

I. 46.—Genus *AGABUS*.

Side of prothorax with a raised margin; labial palpi with terminal joint not incrassate; wings of metasternum variable in size, but never so very short as to be parallel-sided; coxal lines distinctly sinuate; hind tarsi on their outer side with the posterior margins of the joints nearly straight, not lobed.

This genus consists of nearly a hundred species found in the northern parts of the Old and New Worlds; it is one of much interest, but of extreme difficulty so far as regards the determination of the species, on account of the great similarity in general appearance, and the considerable variation in structural characters from species to species. I have arranged the species in twenty-three groups, some of them natural, some clearly artificial; to tabulate these groups in an analytical manner would only confuse the student and lead him into errors of determination; I have therefore contented myself with placing at the head of each group the characters that have induced me to adopt it. These characters are drawn largely from the coxal lines and processes, and the form of the anterior border of the hind coxæ, the metasternal wings, the approximation of the middle legs, and development of the metasternal groove, and the prosternal process.*

* The following species also probably belong to the genus *Agabus*. *Agabus amicus*, Solsky, (No. 1179 *huj. op.*) Turkistan.—*Agabus atratus*, Mann. (No. 1180); Russian America.—*Agabus confertus*, Lec. (No. 1182); North America.—*Agabus foveolatus*, Muls. (No. 1185), very closely allied to No. 706; France.—*Agabus fusco-ænescens*, Regt. (No. 1186)? near No. 737; Austria.—*Agabus glacialis*, Hoch. (No. 1187), near No. 671; Caucasus.—*Agabus goryi*, Aubé (No. 1188), near No. 670; Smyrna.—*Agabus gougeleti*, Reiche, (No. 1189)? No. 714 var.; Corsica.—*Agabus hoeffneri*, Aubé (No. 1190), near No. 720; Sweden.—*Agabus irregularis*, Mann. (No. 1193)?=No. 688; North America.—*Agabus kessleri*, Hoch. (No. 1194)? near No. 757? Russia.—*Agabus luniger*, Kol. (No. 1196)? No. 713 var.; Armenia.—*Agabus morosus*, Lec. (No. 1197)? near No. 707; North America.—*Agabus opacus*, Aubé, (No. 1199); Finland.—*Agabus rotundatus*, Welmcke (No. 1200)? near No. 694? Sardinia.—*Agabus scapularis*; Mann. (No. 1201)?=No. 710; North America.—*Agabus subopacus*, Mann. (No. 1202); North America.—*Agabus terminalis*, Melsk. (No. 1204); North America.—*Agabus venturii*, de Bertolini (No. 1206) Italy.—*Anisomera recta*, Lec. (No. 1208), near No. 662; North America.—*Colymbetes alpinus*, Motsch. (No. 1210)?=No. 736? Mongolia.—*Colymbetes basalis*, Geb. (No. 1214); Siberia.—*Colymbetes costulatus*, Motsch. (No. 1218); Siberia.—*Colymbetes dilatatus*, Brullé (No. 1220)? No. 670 var.? Europe.—*Colymbetes discolor*, Harr. (1222); North America.—*Colymbetes fossiger*, Motsch. (No. 1227); North America.—*Colymbetes phæopterus*, Kirby. (No. 1243)?=No. 1222; North America.—*Colymbetes ruficeps*, Men. (No. 1246); Caucasus.—*Colymbetes sobrius*, Motsch. (No. 1249); North America.—*Colymbetes subquadratus*, Motsch. (No. 1253); Siberia.—*Gaurodytes angusticollis*, Sahl. (No. 1297); Lapland.—*Gaurodytes leptapsis*, Lec. (No. 1298); North America.—*Gaurodytes longulus* (No. 1299); North America.—*Gaurodytes lutosus*, Crotch. (No. 1300); North America.—*Gaurodytes obovatus*, Sahl. (No. 1301); Lapland.—*Gaurodytes obscuripennis*, Sahl. (No. 1302); Lapland.—*Gaurodytes ovalis*, Sahl. (No. 1303); Gothland.—*Gaurodytes suturalis*, Crotch. (No. 1304); North America.

The systematic position of the following is more doubtful, but may possibly be with *Agabus*:—*Agabus dilatatus*, Sol. (No. 1183); Chili.—*Agabus eminentis*, Kirsch. (No. 1184); Peru.—*Anisomera bistrata*,

GROUP 1.

Outline of thorax very discontinuous with elytra; prosternum but little thickened in the middle in front; swimming legs elongate and slender, their femora feeble, with rounded postero-external angle; metasternal cavity ill-developed.

Six species, from both Old and New Worlds.

662. *Agabus (Anisomera) cordatus*, Lec., *Anisomera cordata*, M.C.—Suboblongus, depressus, niger, supra ænescens, capite rufescente, antennis tarsisque 4 anterioribus geniculisque rufis; prothorace transverso, basi fere truncato, elytris angustiore, lateribus sinuatis, anterius rotundatis, angulis posterioribus rectis. Long. 11, lat. 5 m.m.

This species is very readily recognized by the form of the thorax. The legs are slender, and the claws elongate; the sculpture is that of the *Agabus guttatus* allies. I have seen but a single individual which is a male, and has the three basal joints of the front and middle tarsi a little thickened, and furnished beneath with glandular hairs.

North America, (Kansas). 720.

663. *Agabus cephalotes*, Reiche, M.C.—Fere oblongus, depressus, nigro-piceus, nitidus, antennis pedibusque rufis, prothoracis lateribus dilutioribus; prothorace elytris angustiore, lateribus antrorsum subrotundatis, posterius leviter angustatis, angulis posterioribus paulo obtusis; superficie haud coriaceo; elytris punctis magnis posterius irregularibus, antrorsum in seriebus tribus ductis. Long. 9½, lat. 4¾ m.m.

The shining surface and peculiar form of this species render its recognition very easy. There is no difference of sculpture in the sexes; in the male the two basal joints of the front and middle tarsi are scarcely thickened, but are furnished beneath with glandular hairs.

Corsica. 721.

664. *Agabus caraboides*, n. sp.—*Fem.*, Ovalis, fere depressus, niger, antennis pedibusque concoloribus, elytris fuseis; prothorace basi quam elytris evidenter angustiore,

Brullé (No. 1207); Chili.—*Colymbetes annulatus*, Zoub. (No. 1212); Turcomania.—*Colymbetes bicolor*, Kirb. (No. 1215); North America.—*Colymbetes impressus*, Zoub. (No. 1231); Turcomania.—*Colymbetes latus*, Gebl. (No. 1236); Siberia.

The position of the following species is quite doubtful:—*Agabus hydroporoides*, Murr. (No. 1191); West Africa.

lateribus subrectis, antèrius angustato, basi rotundato, angulis posterioribus obtusis; elytris subopacis, coriaceis, punctis obsoletis. Long. $11\frac{1}{4}$, lat. $5\frac{3}{4}$ m.m.

This is another very distinct species of which I have seen but a single individual, a female. The upper surface including the head and thorax is densely coriaceous. The dark colour of the legs and antennæ, and the absence of pale spots on the vertex are also important characters.

Found by Dr. Millingen either in Syria or Mesopotamia. 722.

665. *Agabus abnormicollis*, Ballion, Bull. Mosc. XLIII, p. 329.—Oblongo-ovalis, niger, nitidus, sublevigatus, elytris pone medium guttula testacea, antennis rufis, pedibus piceis; prothorace elytris evidenter angustiore, lateribus subrectis, angulis posterioribus obtusis. Long. $9\frac{1}{2}$, lat. 5 m.m.

This species has the elytra considerably broader than they are in *Agabus cephalotes*. I have only the male before me, the basal joints of the front and middle tarsi, are slightly incrassate and furnished beneath with glandular hairs, the claws are quite simple.

Turkestan. 768.

666. *Agabus maderensis*, Woll., M.C.—Oblongo-ovalis, subtilissime reticulato-punctatus, piceus, supra fusco-brunneus, antennis pedibusque rufis; prothoracis lateribus subrectis, angulis posterioribus rectis; elytris seriebus minus regularibus punctorum numerosorum. Long. 8, lat. 4 m.m.

This species allied to *Dytiscus guttatus* (No. 670) is smaller, and is readily distinguished by the much more numerous punctures on the elytra. The male is more shining than the female, and the reticulation of the elytra is excessively indistinct in it. The basal joints of the front and middle tarsi are but little incrassate, and the anterior claw of the front ones is nearly simple, being slightly thickened, and with its lower edge a little sinuate.

Madeira. 723.

667. *Agabus (Gaurodytes) intersectus*, Crotch, Tr. Am. Ent. Soc. IV, p. 419.—Oblongo-ovalis, antèrius angustulus, niger, supra ænescens, nitidus, antennis rufis, pedibus piceis; prothorace basi elytris angustiore, lateribus leviter obliquis, lenissime curvatis, angulis posterioribus rectis; elytris densissime sat fortiter reticulatis. Long. 8, lat. 4 m.m.

I have seen only one female of this species; Crotch says the male has the anterior, claw of the front tarsi dentate.

North America, (Nevada). 736.

GROUP 2.

Outline of thorax either slightly discontinuous, or continuous with that of the elytra; prosternal process comparatively broad, nearly flat, evenly and distinctly margined, shining and impunctate; metasternal groove moderately broad. Hind coxæ never large; wings of metasternum large; coxal lines deeply impressed in their upper part, much prolonged in the anterior and outward direction; hind legs slender or moderate (never stout), their femora little thickened, the postero-external angle slightly obtuse, sometimes rectangular. Male fore feet but little developed, clothed beneath with very short "glandular" pubescence; sexual differences of sculpture slight.

Seventeen species from both Old and New Worlds.

668. *Agabus hypomelas*, Mann., M.C.—Oblongo-ovalis, niger, nitidus, antennis pedibusque rufis, supra sat conspicue ænescens, capite anteriori, prothoracis lateribus versus angulum anteriorem, elytrorumque epipleuris vage rufescentibus; elytris dense subtilissime reticulatis subtiliusque punctulatis; metasterni impressione brevi. Long. 8, lat. $4\frac{1}{2}$ m.m.

In this species the lateral margin of the thorax is rather fine, and the thorax is rather straight sided, the hind angles being nearly rectangular. The male has the three basal joints of the front and middle tarsi slightly thickened, and furnished beneath with short glandular hairs. The exact position of this species is not easy to define, the prosternal process is short and broad, but is very feebly punctulate at the sides, the metasternal cavity is unusually short, and the coxal lines are not greatly divergent in their upper part; the side wings of the metasternum are shorter than in *Dytiscus guttatus* (No. 670).

North America, (Sitka, Vancouver's Island). 737.

669. *Agabus styriacus*, n. sp.—Oblongo-ovalis, latiusculus, parum nitidus, niger, supra subænescens, antennis palpisque rufis, pedibus piceis, tarsi rufis, elytris guttis duabus testaceis; prothorace lateribus obliquis, basi quam apice latiore, angulis posterioribus rectis; elytris undique punctato-rugosis. Long. $8\frac{3}{4}$, lat. $4\frac{3}{4}$ m.m.

The surface of the wing-cases in this species, is rendered rough by a dense, fine, indefinite sculpture which can scarcely be called punctuation; in the male, even on the base of the elytra with a high magnifying power, this sculpture does not assume the form of reticulation, but in the female the sculpture is rather coarser and deeper, and gives the appearance of very obscure reticulation and dense rugulosity combined. In the male the three basal joints of the front tarsi are

much incrassate and furnished beneath with very short glandular hairs; the middle tarsi are not so much incrassate as the front ones.

This species is allied to *Dytiscus guttatus*, and some of the extreme varieties of that species approach considerably to it, but it appears to me really distinct. It is broader, and the peculiar sculpture is much more developed than in the most extreme varieties of *D. guttatus*; the prosternal process is broader, and the basal joints of the front tarsi of the male are more incrassate.

Styria, (Herr Tschapek). 1166.

670. *Dytiscus guttatus*, Payk.. *Agabus guttatus*, M.C.—Oblongo-ovalis, niger, nitidus, antennis, palpis pedibusque rufis, elytris guttis duabus parum distinctis testaceis; prothorace lateribus subrectis, basi quam apice paulo latiore, basi utrinque fere recto, angulis posterioribus rectis, margine laterali crasso; elytris versus apicem fere opacis et rugulosis, anterie nitidis. Long. 8, lat. 4 m.m.

In the female the elytra near the base are finely but quite distinctly reticulate or coriaceous, in the male this reticulation is less distinct, and the surface near the base has almost the appearance of being finely and closely punctulate; in each sex the roughening of the surface at the extremity is greater than in the allied species. In the male the basal joint of the front and middle tarsi is a good deal incrassate, and the two following joints are a little so, and the three joints are clothed beneath with very short glandular hairs. The two claws of the front feet are similar and simple.

The species varies in the colour of the legs, these being sometimes piceous, and the sculpture also shows some curious variations.

Europe, (Sweden; Finland, to 68° 20' North, Sahlberg; Britain, France, Germany, Northern Italy). 724.

671. *Agabus armeniacus*, n. sp.—♂ Oblongo-ovalis, niger, nitidus, antennis palpis pedibusque rufis, elytris guttis duabus parum distinctis testaceis; prothorace lateribus fere subrectis, basi quam apice paulo latiore, basi utrinque leviter obliquo, angulis posterioribus obtuse rectis, margine laterali crasso; elytris versus apicem subopacis, anterie nitidis et levigatis. Long. 9, lat. 4 $\frac{3}{4}$ m.m.

Extremely closely allied to *Dytiscus guttatus* (No. 670), but with the base of the thorax not quite so straight, so that the hind angles are slightly more obtuse, and with the elytra (in the male at any rate) smoother, as in *Dytiscus biguttatus* (No. 676). The tarsi of the male are formed as in *D. guttatus*, but the front claw on the anterior is thicker than the other claw. The female I have not seen.

Trebizond, Daghestan. 725.

672. *Agabus americanus*, Aubé, M.C.—Oblongo-ovalis, nigricans, nitidus, antennis palpisque rufis, pedibus anterioribus rufo-piceis, posterioribus fere nigris; prothorace lateribus subrectis, angulis posterioribus obtusis, rotundatis, margine laterali elevato; elytris nullo modo reticulatis, lævigatis, punctis subseriatis conspicuis. Long. $8\frac{1}{2}$, lat. 4 m.m.

The male has the basal joints of the front tarsi a good deal incrassate, and much compressed, and rather extensively furnished beneath with short glandular pubescence; the anterior claws are rather elongate and sinuate. The terminal joint of the middle tarsi is elongate and slender.

I have seen only Aubé's type of this species, which appears to be a very distinct one, by the smooth shining surface, and the indistinct rounded hind angles of the thorax.

Mexico, (coll. Mnizech). 1154.

673. *Colymbetes seriatus*, Say, *Agabus seriatus*, M.C.—Oblongo-ovalis, niger, supra ænescens, nitidus, antennis palpisque rufis, pedibus piceis; prothorace lateribus obliquis, basi subtruncate, angulis posterioribus rectis; elytris subtilius reticulatis, versus apicem evidentius reticulatis, sed neque opacis nec rugosis. Long. 9, lat. $4\frac{3}{4}$ m.m.

This species is closely allied to *Dytiscus guttatus* (No. 670), but is rather larger, and has the sculpture of the upper surface finer, and similar in both sexes; the prosternal process is larger and more acutely pointed at its apex. The male has the three basal joints of the front and middle tarsi a little thickened and furnished beneath with glandular hairs; the anterior claw of the front feet is a little dilated near the base so that its lower edge is slightly sinuate.

The species seems to be widely distributed in North America and is somewhat variable in form and sculpture.

North America. (Canada, California). 727.

674. *Agabus perplexus*, n. sp.—Oblongo-ovalis, niger, supra ænescens, antennis pedibusque piceis; prothorace brevi antrorsum angustato, angulis posterioribus subrectis; elytris dense subtiliter reticulatis, retis versus apicem haud omnino minutis. Long. 9, lat. $5\frac{1}{4}$ m.m.

In the male the basal joints of the front and middle tarsi are distinctly thickened and furnished beneath with glandular hairs; the anterior claw of the front feet has the basal portion slightly thickened, so as to cause the outline beneath to be slightly sinuate. The species is closely allied to *Colymbetes seriatus*, but the lateral portions of the metasternum are not quite so much reduced in size.

North America, (California, Vancouver's Island).

675. *Agabus lugens*, Lec., M.C.—Ovalis, latiusculus, niger, supra subænescens, omnium densissime reticulatus, subnitidus, antennis palpis pedibusque piceis, elytris versus latera gutta elongata, subdistincta, testacea; prothorace brevi basi elytrorum latitudine, lateribus obliquis, angulis posterioribus fere rectis. Long. $9\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

In the male the front and middle tarsi have the three basal joints distinctly thickened and furnished beneath with glandular hairs; the claws are simple. The species is very closely allied to *Agabus perplexus*, but the reticulation of the elytra is so dense and indistinct that, even towards the apex, distinct meshes can scarcely be perceived.

North America, (California, Vancouver's Island). 729.

676. *Dytiscus biguttatus*, Ol., *Agabus biguttatus*, M.C.—Oblongo-ovalis, niger, nitidus, antennis rufis, apice summo sæpius nigro, palpis piceo-rufis; elytris guttis duabus testaceis; prothorace basi curvato, lateribus plus minusve curvatis et antrorsum angustatis, margine laterali haud crasso; elytris ad basin et ad suturam vel omnino lævigatis, vel omnium subtilissime reticulatis, versus apicem subtiliter vel vix conspicue rugulosis et paulo conspicuius reticulatis. Long. 9, lat. $4\frac{1}{2}$ m.m.

In the male the three basal joints of the front and middle tarsi are distinctly incrassate and furnished beneath with glandular hairs, and the anterior claw of the front foot has a tooth or lobe in the middle beneath. There is a sexual difference in sculpture the female being a little less shining, and less indistinctly reticulate than the male.

This is a very widely distributed and one of the most variable species, and the variations seem to be, to a greater or less extent, geographical. The elytra, in the South-east of Europe and Asia Minor, are frequently more or less red. The largest, broadest and most smooth individuals occur in Southern Europe. The variety from the Canary Islands (*A. consanguineus*, Woll.) has the reticulation of the upper surface more distinct, and the antennæ immaculate at the apex, the legs and palpi of rather more dilute colour. The species in Scotland makes a nearer approach in form and sculpture to *Dytiscus guttatus* (No. 670) than it does elsewhere, and this form is approximated by mountain specimens even from the South of Europe. The tooth on the front claw of the male varies much, being sometimes quite slender, and in other cases a broad lobe.

Central and Southern Europe, North Africa, Western and Central Asia. (Scotland, England; Belgium, Alsatia, France, Spain, Sierra Nevada 7,000 feet; Italy, Sicily, Greece; Canary Islands; Algeria, Egypt, Nubia, Sinaï; Hedjaz; Trebizond; Turkistan, Dras, Kargil and Leh, F. Stoliczka, September 9th, 1873). 731.

677. *Agabus heydeni*, Wehncke, Berl. Ent. Zeit. XVI, p. 134.—Ovalis, politus, nitidus, niger, antennis palpisque rufis, pedibus piceo-rufis; elytris pone medium

minus distincte pallido-notatis, prothorace lateribus sat crasse marginatis, vix perspicue curvatis, antrorsum sat angustatis, angulis posterioribus rectis. Long. 8, lat. 4 m.m.

The male has the basal joints of the front and middle tarsi very slightly incrassate, the basal two being furnished beneath with short glandular hairs, the claws are quite simple. Although the surface looks very polished, there is a very obsolete reticulation of the elytra, and this is a little more conspicuous in the female than it is in the male. Though allied to *Dytiscus biguttatus*, this species is much smaller, and the hind tarsi are not quite so elongate and slender.

Europe, (Spain and Portugal). 732.

678. *Agabus binotatus*, Aubé, M.C.—Oblongo-ovalis, nitidus, lævigatus, niger, antennis rufis; elytris rufis, fusco-suffusis, limbo dilutiore, pone medium macula plus minusve distincta pallida, prothoracis lateribus rufis, pedibus piceis; prothorace crasse marginato, lateribus leviter curvatis, angulis posterioribus fere rectis, vix obtusis. Long. 8½, lat. 4 m.m.

The male has the basal joints of the front and middle tarsi slightly thickened, the first and second being also clothed beneath with short glandular hairs.

Europe, (Corsica, Sardinia). 733.

679. *Agabus castaneus*, n. sp.—Ovalis, nitidus, lævigatus, subtus niger, supra castaneus, antennis palpis pedibusque rufis, femoribus piceis; prothorace antrorsum angustato, lateribus obliquis haud curvatis, angulis posterioribus fere rectis, vix acutis, margine laterali sat crasso. Long. 8, lat. 4¼ m.m.

The male has the basal joints of the front and middle tarsi a little thickened, and the first and second furnished beneath with short glandular hairs: the female is unknown to me.

Syria, (Mount Sannin). 734.

680. *Dytiscus paludosus*, Fab., *Agabus paludosus*, M.C.—Ovalis, sat convexus, lævis, nitidus, niger, capite anterieus prothoracis lateribus elytris que rufescentibus, antennis pedibusque anterioribus rufis, femoribus medio picescentibus, pedibus posterioribus piceis. Long. 7, lat. 4 m.m.

In this species the hind angles of the thorax are about rectangular, and the outline of the elytra is but little discontinuous with that of the thorax. The upper surface is very smooth and shining, and there is no sexual disparity of sculpture. The male has the front and middle tarsi with the basal joints a little incrassate and furnished beneath with moderately short glandular hairs.

Europe, (Sweden; Finland to 62°. Sahlberg; Britain; France; Spain; Germany). 735.

681. *Agabus japonicus*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 50.—Ovalis, sat convexus, lævis, nitidus, niger, capite thoraceque vix subænescentibus, elytris fuscis, basi humerisque vage rufescentibus, antennis tibiisque quatuor anterioribus, femoribus pedibusque posterioribus piceis. Long. 7, lat. $4\frac{1}{4}$ m.m.

The male has only an extremely slight incrassation of the front and middle tarsi, and only a very narrow space on their underside clothed with glandular hairs; and the claws are simple.

The species much resembles *Dytiscus paludosus*, but is rather broader, more oval, and the elytra and the thorax have their outline very continuous: and the serial punctures of the elytra are finer.

Japan; North China. 780.

682. *Agabus æqualis*, n. sp.—Ovalis, sat convexus, fere lævigatus, sat nitidus, niger, capite thoraceque vix subænescentibus, hoc ad latera indeterminate rufescente, elytris fuscis, basi margineque externo testaceis, antennis pedibusque testaceis: elytris neque punctulatis, nec reticulatis. Long. 7, lat. 4 m.m.

The male has the front and middle tarsi distinctly incrassate and furnished beneath with short hairs, which bear minute palettes, the front claws are quite simple and not elongate; the hind tarsi have the two basal joints provided beneath with swimming hairs. The female I have not seen.

This species is very similar to *Dytiscus paludosus* (No. 680), but the colour is a little more obscure, and the upper surface less shining, and the serial punctures of the elytra are finer: the thorax is shorter behind the eyes, and its outline more continuous with the elytra, and the legs are of a paler colour. It is also excessively similar to *Agabus japonicus*, but the upper surface is less shining, the legs are paler in colour, the male tarsi are more incrassate, and the anterior border of the hind coxa is more arched so that the side wings of the metasternum are externally more abbreviate.

Eastern Siberia, (Transbaikal). 781.

683. *Agabus raffrayi*, n. sp.—Ovalis, sat convexus, lævis, nitidus, niger, capite anterius prothoracisque lateribus haud late rufescentibus, elytris fusco-rufis, basi lateribusque dilutioribus, antennis tibiisque quatuor anterioribus rufis, femoribus pedibusque posterioribus piceis. Long. $7\frac{1}{2}$, lat. 4 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with short hairs which bear minute palettes, the claws are simple: I think the two basal joints of the hind tarsus are provided beneath with swimming hairs.

The species is excessively similar to *Dytiscus paludosus* (No. 680), but is slightly

broader and more oval in outline, and the hind legs are decidedly more developed for swimming, being shorter and stouter.

Abyssinia, (found by Ratfray). 782.

684. *Agabus marginalis*, n. sp.—Ovalis, sat convexus, lævis, nitidus, niger, capite antierius prothoraceque lateribus rufescentibus, elytris fusco-rufis, basi lateribusque dilutioribus, antennis tibiisque anterioribus rufis, femoribus pedibusque posterioribus piceis. Long. $7\frac{1}{2}$, lat. $4\frac{1}{4}$ m.m.

In this species the prosternal process is rather peculiar; the space separating the front legs is broad, but the prosternal process is not very much dilated behind, so that it is not greatly wider than the space between the coxæ, it is a little elevated along the middle, and is finely punctured at the sides. The species greatly resembles *Dytiscus paludosus* (No. 680), but is larger, has the lateral margin of the thorax finer, and the hind legs shorter and stouter; in some respects it approximates to *Dytiscus brunneus* (No. 688), and may be considered intermediate between it and *D. paludosus*, but it is not so broad and is differently coloured and has the prosternal process very different. I have seen only the female.

Europe. (Greece, Styria). 783.

GROUP 3.

Outline of thorax and elytra continuous; *prosternal process very broad and flat, polished; middle coxæ rather widely separated*, with highly developed metasternal impression; hind coxæ rather well developed, the wings of the metasternum rather short; swimming legs moderately slender.

Three species from the New World.

685. *Colymbetes obtusatus*, Say, *Agabus obtusatus*, M.C.—Ovalis, haud convexus, pernitidus, niger, antennis pedibusque rufis, femoribus plus minusve picescentibus, elytris pone medium versus latera lineola, et ante apicem gutta, testaceis; supra undique conspicue sed haud profunde reticulatus, reticulis magnis; prothoracis margine laterali nullo modo crasso. Long. 8, lat. $4\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with short hairs which bear quite distinct palettes: the claws of the front feet are very nearly simple, and are scarcely more developed than in the female.

The shining surface and large meshes of the reticulation are very characteristic; when a careful examination is made, it is seen that in the middle of these meshes (not on the lines thereof as in most other species), there are excessively minute punctures.

Colymbetes nitidus, Say. (Tr. Am. Phil. Soc. II. p. 98) is referred to this species on the authority of Crotch.

North America, (Massachusetts). 788.

686. *Agabus planatus*, n.sp.—*Fem.* Ovalis, haud convexus, pernitidus, nigro-piceus, colore subtus paulo dilutiore, antennis pedibusque rufis, elytris pone medium versus latera lineola, et ante apicem gutta testaceis; supra undique conspiciuntur reticulatus, reticulis magnis; prothorace margine laterali crasso. Long. 9, lat. 5 m.m.

I have seen but a single individual (♀) of this species, which seems to be very closely allied to *Agabus obtusatus*, but is a good deal larger, and has a much broader lateral margin to the pronotum.

This is perhaps the insect considered by Crotch (Tr. Am. Ent. Soc., 1873. p. 417), to be a female variety of *Agabus semivittatus*, Lec.

North America. 789.

687. *Agabus brevicollis*, Lec., M.C.—Late ovalis, subdepressus, vix nitidus, niger, antennis rufis, pedibus piceis; elytris densius profunde reticulatis, pone medium versus latera guttula ferruginea. Long. 10½, lat. 6½ m.m.

I have seen but a single individual, a male in very decayed condition, of this very distinct species; it is of a very broad flat form, with the thorax continuing the outline of the elytra with very little interruption, the lateral margin of the thorax is broad and but little raised; this male has the front and middle tarsi moderately incrassate and furnished beneath with glandular hairs, the claws are broken.

North America, (California). 802.

GROUP 4.

The single (European) species forming this group has the characters similar to those of the highly developed members of group 2, except that the swimming legs are highly developed, being short and thick.

688. *Dytiscus brunneus*, Fab., *Agabus brunneus*, M.C.—Ovalis, latiusculus, sat convexus, nitidus, lævis, subtus niger, capite prosternoque ferrugineis, medio nigris,

supra castaneus, antennis tibiisque anterioribus rufis, femoribus medio pedibusque posterioribus piceis. Long. 9, lat. 5¼ m.m.

The front and middle tarsi are not very greatly thicker in the male than in the female, but they are furnished beneath in the former sex with elongate glandular hairs, and in the same sex there are three joints of the posterior tarsus provided beneath with swimming hairs.

The species is readily distinguished by the broad form, smooth shining surface unicolorous above, and by its stout legs. The prothorax is large and continuous in outline with the elytra.

Central and Southern Europe, Corsica, Sardinia, Northern Africa; (South of England; Alsatia; France, basin of the Seine; Pyrenees, Spain, Portugal, Italy, Tangier). 784.

GROUP 5.

Prosternal process broad and polished; *its margin just behind the coxæ very broad and dilated*, in the posterior half excessively fine.

Three New World species.

689. *Colymbetes stagninus*, Say, *Agabus stagninus*, M.C.—Ovalis, minus convexus, niger, antennis rufis, pedibus piceis, elytris ante apicem vitta sublaterali elongata testacea; vel nitidus (♂) densiusque punctato-reticulatus, vel subnitidus (♀) densiusque minus obsolete reticulatus; prothorace magno. Long. 10, lat. 5½ m.m.

The male has the front and middle tarsi a good deal incrassate, and amply provided beneath with rather long hairs which bear distinct palettes, the claws of the front feet are moderately long, and the anterior one has the base much dilated, the posterior is rather longer than the anterior one, and has the base abruptly thickened in a similar manner; the terminal joints of the middle tarsi in this sex are unusually elongate. The distinction in the sculpture of the sexes is very marked.

North America. (Pennsylvania). 785.

690. *Agabus semivittatus*, Lec., M.C.—♂ Ovalis, convexus, nitidus, niger, antennis rufis, pedibus obscure rufis, elytris ante apicem vitta sublaterali elongata testacea sat distincta; elytris subtilissime punctulatis haud perspicue reticulatis; prothorace magno. Long. 9, lat. 5¼ m.m.

The male has the front and middle tarsi a good deal incrassate, and amply provided beneath with rather long hairs which bear distinct palettes; the claws of the

front feet are rather short, the anterior is rather stout and is abruptly bent, and is furnished with a very large basal lobe, the hind claw is stout and without noticeable lobe; the middle tarsi have the apical joints a little elongated. The female is unknown to me.

The species is readily distinguished from *Colymbetes stagninus* by the smaller size and more convex form, and by the more arched anterior border of the hind coxæ causing the side wing of the metasternum to be much more linear, as well as by numerous other differences.

The mutilated ♂ individual sent me by Dr. Leconte as *A. semivittatus* is either this species or a closely allied one; the tarsi are mutilated so that I cannot say whether they agree with those of the individual I have described or not.

North America, (St. John's Bluff, East Florida, Forster). 786.

691. *Agabus texanus*, n. sp.—Ovalis, sat convexus, nitidus, niger, antennis rufis, pedibus piceis, elytris ante apicem vitta sublaterali, elongata, testacea, plus minusve distincta; elytris sublævigatis; prothorace magno. Long. 8, lat. 5 m.m.

The male has the front and middle tarsi a little incrassate, and with a narrow space furnished beneath with rather short hairs, which bear minute palettes; the claws of the front feet are not long, and the anterior one bears beneath a rather small projection a little before the base; the apical joints of the middle tarsi are slightly elongate.

The sculpture of the elytra in this species is extremely indistinct, nevertheless there is a minute sexual distinction in this respect, the female being seen on a very careful examination to be just visibly less smooth than the male.

The male may be readily distinguished from that sex of *A. semivittatus* by the less developed tarsi and different anterior claws, as well as by other slight characters.

North America, (Texas, Dallas). 787.

GROUP 6.

Thorax and elytra very coadapted and continuous in outline; prosternal process rather narrow, very little dilated behind the coxæ, polished, gently convex transversely, not at all compressed, very finely margined throughout; hind coxæ well developed, wings of metasternum short; hind femora with well developed lamina at postero-external angle. Sexual disparities remarkable on legs, but wanting as to sculpture.

Two New World species.

692. *Agabus punctatus* Melsh., Proc. Ac. Phil. II, p. 27.—Ovalis, sat convexus nitidus, rufescens, abdomine pectoreque piceis, supra ænescens; elytris sublaevigatis, haud reticulatis, vix perspicue punctulatis; prothorace sat magno. Long. $7\frac{3}{4}$, lat. $4\frac{1}{2}$ m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate and furnished beneath with rather short hairs which bear small but distinct palettes; the claws of the front feet are shorter and more curved than in the female and have a small obtuse tooth at the base; the long apical spur of the hind tibia is also thicker than in the female, and has its underside longitudinally striate.

The species varies in the colour of the upper surface, which is sometimes more rufescent, sometimes more æneous; and the serial punctures of the elytra are in some individuals coarser than in others.

North America. (Pennsylvania, Georgia, sec. Crotch). 778.

693. *Agabus æruginosus*, Aubé, M.C.—Ovalis, sat convexus, nitidus, rufescens, abdomine pectoreque piceis, supra subænescens; elytris sublaevigatis, haud reticulatis, subtilissime punctulatis; prothorace sat magno. Long. $7\frac{3}{4}$, lat. $4\frac{1}{4}$ m.m.

In the male the front and middle tarsi are almost without dilatation, and have only a very small surface beneath clothed with hairs; the claws of the front feet are short and have a small swelling at the base; the intermediate femora bear a dense elongate pubescence, and the intermediate tibiæ a more scanty and short pubescence; the hind margin of the posterior femur forms a curve owing to the outer and hinder angle being considerably produced and acute.

This species I should have failed to distinguish from *A. punctatus* had it not been for the remarkable male characters; in nearly all particulars except the sexual peculiarities the two species seem excessively similar; *Agabus æruginosus* will probably prove to be less convex, and more rufescent or less æneous above, and to have the fine punctures on the elytra not quite so obsolete: the only good character to distinguish the females will I think be found in a different arrangement of the punctures on the apical ventral segment.

North America. 779.

GROUP 7.

Hind coxæ small, wings of metasternum large, hind tarsi feeble, but hind femora with a distinct lamina at postero-external angle; male front claws short and dentate beneath; no abdominal file; prosternal process not, or only slightly, compressed, glabrous or feebly punctate, either narrow or moderately broad; cilix at angle of lower surface of hind femur very rudimentary.

Three species from both Old and New Worlds.

694. *Dytiscus uliginosus*, Linn., *Agabus uliginosus*, M.C.—Ovalis, convexus, nitidus, niger, supra subænescens, capite antierius, prothoracis lateribus, elytris humeris et lateribus rufescentibus, antennis pedibusque rufis; elytris nitidis et obsoletissime reticulatis, rarius in femina opacis et densissime reticulatis; prothorace margine laterali lato. Long. 7, lat. $4\frac{1}{4}$ m.m.

This species is of a shorter, broader, and more convex form than its allies. The male has the basal joints of the front tarsi a good deal incrassate, and clothed beneath with short glandular hairs, the claws on the front feet are short, and the anterior one is greatly thickened beneath so as to appear angulate, or obtusely dentate about the middle. The female generally resembles the male in sculpture, but a form occurs rarely (? in Britain only) in which the upper surface in this sex is excessively densely and finely reticulate so as to be quite opaque. The species has the hind coxæ but little developed; the prosternal process is moderately broad, and not elongate, its sides a little compressed, and its surface not shining, but feebly punctate; the mesosternal groove is short and narrow.

Europe, (Sweden, Finland, Britain, France, Belgium, Alsatia, Germany). 743.

695. *Colymbetes semipunctatus*, Kirby, *Agabus semipunctatus*, M.C.—Oblongo-ovalis, niger, nitidus, supra vix ænescens, capite antierius prothoracisque lateribus rufescentibus, antennis pedibusque rufis; elytris nitidis, obsoletissime reticulatis, vix punctulatis; prothorace margine laterali lato. Long. 7, lat. $3\frac{1}{2}$ m.m.

In the male the front tarsi are short, and, as well as the middle ones, have the three basal joints distinctly incrassate and furnished beneath with short hairs bearing small palettes, the claws of the anterior tarsi are short, and the front one bears an elongate acute tooth in the middle beneath. The female I have not seen. The species is undoubtedly nearly allied to *Dytiscus uliginosus*, but has the prosternal process rather broader and more smooth and shining.

North America, (Canada). 747.

696. *Agabus (Gaurodytes) æneolus*, Crotch, Tr. Am. Ent. Soc. IV, p. 417.—Ovalis, sat convexus, niger, supra ænescens, capite antierius, prothoracis elytrorumque lateribus late rufescentibus, antennis pedibusque rufis; supra vel nitidus et in elytris obsolete reticulatus subtiliterque punctulatus (♂), vel sericeo-opacus, subtilius denseque reticulatus (♀). Long. $6\frac{1}{4}$, lat. $3\frac{1}{2}$ m.m.

This species is extremely similar in size and form to the European *Dytiscus femoralis* (No. 726). The difference in the appearance of the two sexes is very striking. The male has the basal joints of the front and middle tarsi a good deal thickened, and furnished beneath with moderately long and glandular hairs; the

claws of the front feet are short, and the anterior is dilated beneath by a tooth occupying the greater part of its length but having a sharp extremity.

The specimen of *Agabus punctulatus* extant in Dejean's collection is a rufescent variety of this species.

North America, (Pennsylvania, Newfoundland, sec. Crotch). 756.

GROUP 8.

Form narrow and parallel; males with short anterior claws dentate beneath, and with a series of striae forming a file (no doubt a stridulating organ) on each side of the third ventral segment; prosternal process rather narrow, very little compressed, nearly glabrous or feebly punctulate; anterior border of hind coxæ much arched, wings of the metasternum moderately large; hind tarsi rather feeble, but the femora have a distinct lamina at the postero-external angle, the ciliæ at this spot very rudimentary.

Four species from both Old and New Worlds.

697. *Agabus (Gaurodytes)*, biguttulus, Th. Sk. Col. IX, p. 110.—Oblongo-ovalis, niger, nitidus, supra subænescens, antennis pedibusque rufis, femoribus picescentibus; supra vel subtilius sed haud inconspicue (♂) vel ubique evidenter (♀) reticulatus; elytris punctis subseriatis haud profundis. Long. $6\frac{1}{4}$, lat. $3\frac{1}{4}$ m.m.

This species is very similar at first sight to *Dytiscus affinis* (No. 698), but the serial punctures of the elytra are not so deep. There is considerable difference in the sculpture of the sexes; in the male the reticulation of the elytra is not much more distinct than in *Agabus æneolus*, while in the female this sculpture is much more marked, the rather large meshes of the reticulation do not however cause the surface to be dull in this sex; the male has the basal joints of the front and middle tarsi distinctly thickened and furnished beneath with short hairs which bear distinct palettes; the claws of the front feet are short, and the anterior one bears beneath a sharp tooth near the base. The elytra have sometimes two pale spots like *A. æneolus* (No. 696), but sometimes these cannot be distinguished.

Gaurodytes boreellus, Sahl. (Not. fenn. XI, p. 409) is I consider a variety of this species.

North Europe, (Sweden, and Finland to 68°, according to Sahlberg). 755.

698. *Dytiscus affinis*, Payk., *Agabus affinis*, M.C.—Oblongo-ovalis, niger, vix supra subænescens, antennis pedibusque rufis, femoribus picescentibus; sublævigatus, elytris guttula pone medium maculaque apicali pallidis. Long. $6\frac{1}{4}$, lat. $3\frac{1}{2}$ m.m.

The three basal joints of the front and middle tarsi are very little incrassate, and are furnished beneath with short hairs, bearing very small and indistinct palettes, the claws of the front feet are not elongate, and the anterior one has near the base a sharp prominent tooth: the difference in sculpture of the two sexes is extremely slight. The pale marks on the elytra are sometimes not easily detected.

Northern Europe, and Siberia; (Sweden: Finland to 68°, according to Sahlberg; Britain, Northern France; Germany). 754.

699. *Agabus stridulator*, n. sp.—Oblongo-ovalis, nitidus, niger, vix supra subænescens, antennis pedibusque rufis, femoribus picescentibus; supra lævigatus, nullo modo reticulatus. Long. 6, lat. 3½ m.m.

The basal joints of the front tarsi in the male are almost without incrassation, and their clothing beneath is but little developed: the front claws are short, and the anterior one bears beneath a sharp prominent tooth. There seems to be no sexual difference in the sculpture of the upper surface; but on the undersurface the file on each side of the third ventral segment of the male is very distinct.

The species is extremely closely allied to *Dytiscus affinis*, but is rather less elongate, and its surface is destitute of the very rudimentary reticulation which on careful examination may be detected in that species: the anterior tarsi of the male have the basal joints less incrassate, the prosternal process is narrower; and the hind coxæ are just slightly smaller, so that the wings of the metasternum are just appreciably less reduced. As in *D. affinis* a pale dash may sometimes be seen near the side of each elytron about the middle, and another near the apex.

North America, (Hudson's Bay, Canada). 1156.

700. *Agabus (Eriglenus) unguicularis*, Th. Sk. Col. IX, p. 101.—Ovalis, sat convexus, niger, vix supra subænescens, antennis pedibusque rufis, femoribus picescentibus subtilissime reticulatus, nitidus, elytris guttula pone medium maculaque apicali pallidis; elytris punctis subseriatis et apicalibus haud profundis, epipleuris basi rufescentibus. Long. 6½, lat. 3¼ m.m.

There is no difference in the sculpture of the sexes in this species: the male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with short hairs bearing very small palettes; the claws of the front feet are short, and the anterior bears a very sharp tooth in the middle beneath.

Europe, (Sweden, South Finland, Stettin, Berlin, Britain). 757.

GROUP 9.

Hind coxæ moderate or rather large, wings of metasternum moderate ; prosternal process acuminate, compressed, finely margined ; swimming legs moderately stout ; middle claws of front feet rather long ; elytra marked with yellow.

Five species from both Old and New Worlds.

701. *Colymbetes tæniolatus*, Harris, *Agabus tæniolatus*, M.C.—Ovalis, sat convexus, nitidus, rufus, vertice et prothorace anterior et posterior ænescentibus, elytris testaceis, lineis longitudinalibus latis plus minusve confluentibus æneis ; supra fere lævigatus. Long. 9, lat. $4\frac{1}{2}$ m.m.

The male has the basal joints of the front tarsi (especially the first one), a little thickened, and furnished beneath with rather short hairs which bear small palettes, the claws are somewhat elongate and the anterior one has a small tooth near the base ; the middle tarsi are scarcely thickened but the basal joint is extremely elongate, its length considerably exceeding that of the longest of the two apical tibial spurs ; the intermediate tibiæ have their inner edge much emarginate.

North America, (Pennsylvania). 761.

702. *Agabus (Gaurodytes) disintegratus*, Crotch, Tr. Am. Ent. Soc. IV, p 416.—Ovalis sat convexus, nitidus, rufus, pectore coxisque posterioribus nigricantibus, vertice et prothorace anterior et posterior ænescentibus, elytris testaceis, lineis longitudinalibus vel discretis vel confluentibus æneis ; supra fere lævigatus. Long. $8\frac{1}{4}$, lat. $4\frac{1}{4}$ m.m.

The male has the basal joints of the front and middle tarsi a little thickened, and furnished beneath with rather short hairs which bear small palettes ; the claws of the front feet are somewhat elongate and the anterior one has a small tooth near the base ; the basal joint of the middle tarsus is somewhat elongate, slightly exceeding in length the tibial spurs ; the tibiæ are quite simple.

The species is readily distinguished from *Colymbetes tæniolatus*, by the undersurface being more or less black, and by the different intermediate legs in the male, and it also has the side wings of the metasternum rather larger. The specimens before me show considerable variation in size and form and markings, and even in some of the structural characters ; the material before me does not enable me to feel certain whether all should be referred to one species or not ; but I am inclined to think this is a species forming more or less localized varieties.

North America. (Kansas, Arizona, Pennsylvania, Nebraska, Canada ; sec. Crotch). 762.

703. *Agabus lineellus*, Lec., M.C.—“Regulariter ovalis, piceo-ferrugineus, nitidus subtilissime reticulatus, elytris testaceis, sutura et vittis utrinque quatuor angustis, nigris antice abbreviatis, nebulisque exterius piceis ornatis, sternis piceis.” Long. $7\frac{1}{4}$, lat. 4 m.m.

I have seen only a single very immature female that I can refer to this species, the reticulation of the elytra is much more distinct than it is in *Colymbetes tæniolatus*, and the mesosternal groove is excessively indistinct being very narrow, and obliquely perpendicular in its direction, the prosternal process short, and with the sides much compressed.

North America, (California). 763.

704. *Agabus lineatus*, Gebl., M.C.—Ovalis, brevis et latiusculus, sat convexus, testaceus, pectore coxisque posterioribus obscuris; elytris subtiliter sed haud obsolete reticulatis, lineis 5 elongatis suturaque nigris. Long. $6\frac{1}{4}$, lat. 4 m.m.

Of this species I have seen only a single immature female individual: it seems very closely allied to *Agabus lineellus* but is shorter, and the hind coxæ are shorter; the prosternal process and mesosternal grooves are similar except that the latter is more horizontal (less oblique).

Siberia. 764.

705. *Dytiscus didymus*, Ol., *Agabus didymus*, M.C.—Ovalis, sat convexus, sat nitidus, robustus, niger, supra ænescens, prothoracis lateribus elytrorumque epipleuris ferrugineis, elytris macula didyma pone medium versus latera, aliaque rotundata apicali pallidis, antennis testaceis, pedibus piceo-rufis; supra sublævigatus, elytris subsericantibus, obsolete punctulatis; prothorace basi utrinque versus angulos posteriores leviter sinuato, his subrectis. Long. 8, lat. $4\frac{3}{4}$ m.m.

The male has the front and middle tarsi distinctly incrassate, and furnished beneath with rather long hairs, bearing small palettes; the claws scarcely differ from those of the female.

The species is very readily distinguished by the peculiar male mark near the side of the elytra, which in clean specimens is always conspicuous, and is formed by two small spots nearly or altogether coalesced.

Central and Southern Europe, and Algeria, (England, France, Germany, Spain, Tangier). 769.

GROUP 10.

Anterior tarsi of male never greatly incrassate, their claws more or less elongate, their undersurface bearing distinct, but not large, palettes. Prosternal process elongate, never broad, but little compressed and not carinate; metasternal groove rather long; wings of metasternum rather large; hind coxæ moderately developed, their front border not much arched; swimming legs moderately slender.

Twelve species from both Old and New Worlds.

706. *Dytiscus congener*, Payk., *Agabus congener*, M.C.—Species variabilis; Ovalis, vel oblongo-ovalis, vix convexus, niger, elytris fusciscentibus, lateribus dilutionibus, prothorace vix ænescente lateribus angustius minus discrete ferrugineis, margine laterali haud lato, antennis pedibusque rufis, his femoribus nigricantibus: prosterni processu elongato, angusto, acuminato, nitido, impunctato, leviter transversim convexo, haud carinato. Long. 7, lat. 4 m.m.

The male has the front and middle tarsi rather elongate, their basal joints distinctly incrassate, and furnished beneath with rather short hairs which bear quite distinct palettes, the claws of the front feet are elongate and but little curved, and very nearly simple, there being a scarcely visible sinuation of their lower edge. In this sex the elytra bear only obscure traces of reticulation, while in the female the sculpture is excessively variable; sometimes the wing-cases in this sex are as free from sculpture as in the male, while sometimes they are densely and distinctly reticulate so as to render the surface dull; the species also varies in colour, size and form, and as the varieties are more or less localized in distribution they lead one to believe at first that they may be distinct species. In Scotland the females are generally very dissimilar to the males, but one also finds rarely there specimens which are intermediate in colour and sculpture between the males and the dissimilar females. In Sweden, according to the few individuals I have seen from there, the females are but little different from the Scotch intermediate form. On Monte Viso, Ghiliani found a brightly coloured form looking just like *Dytiscus paludosus*, and having the females similar in colour and sculpture to the males; while Doria has found at Gnecco a large form in which the difference between the sexes is carried to its extreme. In the variety *Gaurodytes thomsoni* (Sahl. Not. Fem. XI, p. 407) the form is usually narrower and more elongate, and the colour darker, and the females have a slight reticulation near the humeral portion of the elytra. None of the characters however are constant, and as the structural characters remain without variation, I have been compelled to consider all these forms as belonging to but

one species. *Gaurodytes coriaceus*, Sahl., (Not. Fenn. XIV, p. 174) is also I think a variety of the female of this species.

This appears to be an arctic, alpine, and subalpine species.

Europe, Siberia, Greenland, North America, (Sweden, Finland, Lapland, Britain, Germany, France, Northern Italy; Labrador, Hudson's Bay, White Mountains). 744.

707. *Agabus borealis*, (*dissimilis*, Sahl.), n. sp.—Oblongo-ovalis, haud convexus, subnitidus, niger, supra fusco-æneus, elytris versus latera pallidioribus, antennis pedibusque rufis, illis fusco-maculatis, prothorace margine laterali tenuiore; elytris sat nitidis (♂), vel fere opacis (♀). Long 6¼, lat. 3½ m.m.

This is probably another variety of *Dytiscus congener*, with which I have not however united it, as the males have the surface of the elytra rendered a little silky by an excessively fine and indistinct sculpture. The male tarsi, and the other structural characters show no difference from *D. congener*.

Arctic Siberia, (found by Dr. Sahlberg). 745.

708. *Colymbetes ambiguus*, Say, *Agabus ambiguus*, M.C.—Ovalis, vix convexus, niger, elytris rufescentibus, antennis pedibusque rufis, his femoribus nigricantibus, prothorace margine laterali haud lato; prosterni processu elongato, angusto, acuminato, lateribus sat compressis, punctulatis. Long. 6½, lat. 3¾ m.m.

I have seen but two specimens in bad condition, and find the only important difference from *Dytiscus congener*, to be the more carinate and less smooth prosternal process; I have not seen the female: the male has the tarsi formed as in *Dytiscus congener* (No. 706); I shall not be surprised if the examination of other individuals, show this supposed species to be not distinct from *Dytiscus congener*.

The identification with Say's description is by no means a certainty. A specimen was sent me by Leconte as being his *A. morosus*.

North America, (California). 746.

709. *Agabus mutus*, n. sp.—Ovalis, parum convexus, nitidus, haud reticulatus, nigricans, elytrorum lateribus dilutionibus, prothorace subænescente, antennis pedibusque rufis. Long. 6½, lat. 3½ m.m.

The male has the basal joints of the front and middle tarsi scarcely incrassate, and having therefore a very small area beneath furnished with sexual clothing: the front claws are a little longer than in the female, nearly straight, and a little incrassate or laminate; the female is rather duller than the male but has no reticulation.

The species is closely allied to *Dytiscus congener* (No. 706), but is rather smaller

and darker in colour, and the upper surface is still more destitute of reticulation, and the anterior tarsi of the male are more slender.

A series of about twelve specimens shows very little variation.

North America, (Hudson's Bay). 1155.

710. *Agabus anthracinus*, Mann., Bull. Mosc. 1852, II, p. 304.—Ovalis, parum latus, sat convexus, subnitidus, niger, supra ænescens, antennis pedibusque rufis, plus minusve infuscatis, his femoribus picescentibus; supra undique crebrius profunde reticulatus, reticulis elytrorum (præsertim versus apicem) fere transversis. Long. $7\frac{1}{2}$, lat. 4 m.m.

The male has the basal joints of the front and middle tarsi, a good deal incrassate, but much compressed, and furnished beneath with moderately large palettes; the anterior claws are rather elongate and nearly straight, a little unequal, the front one being rather longer than the other, and dilated beneath: the terminal joint of the middle tarsus and its claws are slender. The female resembles the male in sculpture.

The species is allied to *Dytiscus arcticus* (No. 736), although it is so different in the colour: its sculpture although very remarkable is similar to that of *D. arcticus* except in being deeper.

North America, (Hudson's Bay, Canada, Sitkha). 799.

711. *Agabus subfuscatus*, n. sp.—Ovalis, sat nitidus, niger, prothorace subænescente, elytris fusciscentibus, basi lateribusque vage testaceis, antennis pedibusque rufo-testaceis; elytris nullo modo reticulatis, parce subtilissime punctulatis. Long. $7\frac{1}{2}$ lat. 4 m.m.

The male has the front and middle tarsi with the basal joints slightly thickened and furnished beneath with short hairs which bear below distinct palettes; the claws of the front feet are rather elongate and nearly simple. The female differs only by the simple tarsi. The species resembles excessively *Dytiscus congener* (No. 706) but the sculpture of the elytra is slightly different, there being no trace of any reticulation, the hind coxæ are distinctly larger, and the prosternal process slightly more developed, and the supra-articular border is much wider. It is equally similar to *Dytiscus paludosus* (No. 680) but has the mesosternal groove more elongate, and the male tarsi bear distinct palettes.

It is possible that this species and not No. 708 may be the *Colymbetes ambiguus* Say.

North America, (Massachusetts). 749.

712. *Agabus (Gaurodytes) clypealis*, Thoms., Sk. Col. IX, p. 107.—Ovalis, nitidus, niger, prothorace subænescente, lateribus, capite ex parte majore elytrisq̄ue rufescentibus, his dorso late infuscatis, haud reticulatis, subtilissime punctulatis. Long. ? lat. ?

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with short hairs which bear distinct palettes, the claws of the front feet are but little elongate, and are simple. The female I have not seen.

The species is very similar to *Agabus subfuscatus*, but is shorter, and the male front claws are less elongate, and the prosternal process is broader and shorter; it differs from *Dytiscus* congener (No. 706), by its prosternal process, and by the more arched anterior border of the hind coxæ which makes the side wings of the metasternum shorter: it is also extremely similar to *Dytiscus paludosus* (No. 680), but has the side wings of the metasternum shorter, and the metasternal groove longer.

Northern Europe, (Sweden and Finland). 767.

713. *Dytiscus nebulosus*, Forst., *Agabus nebulosus*, M.C.—Ovalis, haud convexus, nitidus, subtus niger, supra testaceus, elytris capiteque nigro-variegatis, prothorace in medio sæpius nigro-bimaculato, antennis pedibusque cum femoribus testaceis. Long. $8\frac{1}{2}$, lat. $4\frac{1}{2}$ m.m.

The markings on the wing cases consist of numerous irregular black spots; the under surface has the margins and sides of the ventral segments as also the articular portions of the hind coxæ more or less yellow. The male has the three basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with long hairs which bear palettes at their extremity, the claws of the front feet are rather long, and the anterior one is thickened or obtusely dentate at the extreme base. In both sexes the surface of the elytra seems to be very smooth, but when a careful examination is made it is seen that the females have the basal portion excessively minutely and finely reticulate or coriaceous.

Europe, Sardinia, Algeria, Syria, Canary Islands. (Sweden, Britain, Germany, France, Spain). 750.

714. *Dytiscus conspersus*, Marsh., *Agabus conspersus*, M.C.—Ovalis, nitidus, (femina interdum subopaca) subtus nigricans, supra flavicans, elytris plus minusve fusco-nebulosis, capite nigricante vertice testaceo-bimaculato, clypeo testaceo, antennis pedibusque rufis, his femoribus plus minusve late infuscatis. Long. 8, lat. $4\frac{1}{2}$ m.m.

This species is variable in the colour of the upper surface which is sometimes, with the exception of the variegated head entirely pallid, the elytra are generally however suffused with vague dark marks, and sometimes the middle of the thorax is also infuscate. The male has the front and middle tarsi with the three basal joints a good deal incrassate, and furnished beneath with long hairs which bear

palettes; the claws of the anterior feet are not elongate, and the front one has the basal half or more a good deal thicker beneath than the apical portion. The females vary much in sculpture, sometimes they are as smooth and shining above as the males, while in the other extreme the surface is quite opaque from a very dense and fine reticulation; forms intermediate between these extremes are to be found, and it is worth notice that these variations of the female are probably to a great extent localised. In *A. godmanni*, Crotch, from the Azores, the sculpture of the surface in the female has become excessively deep so that the surface is very opaque and rugose; and the male has the front and middle tarsi with the basal joints more incrassate, but I cannot consider the form as a distinct species, for in the two males I have seen the claws of the front tarsi are considerably different, in one they are formed as usual in the species, while in the other they are more elongate and have a small tooth near the base; of the female I have seen but one individual so do not know whether it varies: it appears to me then that this will prove to be merely a variety, because there is nothing to distinguish it from Continental specimens except certain sexual disparities and these it seems are variable.

Europe, Corsica, Algeria, Trans-Caucasus, Mesopotamia, Azores; (Denmark, Scotland, England, France, Germany, Spain). 751.

715. *Agabus austinii*, (Crotch), n. sp.—Ovalis, sat convexus, nitidus, subtus capite prosternoque rufis, hoc medio pectore abdomineque nigricantibus, hoc plus minus rufo-variegato, supra fuscus, capite anterius et prothoracis elytrorumque lateribus rufis, antennis pedibusque rufo-testaceis; supra undique evidenter reticulatus, reticulis magnis. Long. $9\frac{1}{2}$, lat. 5 m.m.

The male has the front and middle tarsi distinctly incrassate, and furnished beneath, on a rather narrow space, with moderately long glandular hairs; the claws of the front feet are elongate and nearly straight, and have a swelling at the extreme base, there is no difference in the sculpture of the sexes.

North America, (British Columbia). 792.

716. *Dytiscus striolatus*, Gyll., *Agabus striolatus*, M.C.—Oblongo-ovalis, elongatus, angustulus, minus nitidus, niger, antennis pedibusque rufis; supra undique evidentius reticulatus, retis in elytris elongatis; prothorace angulis posterioribus obtusiusculis. Long. 7, lat. 4 m.m.

The male has the three basal joints of the front and middle tarsi a little incrassate, and furnished beneath with moderately long glandular hairs, the claws of the front feet are rather long, and are simple. In other respects the sexes are quite similar.

Northern Europe; a rare species, (Sweden, Finland, England, the Rhine province; basin of the Seine). 760.

717. *Agabus (Gaurodytes) strigulosus*, Crotch, Tr. Am. Ent. Soc. IV, p. 422.—Oblongo-ovalis, angustulus, niger, supra fuscescens, prothorace elytrorumque lateribus vage testaceis, antennis pedibusque rufis; supra ubique evidenter reticulatus. Long. 6, lat. 3 m.m.

In this species, the reticulation of the upper surface though fine is quite distinct, and forms large meshes, which are as conspicuous on the head and thorax as on the elytra. The male has the three basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with short hairs which bear distinct palettes. The female I have not seen.

The prosternal process in this species is moderately compressed, and is much punctulate: by the form and sculpture a relationship with *Dytiscus striolatus* is suggested, but the male tarsi are differently clothed, and the supra-articular border is quite ordinary.

North America, (California). 748.

GROUP II.

Outline of thorax and elytra discontinuous, male front tarsi slender, but with long claws; prosternal process rather small, nearly flat, very finely margined, feebly punctate; metasternal groove imperfect; swimming legs elongate, slender, and feeble; hind coxæ rather small, but wings of metasternum not large.

Two Old World (Siberian) species.

718. *Agabus sahlbergi*, n. sp.—♂ Oblongo-ovalis, niger, nitidus, antennis palpis pedibusque rufis; prothorace lateribus leviter rotundatis, basi utrinque subrotundato, angulis posterioribus obtusiusculis, margine laterali crasso; elytris nitidis subtilius reticulatis, versus apicem nitidis haud rugosis. Long. $7\frac{2}{3}$, lat. $4\frac{1}{2}$ m.m.

This species is shorter than *Agabus armeniacus* (No. 671), and has the base of the thorax a little more curved and the hind angles more obtuse, and the reticulation of the elytra is not quite so distinct. The difference in the sculpture of the elytra, and the shape of the hind angles of the thorax distinguish it from *Dytiscus guttatus* (No. 670), to which it is closely allied.

I have seen but a single individual, which is a male, and has the three basal joints of the front and middle tarsi a little incrassate and furnished beneath with short hairs; the claws of the front feet are elongate and slender, and a little sinuate, especially the anterior one.

According to Professor Sahlberg this is the species Mannerheim intended to call *A. adpressus*, but is not the one described by Aubé under that name, (vide No. 719).

Dauria. 726.

719. *Agabus adpressus*, Aubé, M.C.—Oblongo-ovalis, niger, nitidus, supra ænesceus, clypeo rufescente, antennis pedibusque rufis; prothorace lateribus sat rotundatis, angulis posterioribus obtusis. Long. 7, lat. $3\frac{1}{4}$ m.m.

There is a difference in the sculpture of the sexes, the female having the elytra extremely finely reticulate, while in the male the reticulation is so obsolete as to easily escape detection: the male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with glandular hairs, and the claws of the front feet are elongate and slightly sinuate beneath. The prosternal process in this species is not broad, and is but little compressed laterally, and is feebly punctulate at the sides, the metasternal cavity is rather short and narrow. The species is closely allied to *Agabus sahlbergi*, but is smaller, and the prosternal process is rather shorter flatter and more punctate, and the sides of the thorax are more contracted at the hind angles.

Arctic Siberia, (Dudinka, J. Sahlberg). 738.

GROUP 12.

Prosternal process small, much compressed; *middle legs very approximate so that the metasternal groove between these is rudimentary and obscure. Sides of thorax rounded.* Coxal lines rather deep and a good deal divergent in front.

Four species from both Old and New Worlds.

720. *Dytiscus wasastjernæ*, Sahl., *Agabus Wasastjernæ*, M.C.—Oblongo-ovalis, niger, supra subænesceus, sat nitidus, antennis pedibusque rufis; prothorace lateribus rotundatis, angulis posterioribus rotundato-obtusis, margine laterali haud crasso; elytris dense evidenter reticulatis et punctulatis. Long. 7, lat. 4 m.m.

The sexes are very similar; in the male the three basal joints of the front and middle tarsi are scarcely incrassate but are furnished beneath with glandular hairs. The apical joints of the antennæ in this species are rather more elongate and slender than in the allies.

Northern Europe; (Sweden, and Finland). 739.

721. *Agabus (Gaurodytes) mimmi*, Sahl., Not. fenn. XIV, p. 182.—Oblongo-ovalis, niger, supra ænescens, antennis pedibusque rufis, vel nitidus et in elytris subtiliter reticulatus punctulatusque (σ), vel sericeo-opacus et subtilissime reticulatus, (ρ); prothorace lato, anteriorius conspicue angustato, lateribus curvatis, angulis posterioribus rotundato-obtusis, margine laterali haud crasso. Long. $7\frac{1}{2}$, lat. 4 m.m.

The male has the three basal joints of the front and middle tarsi a little incrassate and furnished beneath with rather dense and short glandular hairs, the claws of the front feet are elongate, but are scarcely visibly sinuate beneath; the difference in the sculpture of the upper surface in the sexes is very conspicuous.

Northern Europe, (Finland to $66^{\circ} 10'$, according to Sahlberg). 740.

722. *Agabus sibericus*, n. sp.—Oblongo-ovalis, niger, supra ænescens, sat nitidus, antennis pedibusque rufis; prothorace lato, anteriorius conspicue angustato, lateribus curvatis, angulis posterioribus rotundatis, obtusis, margine laterali haud crasso; elytris crebre conspicue reticulatis et punctulatis. Long. $8\frac{1}{2}$, lat. $4\frac{1}{2}$ m.m.

In the male the three basal joints of the front and middle tarsi are a good deal incrassate and furnished beneath with glandular hairs, the claws of the front feet are elongate, but scarcely visibly sinuate beneath; the species is very closely allied to *Dytiscus wasastjernæ* but is larger, and the male has the front tarsi much more differentiated from those of the female.

Eastern Siberia. 741.

723. *Agabus (Gaurodytes) walsinghami*, Crotch, Tr. Am. Ent. Soc. IV, p. 419.—Oblongo-ovalis, niger supra ænescens, nitidus, antennis rufis, pedibus piceo-rufis, illis apice summo nigricante; prothorace anteriorius angustato, lateribus leviter curvatis, angulis posterioribus obtusis, subrotundatis, margine laterali lato; elytris crebrius subtiliter reticulatis, et inconspicue punctulatis, pone medium guttula tenui pallida. Long. $9\frac{1}{2}$, lat. 5 m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate and furnished beneath with long glandular hairs, the claws of the front feet are much elongate and sinuate beneath. There is also a slight but distinct difference in the sculpture of the sexes, the female having a slight silky opacity on the elytra: the front of the head and the sides of the thorax towards the front are rufescent.

North America, (Oregon). 742.

GROUP 13.

Prosternal process acutely raised or carinate along the middle, but its sides little depressed, so that it is not compressed, the sides evenly and distinctly margined; metasternal groove well developed; swimming legs elongate, rather slender; wings of metasternum large or moderate; male front tarsi little incrassate, their claws elongate.

Two species, found in both the Old and New Worlds.

724. *Dytiscus confinis*, Gyll., *Agabus confinis*, M.C.—Oblongo-ovalis, nitidus, sublævigatus, niger, elytris fusco-nigris, externe vage rufescentibus, antennis pedibusque rufis, femoribus plus minusve piceis; elytris vix perspicue punctulatis. Long. 9, lat. $4\frac{1}{2}$ m.m.

In the male the three basal joints of the front tarsi are but little thickened, and bear beneath small palettes which scarcely appear to be placed on hairs, the claws of the front feet are elongate, little curved, and scarcely sinuate beneath. In each sex the elytra appear smooth and shining, but when carefully examined excessively fine and obsolete distant punctures are found to exist, and moreover the female has excessively dense and fine regular reticulation.

Northern Europe, and North America. (Sweden; Finland to 68° North, Sahlberg; Lake Superior; Kansas). 752.

725. *Agabus infuscatus*, Aubé, Spec. p. 330.—Oblongo-ovalis, niger, prothoracis lateribus vage rufescentibus, elytris fusco-nebulosis ad latera pallidioribus, antennis pedibusque rufis, femoribus infuscatis; elytris densius subtilissimeque reticulatis, minus nitidis, punctis subseriatis et apicalibus subobsoletis. Long. 8, lat. $4\frac{1}{4}$ m.m.

This species is readily distinguished by the peculiar uneven or rugose surface of the intra-linear portions of the hind coxæ. The male has the three basal joints of the front and middle tarsi but little incrassate, and furnished beneath with small palettes which do not appear to be placed on hairs; the claws of the front feet are elongate and almost straight and simple: the apical portions of the sixth to tenth joints of the antennæ are a little swollen internally at the apex. The sculpture appears to be the same in each sex.

I have great difficulty in believing this to be Aubé's *A. infuscatus*, though it is so identified by Leconte and others.

United States of North America, (Lake Superior). 753.

GROUP 14.

Hind coxæ large, with acutely arched upper border; wings of the metasternum very slender; prosternal process rather small; swimming legs rather slender; male front tarsi but little incrassate.

Two European species.

726. *Dytiscus femoralis*, Payk., *Agabus femoralis*, M.C.—Ovalis, minus convexus, niger, nitidus, supra ænescens, capite anterior, prothoracis elytrorumque lateribus rufescentibus, antennis pedibusque rufis; elytris subobsolete reticulatis, sed evidenter punctulatis; prothorace margine laterali lato. Long. 6, lat. $3\frac{1}{2}$ m.m.

In the male the basal joints of the front and middle tarsi are slightly thickened, and furnished beneath with moderately long glandular hairs, the claws of the front feet are elongate, and nearly straight and simple; in this sex the front femora are fringed beneath with dense long ciliæ: there is no sexual disparity of sculpture.

Northern Europe; (Sweden; Finland to $68^{\circ} 30'$ according to Sahlberg; Britain, France, Belgium, Germany). 758.

727. *Dytiscus abbreviatus*, Fab., *Agabus abbreviatus*, M.C.—Ovalis, sat convexus, sat nitidus, subtus rufescens, plus minusve picescens, supra ænescens, capite prothoracisque lateribus ferrugineis, elytris fascia transversa subbasali undulata, macula flammulata pone medium versus latera, alteraque apicali parvula, rotundata testaceis, antennis pedibusque rufis; elytris densissime vix perspicue reticulatis subtilissimeque punctulatis. Long. $7\frac{1}{2}$, lat. 4 m.m.

The male has the three basal joints of the front and middle tarsi a little incrassate, and furnished beneath with rather long hairs, which bear small palettes at their apex, the claws scarcely differ from those of the female. The species is easily distinguished amongst its allies by the pale transverse fascia near the base of the elytra; the external portion of the elytra towards the base is also more or less pale.

Central Europe; (Sweden, England, Germany, Belgium, France). 770.

GROUP 15.

Sides of thorax very finely margined, not at all curved; prosternal process very flat, not visibly margined; metasternal groove rather elongate; wings of metasternum large; front border of hind coxæ little arched; swimming legs feeble, and elongate; male front tarsi with the basal joints but little incrassate, the fifth joint angularly dilated in the middle beneath; claws elongate.

A single North European species.

728. *Dytiscus elongatus*, Gyll., *Agabus elongatus*, M. C.—Oblongo-ovalis, angustulus, niger, supra fusco-subæneus, antennis pedibusque testaceis, femoribus plus minusve infuscatis; elytris omnino densissime subtilissimeque reticulatis, sat nitidis; prothorace lateribus haud curvatis, margine laterali subtili. Long. 7, lat. $3\frac{1}{4}$ m.m.

In the male the front tarsi are peculiar in form, the basal joint is a little thickened at its extremity, but the hairs on it and the following two joints are very little indeed, the fifth joint is elongate, and is underneath incrassate about the middle, the claws are elongate, and at the base abruptly bent, especially the hinder one, they are without tooth, but are a little sinuate. The intermediate tarsi have the basal joint a good deal thickened, it and the two following ones bearing a few extremely short and indistinct glandular hairs. There is no difference in the sculpture of the sexes.

The antennæ of this species have a peculiarity, (pointed out by C. J. Thomson) which is not however very conspicuous; they have the 6th to 9th joints a little thickened at the extremity at the lower angle; this is more conspicuous in the male than it is in the female, and the prominent spot in the former sex seems to be a fovea filled with a glandular pubescence.

Northern Europe; (Sweden, and Finland to 64° , according to Sahlberg). 765.

GROUP 16.

Prosternal process compressed on its apical half or through its whole length, finely but quite distinctly margined; wings of metasternum large, or moderately large; swimming legs moderately short; reticulation of upper surface frequently very conspicuous; male front tarsi much incrassate and dilated, their claws various, either short and dentate beneath, or elongate, or very elongate.

Seven species, six of them North American, and one North European.

729. *Agabus reticulatus*, Aubé, Spec. p. 355.—Ovalis, sat convexus, niger, elytris fuscis vel fusco-nigris, limbo externo rufescente, prothorace ad latera anguste minus distincte rufescente, antennis pedibusque rufis, posterioribus piceis; supra undique evidenter reticulatus, vel sat nitidus (σ) et reticulis sat magnis, vel subopacus (φ) et reticulis haud magnis. Long. 8, lat. $4\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a great deal incrassate, and broadly furnished beneath with hairs of which the terminal half bear three

series of small palettes, the claws of the front feet are elongate and nearly straight; the female has the upper surface less shining than the male, and the meshes of the reticulation smaller.

North America. (Lake Superior, Pennsylvania). 793.

730. *Agabus obsoletus*, Lec.(?), M.C.—Ovalis, minus convexus, niger, elytris fusco-nigris, ad humeros plus minusve indistincte rufescentibus, prothoracis lateribus vix ferrugineis, antennis pedibusque rufis, his plus minusve picescentibus. Long. 8, lat. $4\frac{1}{2}$ m.m.

Mas, nitidus, fere levigatus, densissime obsoletissimeque reticulatus.

Fem., elytris subopacis, densius sat profundeque reticulatis, ad apicem lævigatis, reticulis fere parvis.

The male has the three basal joints of the front and middle tarsi much incrassate, and furnished beneath with rather large palettes, about thirty in number on each foot, the basal palettes seem seated directly on the tarsus while the outer ones are borne on hairs; the claws on the front feet are elongate and slender, and sinuate beneath.

The female of this species much resembles that of *Agabus reticulatus*, but has the meshes of the reticulation on the elytra smaller, and the apex quite without scratches.

Western North America. 796.

731. *Agabus (Gaurodytes) lecontei*, Crotch, Tr. Am. Ent. Soc. IV, p. 417.—Ovalis, minus convexus, niger, capite thoraceque æneis, subtiliter (in femina magis conspicue) reticulatis, elytris fusco-rufis, antennis pedibusque rufis, his plus minusve picescentibus. Long. $7\frac{3}{4}$, lat. $4\frac{1}{4}$ m.m.

Mas, elytris nitidis, fere omnino lævigatis.

Fem., elytris subopacis, dense profundeque reticulatis, reticulis circa scutellum angustis et elongatis, parte apicali fere omnino lævigata.

The male has the three basal joints of the front and middle tarsi greatly incrassate, and furnished beneath with rather large palettes; the claws of the front feet are short, and the anterior one is furnished near the apex with a long slender lobe.

The species differs from *A. obsoletus* by the outline of the thorax and elytra being more continuous, as well as by other characters which will be observed from the above diagnosis.

Some individuals have the elytra testaceous, with infusate nebulosities, and probably will prove a distinct species, but as I have seen only males, and these are very similar in their tarsi &c. to the darker form, I do not think it can be properly considered distinct at present.

Western North America. 797.

732. *Agabus griseipennis*, Lec., M.C.—Ovalis fere angustulus, minus convexus, niger, capite thoraceque æneis, hoc margine laterali ferrugineo, subtiliter (in femina magis conspicue) reticulatis, elytris testaceis, infuscatis (basi margineque externo exceptis); antennis pedibusque testaceis, femoribus ex parte nigris. Long. 8, lat. $4\frac{1}{4}$ m.m.

Mas, elytris nitidis, fere omnino lævigatis.

Fem., elytris subopacis, dense profundiusque reticulatis; parte apicali omnino lævigata.

In the male the three basal joints of the front tarsi are greatly incrassate and but little compressed, and are furnished beneath with large palettes, the fourth joint is unusually short, the claws are quite short, and the anterior one is thick, with a slender termination: the intermediate tarsi have the four basal joints much incrassate, and the three basal furnished beneath with large palettes, the claws of the elongate fifth joint are unequal, the hinder or inner one being rather the shorter, and incrassate with a slender, much curved, termination.

Though this species much resembles the pale form of *A. lecontei*, it is distinguished by its narrower, more elongate form, and the slight but quite undoubted differences in the structure of the male feet; the reticulation of the upper surface in the female is deeper than in *A. lecontei*.

Western North America. (Nevada). 798.

733. *Agabus (Gaurodytes) zetterstedti*, Thoms., M.C.—Oblongo-ovalis, minus convexus, subnitidus, niger, capite prothoraceque ænescentibus, elytris fuscis, lateribus dilutioribus, antennis pedibusque testaceis; supra undique densius reticulatus. Long. 9, lat. 5 m.m.

The male has the front and middle tarsi much incrassate, and furnished beneath with large palettes; the claws of the front feet are rather elongate and stout, and but little curved, and slightly sinuate beneath; the sculpture of the upper surface is not so deep as in the female. The species has much superficial resemblance to *Dytiscus sturmi* (No. 737), but is more elongate, and has the upper surface more densely reticulate, and the prosternal process of a different form.

Northern Europe, and Siberia; (Sweden; Finland, to 69° North, Sahlberg). 800.

734. *Agabus obliteratus*, Lec., M.C.—Ovalis, minus convexus, haud latus, fere lævigatus, permitidus, niger, antennis pedibusque rufis, femoribus picescentibus; prothorace margine laterali anguste rufo, elytris fusco-testaceis, basi margineque externo dilutioribus. Long. 8, lat. $4\frac{1}{4}$ m.m.

The male has the three basal joints of the front and middle tarsi greatly incrassate, and furnished beneath with rather large palettes; the claws of the front feet are

elongate and slender, and sinuate beneath: the female agrees with the male in the smooth shining upper surface. I have seen but two individuals of the species, which appears to be extremely closely allied to *Agabus obsoletus* (No. 730), but has the thorax rather smaller, and rather less continuous in outline with the elytra, the colour paler, and the elytra in the female smooth.

North America, (Kansas). 801.

735. *Colymbetes erythropterus*, Say, *Agabus erythropterus*, M.C.—Minus regulariter ovalis, minus convexus, haud nitidus, niger, elytris fuscis, margine externo late rufescente, antennis et tibiis anterioribus rufis, pedibus posterioribus piceis; supra undique crebrius reticulatus; prothorace lateribus conspicue rotundatis. Long. $9\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

The structure of the male feet is very remarkable in this species, the anterior tarsi are much incrassate and compressed, both the fourth and fifth joints being stout, the first joint underneath has its larger portion bare and its apical one densely clothed with glandular hairs, while the hairs on the two following joints bear rather large palettes, the front claws are largely developed and peculiar, the anterior one being greatly thickened beneath, and so with a rounded outline, while its upper edge is nearly straight, the slender hinder one when looked at from behind appears grooved; both bear a small angular tooth at their extreme base: the three basal joints of the middle tarsi are clothed beneath in a similar manner to the front ones, and the fourth joint on middle and front feet seems to be hollow beneath, but to have the cavity clothed with dense short ciliae on each side, the fifth joint of the middle foot is very elongate and its claws large. There is a remarkable sexual difference in the sculpture of the elytra; in the male their surface is covered with well marked reticulations which form (very irregularly) quadrate meshes; while in the female the basal portion of the elytra is densely covered with longitudinal scratches, which form very elongate slender meshes, while the sculpture at the apex is similar to that of the male. The male seems to be rather larger than the female.

North America, (Lake Superior, Pennsylvania). 804.

GROUP 17.

Prosternal process flat, very finely or indistinctly margined; male front tarsi much incrassate, and furnished beneath with remarkably large palettes; wings of metasternum only moderately large; swimming legs moderately long and stout; surface conspicuously reticulate.

Two European species.

736. *Dytiscus arcticus*, Payk., *Agabus arcticus*, *M.C.*—Ovalis, angustulus, supra minus convexus, minus nitidus, subtus nigricans, capite prosternoque ex parte testaceis, supra fuscus, capite anterieus, prothorace lateribus vittaque transversa in medio, elytris lateribus, antennis pedibusque testaceis; supra undique conspicue, erebrius, irregulariter reticulatus; prothorace margine laterali persubtili. Long. 7, lat. 3½ m.m.

The male has the front and middle tarsi much incrassate, and furnished beneath with large quite circular palettes, which appear to be seated directly on the tarsus and are about ten or twelve in number: the front claws are unequal, the posterior one being rather elongate, and slender and sinuate beneath, while the anterior one is rather shorter, and has the basal half thickened so as to form an angular projection beneath. The scratches on the upper surface are very deep in the female, and in this sex there is generally, but not always, a peculiar sinuation of the sides of the thorax just behind the front angles.

The colour varies somewhat.

Northern Europe; Arctic Siberia; (North America, teste Crotch). Sweden; Finland to 69° north, Sahlberg; Scotland; Alsatia, (coll. Castlenau). 794.

737. *Dytiscus sturmi*, Gyll., *Agabus sturmi*, *M.C.*—Ovalis, sat convexus, minus nitidus, nigricans, supra fuscus, capite thoraceque subaenescens, hujus elytrorumque lateribus testaceis, antennis pedibusque testaceis, femoribus medio nigricantibus; supra undique subtiliter crebre reticulatus; prothorace margine laterali subtili. Long. 8, lat 4½ m.m.

The male has the front and middle tarsi a great deal incrassate, and furnished beneath with large palettes which are about twelve in number; the front claws are rather elongate and of about one length and the anterior one is nearly straight beneath; the apical joint of the middle tarsus is very elongate: there is no difference of sculpture in the sexes.

The colour is subject to some variation.

Europe; (Sweden; Finland to 63° North, Sahlberg; Britain, France, Belgium, Germany). 795.

GROUP 18.

Swimming legs highly developed, short and incrassate; prosternal process rather broad, but a good deal compressed; wings of metasternum moderately large; male front tarsi much incrassate, furnished beneath with rather long hairs, bearing rather well developed palettes, claws rather short.

One Japanese species.

738. *Agabus conspicuus*, Sharp, Tr. Ent. Soc. Lond., 1873, p. 48.—Regulariter ovalis, convexus, minus nitidus, niger, elytris fuscis ad latera minus discrete rufescentibus, antennis pedibusque anterioribus testaceis, his femoribus ex parte majore nigricantibus, pedibus posterioribus nigris; supra undique subtiliter sed nullo modo obsolete reticulatus, reticulis subtransversis haud parvis. Long. 11, lat. $6\frac{1}{2}$ m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate but much compressed, and furnished beneath with rather long hairs bearing large palettes, the fourth joint is rather elongate; the anterior claws are rather short, and the front one is thickened beneath, and is emarginate at the base, while the hinder one is thickened at the base; the claws of the intermediate feet are rather long and stout, and simple: there is no sexual difference in sculpture.

This large species is very regular in its outline, the thorax is large, and is sinuate at the base near the hind angles, so that these are nearly acute, the hind legs are short and stout, the sculpture of the elytra is more distinct than in *Dytiscus sturmi*, and the meshes of the reticulation are larger and more transverse in their direction than in that species. The colour varies slightly; when the elytra are expanded it is seen that they are of an obscure yellowish colour, clouded with dense fuscous blotches, which are nearly wanting on the outer part.

Japan. 803.

GROUP 19.

Coxal lines in their anterior part but little directed outwards. Prosternal process rather broad, but always compressed; wings of metasternum large or inoderate; male front tarsi and claws variable.

Nine species from both Old and New Worlds.

739. *Dytiscus chalconotus*, Panz., *Agabus chalconotus*, M.C.—Ovalis, minus convexus, nitidus, niger, supra ænescens, prothoracis elytrorumque lateribus plus minusve rufescentibus, antennis pedibusque anterioribus rufis, his femoribus pedibusque posterioribus picescentibus; elytris dense subtiliter reticulatis. Long. 8, lat. $4\frac{1}{2}$, m.m.

The male has the three basal joints of the front and middle tarsi a little incrassate and furnished beneath with moderately long glandular hairs; the claws of the front feet are moderately long, simple, and very nearly equal: the apical ventral segment is rugose towards the apex especially on each side of the middle.

The species varies somewhat in size and colour.

Europe, Sardinia, Algeria. (Sweden, Finland, Britain, Germany, France, Spain). 771.

740. *Agabus altaicus*, Gebl., M.C.—Ovalis, vix convexus, nitidus, niger, supra ænescens, prothoracis elytrorumque lateribus plus minusve rufescentibus, antennis pedibusque rufis, posterioribus picescentibus; elytris dense subtiliter reticulatis subtiliterque subpunctatis. Long. 7, lat. 4 m.m.

The male has the three basal joints of the front and middle tarsi slightly incrassate, and furnished beneath with moderately long glandular hairs: the claws of the front feet are moderately long, and almost simple, there being only a very slight emargination beneath near the base; the apical ventral segment is rugose at the apex.

The species is very closely allied to *Dytiscus chalconotus*, but is smaller, and has the metasternal groove considerably smaller; and the sculpture of the elytra shows more distinctly than in *D. chalconotus*, that the reticulation has excessively fine punctures placed on it.

Siberia. 772.

741. *Dytiscus vittiger*, Gyll., *Agabus vittiger*, M.C.—Oblongo-ovalis, convexus, niger, nitidus, supra plus minusve ænescens, antennis pedibusque rufis, femoribus picescentibus; elytris evidenter reticulatis, punctis subseriatis majoribus; pone medium vitta parvula laterali maculaque apicali minuta pallidis; prothorace angulis posterioribus rotundatis. Long. $8\frac{1}{2}$, lat. $4\frac{1}{2}$ m.m.

The male has only an extremely slight thickening of the basal joints of the front and middle tarsi, and they are furnished beneath with short glandular hairs, and the claws of the front feet are rather elongate and nearly simple; there is no difference in the sculpture of the upper surface in the sexes; but the apical ventral segment is in the male very deeply strigose, while in the female it is pinched up in the middle, so as to form a short very elevated plica at the apex.

Northern Europe. (Sweden; Finland to $68^{\circ} 30'$, Sahlberg). 759.

742. *Agabus neglectus*, Er., M.C.—Ovalis, vix convexus, subnitidus, niger, supra ænescens, prothoracis elytrorumque lateribus plus minusve rufescentibus, antennis pedibusque rufis, posterioribus piceis; elytris densius subtiliusque reticulatis, et (præsertim versus apicem) subtilius punctulatis. Long. 8, lat. $4\frac{3}{4}$ m.m.

The male has the three basal joints of the front and middle tarsi a little incrassate, and furnished beneath with moderately long glandular hairs; the claws of the front feet are rather long, and their lower edge is a little emarginate near the base so as to render the outline sinuous; the apical ventral segment is very deeply and coarsely rugose. Though very closely allied to *Dytiscus chalconotus* (No. 739), this is an undoubtedly distinct species; the sculpture of the upper surface is finer and denser, and the fine punctures placed on the meshes or reticulations of the elytra are more distinguishable. It is still more closely allied to *Agabus altaicus*,

but is considerably larger, and the rugosity of the apical ventral segment in the male is much greater. The few specimens before me show a little variation in the length of the prosternal process, and in the size of the metasternal groove.

Northern Europe, (Germany ; France ; a very rare species). 774.

743. *Agabus nigro-æneus*, Er., Kaf. Mark. I, p. 157.—Oblongo-ovalis, sat convexus, minus nitidus, niger, supra nigro-æneus, prothoracis elytrorumque marginibus obscure ferrugineis, antennis rufis, pedibus piceis ; elytris dense conspicueque reticulatis. Long. 10, lat. $5\frac{3}{4}$ m.m.

The male has the front and middle tarsi a good deal incrassate, and the three basal joints furnished beneath with rather long glandular hairs, some of which are developed into distinct palettes : on the anterior feet the front claw has the basal portion a good deal thickened, while the posterior one is a good deal emarginate beneath near the base : the apical ventral segment bears deep oblique furrows, which scarcely extend to the flattened or depressed middle portion : the claws of the hind tarsi are shorter and stouter in the male than in the female : and in the former sex the three basal joints of the hind tarsi are provided beneath with swimming hairs, while in the males of the allied species such hairs are confined to the first joint.

Northern Europe, Siberia, North America ; (Sweden ; Finland ; France ; Germany ; Hudson's Bay ; Canada ; California). 776.

744. *Agabus subtilis*, Er., M.C.—Ovalis, sat convexus, minus nitidus, niger, supra nigro-æneus, antennis rufis, pedibus piceo-rufis ; elytris densius subtiliusque reticulatis. Long $9\frac{1}{2}$, lat. $5\frac{1}{4}$ m.m.

The male has the front and middle tarsi a good deal incrassate, and the three basal joints rather thickly furnished beneath with moderately long glandular hairs, some of which are developed into minute palettes ; the anterior claw of the front feet is a good deal thickened in its basal portion, while the posterior one is slightly emarginate near the base : the apical ventral segment is deeply strigose longitudinally on each side of the middle : the hind tarsi in the male also are peculiar in form and greatly approximate to what prevails in the genus *Ilybius*, the fourth joint being externally a little lobed at its lower posterior angle, while the fifth joint is thicker than in the female, and has its lower edge emarginate, and the claws shorter, thicker, and more unequal than in the female.

The species greatly resembles *Agabus neglectus*, but it is larger, and the males are readily distinguished by the structural peculiarities ; the females are extremely similar, and except for the larger size of *A. subtilis* it would be very difficult to distinguish them : *A. subtilis* ♀ has however the minute punctuation on the apical

portion of the elytra more indistinct than it is in *A. neglectus*, and the prothorax decidedly a little longer.

Northern Europe, and Siberia; (Sweden, Finland, Denmark, Germany, Kirgisia, coll. Castlenau). 744.

745. *Agabus politus*, Reiche, M.C.—Ovalis, latiusculus, pernitidus, haud convexus, niger, supra subaenescens, prothoracis elytrorumque lateribus obscure ferrugineis, antennis pedibusque anterioribus rufis, posterioribus piceis; elytris crebre fere obsolete reticulatis. Long. 10, lat. $5\frac{3}{4}$ m.m.

The male has the three basal joints of the front and middle tarsi a little incrassate and furnished beneath with moderately long glandular hairs, the claws of the front feet are slender and simple but rather long.

The species is closely allied to *Agabus gagates*, but is slightly larger, and the reticulation of the upper surface is more effaced, and the lateral margin of the prothorax is rather broader. When immature this species is entirely pale beneath.

Algeria. 777.

746. *Agabus gagates*, Aubé, Spec. p. 306.—Ovalis, latiusculus, nitidus, haud convexus, subtus prosterno mesosternoque ferrugineis, pectore abdomineque piceis, supra aenescens, prothoracis elytrorumque lateribus plus minusve rufescentibus; antennis pedibusque rufis; elytris dense subtiliter reticulatis; prothorace margine laterali angusto. Long. 9, lat. 5 m.m.

The male has the three basal joints of the front and middle tarsi slightly incrassate, and furnished beneath with moderately long glandular hairs; the claws of the front feet are rather long and nearly simple, but each has underneath a minute thickening at some distance from the base, causing the outline to appear a little sinuate.

The species greatly resembles the larger individuals of *Dytiscus chalconotus* (No. 739), but is readily distinguished by the narrower pronotal margin.

North America, (Lake Superior, Pennsylvania). 773.

747. *Agabus discors*, Lec., M.C.—Oblongo-ovalis, haud nitidus, nec convexus, niger, antennis pedibusque rufis, femoribus picescentibus; supra profunde striolato-reticulatus; prothorace lateribus rotundatis, angulis posterioribus obtusis; antennis elongatis. Long. 11, lat. $5\frac{3}{4}$ m.m.

The male has the front and middle tarsi distinctly incrassate, and amply provided beneath with dense elongate hairs not bearing palettes; the anterior claws are elongate, little curved, and distinctly sinuate beneath: two joints of the hind tarsi have swimming hairs beneath. The female I have not seen.

This species has the broad prosternal process greatly compressed, and the middle

legs very approximate, so that the metasternal groove is excessively narrow and indistinct.

North America, (Oregon, Vancouver's Island). 790.

GROUP 20.

Coxal border very wide; the coxal lines gently, not abruptly, turned outwards at the extremity; prosternal process punctulate, slightly raised along the middle.

Four species from both Old and New Worlds.

748. *Agabus melanarius*, Aubé, Spec. p. 353, *Agabus tarsatus*, M.C.—Oblongo-ovalis, niger, sat nitidus, supra haud perspicue venescens, antennis rufis, pedibus piceis; fortiter conspicue reticulatus, prothorace lateribus vix rotundatis, angulis posterioribus obtuse rectis; prosterni processu punctulato medio glabro. Long. 9, lat. 5 m.m.

The male has the three basal joints of the front and middle tarsi a little thickened, and furnished beneath with very short glandular hairs: the anterior claw of the front foot is slightly thickened, and its lower margin a little sinuate.

Northern Europe. (Sweden, Finland, Denmark, Germany, Russia). 730.

749. *Agabus tristis*, Aubé, M.C.—Oblongo-ovalis, superne minus convexus, sat nitidus, fusco-niger, prothoracis lateribus, et vitta transversa post marginem anteriorem, elytris que humeris plus minusve discrete rufescentibus, antennis pedibusque rufis, posterioribus plus minusve infuscatis, corpore subtus plus minusve rufo-variegato; supra undique evidenter reticulatus reticulis magnis. Long. 10½, lat. 5½ m.m.

The male has the three basal joints of the front and middle tarsi much incrassate and amply furnished beneath with short glandular hairs: the claws of the front feet are moderately long, and are scarcely at all more developed than in the female, but the anterior one has a tooth at its extreme base: there is a slight difference in the sculpture of the sexes, the female having the scratches on the basal portion of the elytra placed in a rather more regular and oblique direction, and the meshes formed by them are more elongate.

The species varies a good deal in colour.

Russian America: Arctic Siberia, (Dudinka, Sahlberg). 791.

750. *Agabus wollastoni*, n. sp.—Mas et femina perdisssimiles; oblongo-ovalis, minus convexus, subtus niger, antennis palpis pedibusque rufis; supra undique subtiliter sed evidenter reticulatus; prothorace basi elytrorum latitudine, lateribus obliquis, minus rotundatis, angulis posterioribus vix obtusis. Long. 11, lat. 6 m.m.

Mas, nitidus, elytris fusco-æneis, elytrorum reticulis sat elongatis. Long. 12 m.m.

Fem., opaca, elytris fusco-sub-rutis, ad apicem sat nitidis, subtilius reticulatis, reticulis elongatis, tantum ad apicem latioribus et brevioribus. Long. 11 m.m.

The male has the three basal joints of the front and middle tarsi incrassate, and furnished beneath with glandular hairs, the outer portion of which bear about three series of ill-developed palettes; the claws of both feet are rather elongate, equal and simple: the sexual difference in sculpture and appearance is very striking.

Though the species is approximated by the various varieties of *Dytiscus bipustulatus*, yet on the whole it seems to me that it must be considered a distinct species, until sufficiently intermediate forms can be brought forward. The simple structure of the male tarsal claws, is a prominent distinctive character; the female is excessively close in appearance to the ♀ var. (*Agabus solieri*, Aubé). of *A. bipustulatus*, but it has not the sides of the thorax rounded; in both sexes the prosternal process is rather broader and flatter than in *Dytiscus bipustulatus*, approximating to that of *Agabus melanarius*, Aubé.

Madeira. 806.

751. *Dytiscus bipustulatus*, Linn., *Agabus bipustulatus*, M.C.—Species per variabilis; supra et infra undique strigulosus, niger, supra plus minusve ænescens, antennis palpisque rufis, pedibus piceis, anterioribus dilutioribus; reticulis elytrorum semper in parte basali longitudinalibus, sæpius angustis et elongatis. Long. 10, lat. $5\frac{1}{2}$

The male has the three basal joints of the front and middle tarsi much incrassate, and furnished beneath with glandular hairs, the outer portion of which bear about three rows of ill-developed palettes; a considerable portion of the basal joint on the front feet is bare. The anterior claws are unequal, the front one being moderately long, and bearing a small tooth beneath at the extreme base, while the hinder one is elongate and much dilated behind, the swelling extending over the greater part of the length of the claw but leaving the extremity slender, and causing the outline behind to be much sinuate: the claws on the middle feet are also unequal, both are elongate and very little curved, the anterior one being considerably longer than the other. There is generally a sexual difference in the sculpture of the upper surface the female being duller than the male, and having the longitudinal striæ finer and denser, and on the humeral portion taking a more oblique outward direction, the sculpture at the extreme apex is the same as in the male.

This species which is perhaps the commonest of the European Dytiscidæ is extremely variable as regards size, colour, form, sculpture, sexual disparity, and the form of the male tarsi: the broad supra articular border readily distinguishes it from the other European allies, except *A. melanarius*, Aubé, and that species always

has the meshes of the reticulation on the elytra comparatively broader and shorter, and the prosternal process less compressed at the sides.

Europe, throughout, from Iceland and 69° North according to Sahlberg, to Spain and Portugal; Corsica; Sardinia, Sicily, Algeria, Syria, Persia. 805.

The variation found in this species is very complex and interesting. The ordinary form may be considered to be that in which the female has the surface duller than the male and the longitudinal scratches finer, denser and more oblique, the general form in both sexes being rather regularly oval, the female however being generally just a little narrower and more oblong than the male: on examination under the compound microscope with a half-inch object glass, it appears that the dullness of the surface in the female is caused by minute scale-like reticulations, which are not so deep in the male as in the other sex: this form is that universally found in temperate Europe, and I have it in my collection from as far east as Persia: the size about 9—11 m.m. long, 5—5½ m.m. broad: this may be called the ordinary or typical form. In some of the warmer parts of Europe, there are found large specimens in which the sculpture in the female is quite similar to that of the male, which, as in the ordinary form just mentioned, consists of very elongate, narrow meshes on the basal portion of the elytra: this may be called the South European variety. In the highland districts of Britain, and in the Alps and Iceland, the specimens become smaller, and of a narrower, more oblong and depressed form with the base of the thorax narrower than that of the elytra, and the surface in the female excessively dull, so that the disparity in the appearance of the two sexes is very great: but this form (for females of which Aubè proposed the name “*Agabus solieri*”) is connected with the common temperate European form by every shade of intermediate variation: this may be called the dimorphic Alpine form. In some localities in the Alps and Pyrenees there are found (I believe always at a great elevation) specimens of elongate, narrow and depressed form, with very shining surface, the sculpture in the female being similar to that of the male, and the meshes of the reticulation of the elytra are generally rather broader and shorter than in the ordinary temperate European form. This form has been found by Kiesenwetter in the Alps of Carniola; and has also occurred at Lago Pinter, and in the Hautes Pyrenees; it may be called the monomorphic Alpine form. We have thus the peculiar anomaly that in some Alpine districts the sexual divergence in sculpture of the female from the male is much increased, while in other Alpine districts there is on the contrary convergence of the sculpture of the female to the male, or in fact absolute similarity. I have no evidence that these two Alpine forms of the female are ever found together, indeed all the evidence I have indicates the contrary; thus though I have found great numbers of the dimorphic Alpine form in the mountains about Braemar, I have never found a single female with sculpture at all like that

of the male, while the females before me from Lago Pinter, seven in number are all similar to the males. There thus appear to be two Alpine races, the males of the two being similar while the females are very different. The species however not only varies in sculpture both absolutely (that is in both sexes considered together) and sexually, but it shows quite as great and even more interesting modifications, in what may be called quite structural characters; thus the shape becomes in the Alpine forms very different from what obtains in the plains, and in correspondence with this modification of shape is a change in the legs, which are very much more elongate and slender, (that is less highly developed for swimming) than they are in the individuals of the plain; this diminution in the power of the legs reaches its extreme in the most divergent females of both the Alpine forms.

The male tarsi are subject also to much variation, the amount of their incrassation and the sexual structure of the front claws being each inconstant; the greatest development of the male feet and claws is found in the large individuals of the plains, the smallest in the Alpine forms: in these latter the amount of dilatation of the tarsus is greatly diminished, and the posterior of the claws on the front feet becomes more slender, the dilatation of its hinder edge being in extreme cases very greatly diminished: the front claws moreover are variable independently of Alpine or boreal localization. For I have a male (from Corsica?) in which the anterior claw retains pretty nearly the normal shape, but is not longer than the front one.

It seems very difficult to comprehend these variations. Especially peculiar seems the fact that the males of Alpine and boreal districts depart from the dwellers of the plains in one direction only, and yet their females depart in two opposite directions; equally difficult of explanation is the fact that though disparity in sculpture of the sexes is the rule, yet this disparity disappears in the two forms which in other respects are most widely different from one another, viz., the large and powerful South European variety, and the feeble, monomorphic Alpine variety: we seem however at any rate justified in inferring that the peculiar sculpture of the females bears no correlation to the development of the male tarsi.

GROUP 21.

Anterior portion of prosternum united with prosternal process so as to form a sensible angle; prosternal process compressed; wings of metasternum rather short; coxal lines not greatly turned outwards at the extremity; coxal border small; male anterior tarsi much developed; hind legs slender.

Two Palearctic species.

752. *Dytiscus fuscipennis*, Payk., *Agabus fuscipennis*, M.C.—Ovalis, posterius angustatus, convexus, ferrugineus, subtus plus minusve infuscatus, sat nitidus, fere lævigatus; prothorace elongato, antrorsum conspicue angustato, lateribus obliquis haud curvatis. Long. 10, lat. 5 $\frac{3}{4}$ m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with hairs bearing moderately large palettes, the claws of the front feet are elongate and but little curved, a little sinuate beneath and rather slender.

This species though not much shining has the sculpture only slight, the usual subserial punctures being obsolete, the surface has however an excessively fine and minute reticulation which prevents it being shining, and there is even a very slight sexual difference in this respect, the female being rather duller than the male.

The species varies somewhat in colour, the individuals from Germany being darker than those from Lapland; indeed in the examples from the former of these countries, the prothorax is generally quite infuscate, with the sides reddish.

Northern Europe, Siberia, (Sweden, Finland, North Germany). 807.

753. *Agabus coxalis*, n. sp.—(♂) Ovalis, latus, posterius acuminatus, sat convexus, sublævigatus, minus nitidus, testaceus, subtus et vertice nigro-ornatis, elytris vix fusco-nebulosis; prothorace antrorsum fortiter angustato. Long. 10, lat. 6 m.m.

The male has the three basal joints of the front and middle tarsi very broad, and but little compressed, and they are furnished beneath with rather long hairs, bearing large palettes; the claws on the front feet are very unequal, the front one being short and thick, while the hinder one is quite twice as long; the claws of the intermediate feet are equal and simple. The female I have not seen.

The species resembles *Dytiscus fuscipennis* in form, but is readily distinguished by its variegate undersurface, the hind coxæ being broadly pale yellow in the middle, and surrounded with black; the elytra are rendered dull by an excessively dense and minute but very regular reticulation: the broad male tarsi are remarkable. The serial punctures of the elytra are extremely obsolete.

Eastern Siberia, (Angara); Lapland. 808.

GROUP 22.

Prosternal process extremely compressed; wings of metasternum short, coxal lines much approximated, abruptly turned outwards at the apex; apical joints of antennæ dilated in the male.

Three species from both Old and New Worlds.

754. *Agabus clavatus*, Lec., M.C.—Oblongo-ovalis, sat convexus, fere angustus, nitidus, sublævigatus, ferrugineus, antennarum palparumque apicibus fuscis; prothorace fere brevi, margine laterali sat crasso. Long. 8, lat. 4 m.m.

The male has the five apical joints of the antennæ dilated and flattened, and when the underface of the joints is looked at each is seen to be somewhat distorted or sinuate near the farther inner angle; the basal joints of the front and middle tarsi are a little incrassate, and are somewhat amply furnished beneath with rather small oval palettes; the claws are slender and simple, the front one being longer than the hind one, and but little curved. The female I have not seen. The upper-surface when carefully examined is seen in this species to be sparingly and excessively minutely punctulate.

North America, (Kansas). 809.

755. *Dytiscus serricornis*, Payk., *Agabus serricornis*, M.C.—Ovalis, convexus, subopacus, ferrugineus, supra fusco-æneus, limbo plus minusve ferrugineo; prothorace elongato, antrorsum fortiter angustato, angulis posterioribus subrotundatis, margine laterali haud lato; elytris opacis sublævigatis. Long. ♂ 11, lat. 6 m.m.

The male is considerably larger than the female, and has the four apical joints of the antennæ dilated and flattened, and excavate beneath; the front femora are furnished beneath with long dense ciliæ; the hind legs are very peculiar, their femora are a little depressed or thinned near the trochanters, the tibiæ have their lower face somewhat curved, and their inner edge densely ciliate, and the basal joint of the tarsus has its lower face much curved, and densely ciliate: the front and middle tarsi have their basal joints much incrassate and compressed and amply furnished beneath with moderately large, rounded palettes; the claws of the front feet are elongate, slender, and nearly straight. There is no sexual difference of sculpture, and when the upper surface is examined, its dullness is seen to arise from its being excessively finely and densely reticulate, and it is also seen to be excessively minutely and sparingly punctulate.

North Europe, and Siberia; (Sweden; Finland to 69° 40' North. Sahlberg). 810.

756. *Agabus clavicornis*, n. sp.—Ovalis, sat convexus, subopacus, piceus, supra ænescens, antennis rufis; prothorace sat elongato, antrorsum sat angustato, angulis posterioribus subrotundatis, margine laterali haud lato; elytris opacis sublævigatis. Long. 10½, lat. 6 m.m.

The male is broader than the female and has the four apical joints of the antennæ dilated and flattened, and excavate beneath; the front femora are densely ciliate beneath; the front and middle tarsi are very broad and but little compressed, and are furnished beneath with large palettes; the claws of the front feet are elongate,

equal, and but little curved; the reticulation of the upper surface is less obsolete in the female than in the male, the difference between the two sexes in this respect being more marked on the thorax than on the elytra.

The species is very similar to *Dytiscus serriicornis*, but is broader and flatter, has the thorax less elongate, the male front and middle tarsi remarkably dilated, and the hind legs of that sex simple.

Eastern Siberia. 811.

GROUP 23.

Under-wings reduced to slips; sculpture of the elytra consisting of isolated scratches, of which the basal ones assume an oblique, the outer and apical ones a transverse direction.

One North American species.

757. *Colymbetes bifarius*, Kirby, *Agabus bifarius*, M.C.—Ovalis, sat convexus, niger, supra subaenescens, capite, prothoracis elytrorumque lateribus rufescentibus, antennis pedibusque rufis; elytris strigulis brevibus ad basin obliquis, apicem versus transversis, ornatis. Long. 6, lat. $3\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi distinctly dilated, and furnished beneath with moderately long hairs which bear distinct palettes, the claws of the front feet are rather elongate, very little curved, and scarcely sinuate. I have a male and female before me, and their sculpture is similar, except that the peculiar short scratches are rather more numerous and distinct in the female than in the male; in two specimens from California (in bad condition), the sculpture of the female is different, the surface being opaque and the scratches on the basal part of the elytra are more elongate so as to form a reticulation: a third form, from Hudson's Bay, differs from the Californian one by the scratches being much fewer. It is quite possible that these will prove to be distinct species.

North America. (Canada, Hudson's Bay, California). 766.

I. 47.—Genus *ILYBIOSOMA*.

Hind coxæ largely developed, with greatly arched upper border, so that the wings of the metasternum are very slender, parallel-sided (or linear), but much curved; swimming legs stout and short; epipleuræ behind the middle narrow.

The unique species is found in North America.

758. *Agabus regularis*, Lec., M.C.—Ovalis, crassus, convexiusculus, piceus, supra ænescens, antennis rufis; supra undique densius minus subtiliter reticulatus; thorace cum elytris continuo, antrorsum angustato, margine laterali, lato, humili; elytris pone medium vittula parum conspicua testacea; antennis sat elongatis et gracilibus; pedibus posterioribus brevibus et crassis. Long. 11, lat. 6½ m.m.

The male has the three basal joints of the front and middle tarsi a good deal incrassate, and furnished beneath with moderately short hairs, many of which bear minute palettes. There is no sexual difference of sculpture.

The species is remarkable by its short, thick, hind legs; their development, indeed for swimming organs is more advanced than in any species of *Agabus*.

North America, (San Diego, California). 831.

1. 48.—Genus *PLATYNECTES*.

Side of prothorax with a raised margin; hind coxæ very large, so that the wings of the metasternum are greatly reduced, and are slender and linear: hind legs rather long and slender; epipleuræ behind the middle very narrow.

The thirteen species * of this genus form three groups, viz:—

GROUP 1.—Ventral segments strigose; prosternal process not broad nor flat, but somewhat compressed and carinate along the middle. Male tarsi distinctly incrassate. Upper surface evidently reticulate. Species inhabiting Australia and Tasmania. Nos. 759 to 762.

GROUP 2.—Ventral segments polished prosternal process rather broad, nearly flat, very acuminate. Species found in Australia and Asia. Nos. 763 to 766.

GROUP 3.—Upper surface very polished; prosternal process broad, flat, but little acuminate. Species found in South America. Nos. 767 to 771.

GROUP 1.

759. *Platynectes ænescens*, n. sp.—Ovalis, haud angustus, minus convexus, sat nitidus, supra crebre subtiliter reticulatus, niger, supra ænescens, prothorace ad latera vage angustequè ferrugineo, elytris macula sublaterali pone medium testacea, antennis pedibusque rufis, thorace cum elytris omnino continuo, angulis posterioribus haud acutis; prosterni processu angusto. Long. 6½, lat. 4 m.m.

* In addition to these it is probable that the following names refer to species of this genus. *Agabus bakewelli*, Clark (No. 1181); Australia.—*Agabus lugubris*, Blanch. (No. 1195) ? No. 763 var.; Tasmania.

Agabus tasmania, Clark (No. 1203; near No. 764; Australia, Tasmania.—*Colymbetes lineatus*, Redt. (No. 1237) ? near No. 766; India.—*Colymbetes magellanicus*, Bab. (No. 1238); Patagonia.—*Colymbetes monostigma*, Hope (No. 1240), gen. dub.; Australia.—*Colymbetes octolecim-maculatus*, MacL. (No. 1242); Java.—*Colymbetes submaculatus*, Cast. (No. 1252); near No. 769; Cayenne.

The male has the front and middle tarsi a little incrassate, and furnished beneath with rather long hairs which bear very minute palettes; there is no trace of oblique striæ on the apical ventral segment. There is no difference in the sculpture of the sexes.

Australia. 816.

760. *Agabus reticulosus*, Clk., M.C.—Ovalis, minus brevis, sat convexus, sub-opacus, fusco-niger, antennis pedibusque rufis, capite anterieus prothoraceque lateribus vage rufescentibus, elytris pone medium vitta sublaterali, indeterminata, plus minusve elongata, testacea; supra densius reticulatus; prothorace cum elytris continuo, angulis posterioribus haud acutis; prosterni processu angusto. Long. 7, lat. 4 m.m.

The male has the front and middle tarsi distinctly incrassate and furnished beneath with rather long hairs which bear small palettes; there seems to be a slight sexual difference in the sculpture of the upper surface, the female having the reticulations on the basal portion of the elytra rather denser, and the meshes narrower.

The few specimens I have seen are immature and soft; in them the under surface has the ventral segments somewhat more rufescent than the breast; the colour on the upper surface is very ill-defined, there is a vague rufescent area near the shoulders of the elytra, with which the sublateral mark tends to be connected. The serial punctures of the elytra are excessively obsolete.

Australia. 817.

761. *Platynectes limbatus*, n. sp.—(♂). Ovalis, sat convexus, fere angustus, sub-nitidus, fusco-niger, antennis pedibusque rufis, capite anterieus et prothorace lateribus anguste, elytris lateribus late, rufescentibus; supra densius subtiliusque reticulatus; prothorace cum elytris continuo, angulis posterioribus haud acutis; prosterni processu angusto. Long. 7, lat. vix 4 m.m.

The only individual I have seen is a female, and though very similar to *Agabus reticulosus*, indicates an undoubtedly distinct species, the size is smaller, the form narrower, the upper surface less dull, the outer portion of the elytra more broadly reddish, the serial punctures of the elytra less obsolete, and the coxal lines rather more widely separated.

Australia. 818.

762. *Platynectes obscurus*, n. sp.—Ovalis, fere angustus, sub-convexus, nitidus, niger supra ænescens, elytris vittula sublaterali pone medium testacea, antennis pedibusque rufis; supra crebrius subtiliter reticulatus; thorace cum elytris omnino

continuo, angulis posterioribus haud acutis ; prosterni processu angusto, fere plano. Long. $6\frac{1}{4}$, lat. $3\frac{3}{4}$ m.m.

Though I have seen only a single very mutilated individual, I have no hesitation in considering it a distinct species allied to *Platynectes ænescens*, but making a greater approximation to *Dytiscus decempunctatus* (No. 763), it is narrower and more shining than *P. ænescens*, and the reticulation of the elytra is closer but less regular and distinct, approaching in fact to *D. decempunctatus* in this respect ; the prosternal process also is flatter and slightly broader than in *P. ænescens*, making also a slightly greater approach to that of *D. decempunctatus* ; the specimen described has lost its tarsi, but is probably a male.

Tasmania. 819.

GROUP 2.

763. *Dytiscus decempunctatus*, Fab., *Agabus decempunctatus*, M.C.—Pervariabilis ; Ovalis vel oblongo-ovalis, fere lævigatus, subtilissime reticulatus, per-nitidus, vel subopacus, niger, antennis pedibusque rufis, (posterioribus interdum piceis), plus minusve testaceo-signatus, capite sæpius flavo-trimaculato ; thorace brevi, cum elytris omnino continuo, angulis posterioribus per-acutis, ad elytris arcte applicatis, margine laterali haud alto, sed nec obsoleto, angulis anterioribus sæpius late flavis ; prosterni processu lato, fere plano, apice peracuto. Long 7, lat. 4 m.m.

The male differs from the female by a slight incrassation of the basal joints of the front and middle tarsi, and these being set beneath with hairs which bear very minute palettes, the claws are small and simple ; the male also has the apical ventral segment provided with much coarser, oblique, stria-like rugosities than the female has.

Australia (apparently throughout) ; Tasmania ; New Guinea ; Ternate ; the Philippine Islands ; Java. 812.

This is a very variable species, and some of its forms appear at first to have sufficient differences to justify their being considered distinct species ; the species is apparently very common in Australia, and the careful examination of a great many specimens from different parts of the country has shown me that the various forms are combined in one species by intermediate individuals. It is convenient to consider these forms as four in number, viz., the form which Germar described as *Agabus spilopterus*, of moderate size, about $7-7\frac{1}{2}$ m.m. in length and $4-4\frac{1}{4}$ m.m. in breadth, the anterior spot on the head is large and distinct, as is also the yellow mark at the front angles of the thorax, the upper surface is shining, and the hind legs are moderately long, and not very thick ; the yellow marks on the elytra are a

narrow band near the outer margin not reaching quite to the shoulder or apex, and just within this, beyond the middle, one small spot, or two small spots close together; sometimes there is a small basal spot on each side the scutellum and these may be extended so as to form a transverse yellow basal band; my individuals of this form are chiefly from Melbourne and Adelaide, but I have it also from more northern parts, and even from the extreme North-west of Australia individuals are before me scarcely differing from the Melbourne individuals. The second form is rather larger, about $7\frac{1}{2}$ –8 m.m. long, and differs from the preceding chiefly by the greater extension of the yellow marks of the upper surface, these assume the form of six or eight rather regular lines on each elytron, and a transverse band across the middle of the thorax; and in this form the hind legs are rather thicker and shorter than in the first form; the markings of the upper surface are however so variable that it is difficult to find two individuals in which they are quite similar, the band across the middle of the thorax becomes more or less effaced, and the longitudinal lines on the elytra become interrupted, and at the points where they are interrupted coalesce more or less, so as to form irregular spots, and the spots formed at these points of coalescence sometimes remain when all other traces of the longitudinal lines on the wing-case have disappeared; the specimens I have seen of this form, are from Paroo river, Swan river, Darling river, Sidney, and West Australia.

The third form is again similar to the first one but is shorter and flatter, about $6\frac{1}{2}$ –7 m.m. long, and has the hind legs shorter and thicker than in the first form, and it also has the thorax more strongly transverse, the anterior yellow spot on the head is conspicuous as is also that on the anterior angle of the thorax, but the yellow marks on the elytra are even less conspicuous than in the first form, the lateral line being more abbreviated anteriorly, and the one spot beyond the middle near this line smaller; this form seems specially common on the North-eastern parts; I have it from Sidney, Port Denison, Port Bowen, Brisbane, Rockhampton and Gayndah, and it is probably this form that Macleay named *Agabus mastersi*.

The fourth form is in its well marked developments very different, it is large, about 8 m.m. long, and instead of having the upper surface very shining, it is dull and greasy or silky looking, and the reticulation of the elytra is very indistinct, the middle yellow spot on the head is not large, and the yellow marks on the elytra are extremely reduced so as to appear quite absent, but on examination more or less evident traces of the sublateral band and its adjacent spot (as mentioned in form No. 1) can always be found; the hind legs are long and slender, and the lateral wing of the metasternum is a little larger than in the other forms. This variety has been found at Clyde river, and also by d'Albertisi in the mountains of Victoria in October, 1874.

The majority of the individuals I have observed from Australia may be referred to the above four forms, but there are various points of structure, besides those already alluded to, which are variable; among these may be mentioned the width of the

prosternal process, and the breadth of the prothoracic lateral margin. All the variations I have observed connect more or less with what I have called the first form.

Outside the limits of Australia there occur additional variations, which have no other claim than their geographical separation to be considered distinct species, and which I therefore cannot accept as such. Thus in Tasmania there is found a form differing by the straighter sides of its thorax from the Australian central form, and it has the yellow lateral stripe of the elytra extending without interruption to the humeral angle of the elytra. I have seen but one individual of it, the only Tasmanian specimen of the species that has come before me.

In the Philippine Islands, the *Agabus semperi*, Wehncke, departs but little from the first Australian form, but the spots on the head and front angles of the thorax are reduced in size, as is also the lateral band of the elytra, while on the other hand the two adjacent spots on the elytra have become very conspicuous; the surface is very shining, and the very fine reticulation of the elytra is even more indistinct than in the shining first Australian form.

In Java occurs a form similar to the first Australian form, but with the upper surface nearly entirely black, and with the hind legs more slender; on examination the anterior angles of the thorax are decidedly reddish, and the lateral band and adjacent spot on the elytra may be detected; the upper surface is very shining, and the meshes formed by the very fine scratches of the elytra are rather larger, and have no trace of accompanying minute punctures such as may be found in the Australian form.

Another variety resembles in size, form and sculpture, the individuals from Java and the Philippine Islands, but has the yellow marks on the elytra formed into five very definite spots on each; I have seen individuals agreeing in this respect but differing *inter se* as to minor details, from the Philippine Islands, Ternate, and New Guinea.

764. *Platynectes daemeli*, n. sp.—Ovalis, latus, subdepressus, nitidus, niger, antennis pedibusque rufis; crebre subtiliter reticulatus; prothorace brevi, cum elytris omnino continuo, angulis posterioribus peracutis, ad elytra arcte applicatis; prosterni processu lato, fere plano, apice peracuto; abdomine segmento ultimo ventrali in utroque sexu fere levigato. Long. 7, lat. 4 m.m.

The male differs from the female, only by a slight incrassation of the front and middle tarsi, and by their basal joints being furnished beneath with short glandular hairs.

Though very closely approximated by the flatter and broader varieties of *Dytiscus decempunctatus*, it seems to be really distinct; the form is yet broader, but is more acuminate behind, the variegation of the surface with yellow is nearly absent, the antennæ are always shorter, and the apical ventral segment quite free from strigose

sculpture. The colour varies a little, the front margin of the head, and the sides of the thorax being more or less obscurely reddish, and the sides of the ventral segments more or less conspicuously spotted with red: and by careful examination a minute yellow sublateral spot beyond the middle of the elytra may generally be detected.

Australia. 813.

765. *Agabus latissimus*, Clk., M.C.—Subrotundatus, minus convexus, niger, elytris macula parva pone medium testacea, antennis pedibusque rufis, capite anterieus prothoraceque lateribus piceis; densius subtiliusque reticulatus; prothorace brevi, cum elytris omnino continuo, angulis posterioribus per-acutis, ad elytra arete applicatis; prosterni processu lato, fere plano, apice peracuto. Long. 8, lat. 5 m.m.

The male has the front and middle tarsi slightly incrassate, and the basal joints furnished beneath with short glandular hairs; on each side of the ventral segment there may be seen a few short rather obsolete striæ. The female I have not seen.

This species, so remarkable by its broad, rounded outline, seems very closely allied to *Platynectes daemeli*, from which however its superior size, and the denser reticulation of the upper surface distinguish it.

Australia. 814.

766. *Agabus dissimilis*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 50.—Late ovalis, depressus, pernitidus, fere lævigatus, niger, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus piceis, capite, thoraceque angulis anterioribus flavis, illo utrinque nigricante, elytris plus minusve testaceo-ornatis; thorace brevi, cum elytris omnino continuo, basi utrinque versus angulos posteriores haud sinuato, his vix acutis, margine laterali vix elevato; prosterni processu lato, plano. Long. 5, lat. 3½ m.m.

The male has the front and middle tarsi very slightly incrassate, and furnished beneath with short glandular hairs, and in it the apical ventral segment has some oblique striæ on each side.

The species bears some resemblance to the smaller, broader, and more depressed of the forms of *Dytiscus decempunctatus* (No. 763), but is considerably smaller and more depressed, very smooth and shining, with the side margin of the thorax more obsolete, and the red colour on the head more extended; the marks on the elytra are very variable, sometimes there is a transverse yellow basal fascia, and an apical spot, and several more or less interrupted longitudinal lines, but these elongate lines are often quite absent, and the basal fascia may also entirely disappear, or may be represented by one or two spots; the apical yellow mark more or less connected with a lateral line abbreviated in front, is the most constant mark on the wing-cases.

Japan, China, Northern India. 815.

GROUP 3.

767. *Agabus undecim-guttatus*, Aubé, M.C.—Ovalis, sat latus, subdepressus, pernitidus, subtilissime reticulatus, niger, antennis pedibusque rufis; supra maculis undecim testaceis, parvulis; thorace cum elytris omnino continuo, basi utrinque ad angulos posteriores haud sinuato, his subacutis haud retrorsum spectantibus, margine laterali lato; prosterni processu lato, plano, apice obtuso. Long. $6\frac{1}{2}$, lat. 4 m.m.

The male of this species has a slight incrassation of the front and middle tarsi, and the three basal joints narrow beneath are clothed with short hairs; the apical ventral segment is quite smooth. There is no sexual difference of sculpture. The yellow marks of the upper surface consist of one on the middle of the head, one on each side of the thorax near the side, (the anterior angle being more or less reddish), and four on each elytron, one at the base near the suture, and another near the shoulder, a third near the side beyond the middle, while the fourth is placed near the apex. The excessively fine sculpture of the elytra consists of reticulations, with a minute puncture in the middle of each mesh. The serial punctures of the elytra are fine but quite distinct.

South America, (Brazil). 826.

768. *Agabus decemnotatus*, Aubé, M.C.—Ovalis, latus, subdepressus, pernitidus, fere omnino lævigatus, subtus piceo-rufus, vel rufus, supra piceus, vel nigro-piceus, capite testaceo, utrinque piceo, thorace utrinque late vage testaceo, elytris maculis magnis decem testaceis, thorace cum elytris omnino continuo, basi utrinque ad angulos posteriores sinuato, angulis posterioribus acutis, margine laterali sat lato; prosterni processu lato, plano, apice obtuso. Long. 7, lat. $4\frac{1}{4}$ m.m.

There is very little difference in the sexes of this species, a slight difference in the clothing of the basal joints of the front and middle tarsi being all that distinguish the male. The diminution of the sculpture reaches its extreme in this species, even the marginal punctures of the thorax are extremely fine, while the serial punctures of the elytra can scarcely be distinguished. The yellow spots on each elytra are placed one near the scutellum, one some little distance from the shoulder, one near the suture about the middle, one near the outer margin a little behind the middle, and one near the apex.

South America, (Cayenne). 827.

769. *Platynectes ornatifrons*, n. sp.—Ovalis, sat latus, subdepressus, nitidus, supra densissime subtilissimeque reticulatus, niger, antennis pedibusque rufis, capite in medio testaceo-maculato, thorace ad angulos anteriores rufescente, elytris macula subapicali aliaque parvula sublaterali pone medium testaceis; thorace basi utrinque

ad angulos posteriores subsinuato, his acutis, margine laterali sat lato ; prosterni processu lato, plano, apice obtuso. Long. $7\frac{1}{4}$, lat. $4\frac{1}{2}$ m.m.

The two individuals I have seen of this species are in very bad condition, and I do not know their sex ; they bear a great resemblance to some of the varieties of *Dytiscus decempunctatus* (No. 763), but may be readily distinguished by the blunt point of the prosternal process ; the sculpture of the upper surface is excessively dense and fine, but prevents the appearance of its being polished ; the subserial punctures of the elytra although fine are quite easily distinguished.

South America, (interior of Brazil). 828.

770. *Agabus nigerrimus*, Aubé, M.C.—Rotundato-ovalis, latus, subdepressus, supra densissime subtilissimeque reticulatus, nitidus, niger, antennis pedibusque rufis, capite in medio rufo-maculato ; thorace vix ad angulos anteriores rufescente, basi utrinque vix sinuato, angulis posterioribus subacutis, margine laterali sat lato ; elytris maculis duabus minutis, sublateralibus testaceis, una pone medium altera ad apicem ; prosterni processu lato, plano, apice obtuso. Long. $7\frac{1}{4}$, lat. $4\frac{1}{2}$ m.m.

I have seen only a single individual, in very bad condition, of this species ; though closely allied to *P. ornatifrons*, it is easily distinguished by its broader form. The specimen is a male, its front and middle tarsi are scarcely incrassate, but the basal joints are furnished beneath with dense short hairs ; the apical ventral segment is quite smooth.

South America, (Brazil, coll. de Bonvouloir). 829.

771. *Platynectes parananus*, n. sp.—Rotundato-ovalis, latus, minus depressus sublaevigatus, nitidus, niger, ventre rufescente, antennis pedibusque rufis, capite in medio thoraceque ad angulos anteriores testaceo-maculatis ; elytris maculis tribus parvulis sublateralibus testaceis ; thorace basi utrinque haud sinuato, angulis posterioribus sat acutis, margine laterali fere tenui ; prosterni processu lato, plano, apice obtuso. Long. $7\frac{1}{2}$, lat. 5 m.m.

This species is excessively remarkable by its broad form ; the front legs are more widely distant than usual in the allies, so that the prosternal process appears less abruptly dilated : the sculpture of the upper surface is excessively dense and fine, even the serial punctures being nearly effaced ; the only individual I have seen is a male, but has lost its front tarsi, the middle ones however are rather broadly clothed beneath with short hairs bearing distinct small narrow palettes.

South America, (Parana). 830.

I. 49.—Genus *LEURONECTES*.

Side of prothorax without raised margin ; coxal lines present.

The genus comprises only two* dissimilar species found in South America.

772. *Leuronectes parallelus*, n. sp.—Oblongus, parallelus, subdepressus, nitidissimus, niger, antennis pedibusque rufis, supra subtiliter haud dense reticulatus ; prothorace immarginato, punctis magnis ad margines parallelis ; elytris punctis subseriatis conspicuis ; prosterni processu sat lato, apice acuminato ; tarsis posterioribus gracilibus. Long. 7, lat. $3\frac{1}{2}$ m.m.

The male has only a slight thickening of the front and middle tarsi, and their three basal joints furnished beneath with very short pubescence ; the apical ventral segment is without striæ. The female I have not seen.

This species has the form of our European *Dytiscus striolatus* (No. 716).

South America, (Columbia). 821.

773. *Colymbetes gaudichaudi*, Lap., *Agabus gaudichaudi*, M.C.—Ovalis, latiusculus, subdepressus, densius subtiliter reticulatus, subnitidus, niger, antennis pedibusque rufis, prothorace ad angulos anteriores picescente, elytris macula inconspicua, sublaterali pone medium testacea ; prothorace punctis marginalibus subobsoletis, elytris punctis subseriatis sat conspicuis ; prothorace immarginato ; prosterni processu plano, acuminato ; lineis coxalibus subtilibus. Long. $8\frac{1}{4}$, lat. $4\frac{3}{4}$ m.m.

The male has the three basal joints of the front and middle tarsi moderately incrassate, and rather amply furnished beneath with moderately short glandular hairs, and the apical ventral segment is finely and longitudinally strigose. There is an extremely slight sexual difference in the sculpture of the elytra, this being slightly denser in the female.

Though allied structurally to *Leuronectes parallelus* this species is extremely distinct therefrom by its broad form, and more closely and distinctly sculptured, less shining, upper surface ; the hind legs are rather well developed for swimming.

South America, (Chili). 822.

*A third species, unknown to me, should probably be referred to the genus, viz., *Agabus mulleri*, Kirseh. (No. 1198 huj. op.) ; Bogota.

I. 50.—Genus *AGAMETRUS*.

Side of prothorax without raised margin ; coxal liues absent.

The three species are all South American.

774. *Agametrus labratus*, n. sp.—Ovalis, sat latus, subdepressus, niger, antennis pedibusque rufis, capite antierius prothoraceque ad angulos anteriores late rufescentibus ; thorace basi utrinque haud sinuato, angulis posterioribus vix acutis, præsertim versus latera conspicue reticulato ; elytris nitidissimis, haud dense, obsolete reticulatis, maculis lateralibus duabus inconspicuis, una pone medium, altera ad apicem, testaceis, punctis subseriatis minutis ; thorace margine laterali nullo ; prosterno processu lato, apice acuminato ; lineis coxalibus nullis. Long. $6\frac{1}{2}$, lat. $3\frac{7}{8}$ m.m.

The male has the basal joints of the front and middle tarsi scarcely incrassate and furnished beneath with glandular hairs : the apical ventral segment has a few oblique striæ on each side the middle : there is no sexual difference in the sculpture of the upper surface.

South America, (Venezuela). 823.

775. *Agametrus humilis*, n. sp.—Ovalis, sat latus, niger, antennis pedibusque rufis, capite antierius prothoraceque ad latera late rufescentibus ; thorace basi utrinque subsinuato, angulis posterioribus sat acutis, undique subtiliter reticulato, basi utrinque versus angulos posteriores subimpresso ; elytris nitidissimis, crebrius obsolete reticulatis, maculis lateralibus duabus, una pone medium, altera ad apicem, testaceis, prætereaque linea externa apicali subdistincta ; thorace margine laterali nullo ; prosterni processu lato, apice acuminato ; lineis coxalibus nullis. Long. 7, lat. 4 m.m.

This species is about intermediate between *A. labratus*, and *Colymbetes peruvianus* (No. 776), it is distinguished from the former, by the less distinct reticulation of the thorax, and its more acute posterior angles, and closer reticulation of the elytra. I have seen only females.

South America, (Venezuela). 824.

776. *Colymbetes peruvianus*, Cast., *Copelatus peruvianus*, M.C.—Ovalis, sat latus, subdepressus, nitidus, niger, antennis pedibusque rufis, thorace ad angulos anteriores elytrisque maculis duabus conspicuis (a linea subobsoleta sæpius conjunctis) testaceis ; thorace æquali, undique subtiliter reticulato, basi utrinque sinuato,

angulis posterioribus bene acutis; elytris crebrius obsolete reticulatis, punctis subseriatis minutis; thorace margine laterali nullo; prosterni processu lato, apice acuminato; lineis coxalibus nullis. Long. 8, lat. $4\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with rather short glandular hairs, and in the same sex there are three or four striæ on each side of the apical ventral segment.

South America, (Peru). 825.

I. 51.—Genus *AGABINUS*.

Coxal lines deeply impressed, and very little sinuate so as to be subparallel, the coxal border continued forwards to the posterior border of the metasternum.

The genus consists of a Californian species.

777. *Colymbetes glabrellus*, Motsch., M.C.—Ovalis, sat convexus, pernitidus fere lævigatus, niger, antennis pedibusque rufis vel piceis; thorace cum elytris continuo, angulis posterioribus subrectis; elytris punctis seriatis minutis; tarsis posterioribus gracilibus; lineis coxalibus subparallelis, versus apicem nullo modo extrorsum abductis. Long. $4\frac{3}{4}$, lat. $3\frac{1}{2}$ m.m.

The male characters are very slight, there is scarcely any incrassation of the front and middle tarsi, and their two basal joints only are furnished beneath with small patches of glandular hairs.

North America, (California). 833.

I. 52.—Genus *PLATAMBUS*.

Epipleuræ behind the middle comparatively broad.

The three species are found in the European and Japanese regions.

778. *Dytiscus maculatus*, Linn., *Agabus maculatus*, M.C.—Ovalis, sat convexus, ferrugineus, vertice, prothorace anterior et posterior elytris infuseatis, his margine laterali signaturisque plus minusve extensis testaceis; prothorace haud brevi, margine laterali tenui, angulis posterioribus acutis; elytris ad basin sæpius

sublævigatis, versus apicem dense minuteque rugosis; prosterni processu lato, utrinque longitudinaliter depresso, apice acuminato. Long. 8, lat. $4\frac{1}{4}$ m.m.

The male has the front and middle tarsi a little incrassate, and the three basal joints provided on rather a large space with glandular hairs; the hinder claw on the front feet is a little shorter and thicker than the anterior one. Although the species is very variable in its sculpture, there seems to be no sexual disparity in this respect. It is not easy to find two individuals exactly similar in colour; and the variations of size and sculpture are also very great. The largest individuals I have seen are from Piedmont, and are extremely smooth and shining, the elytra appearing in fact almost free from sculpture: the smallest individuals are those found in Scotland, and in them the sculpture of the wing cases is (comparatively) deep, and the surface dull; and in this same variety the yellow markings of the elytra are reduced to the marginal band. In the mountains of Spain, a variety (*A. graellsii*, Har.) is found having the sculpture dense and deep, and the yellow marks on the elytra forming two or three pale spots on each. All the variations are found, when an extensive series is examined, to be connected together in the most intimate and complicated manner.

Europe. (North America ?); (Sweden; Finland to $68^{\circ} 30'$ North, Sahlberg; Britain; France; Spain; Piedmont; Germany). 834.

779. *Agabus sinuatus*, Aubé, M.C.—Ovalis, statura coloreque variabilis, ferrugineus, vertice, prothorace elytris que variabiliter infuscatis, (vel subænescentibus), his ad basin et ad marginem anteriorem plus minusve testaceo-signatis; corpore supra punctis impressis, crebribus, conspicuis, prætereaque plus minusve minute ruguloso, rugulositate hac versus elytrorum apicem profunda et densissima; prosterni processu lato, plano, tenuiter marginato, haud impresso, apice acuminato. Long. $8\frac{1}{2}$, lat. $4\frac{3}{4}$ m.m.

The three basal joints of the front and middle tarsi are in the male very little incrassate, but they are furnished beneath with moderately long glandular hairs; the front claws are equal, if there be a difference the hinder one is slightly more slender than the front one.

This species seems to be almost as variable as *Dytiscus maculatus*, but may be readily distinguished by the presence of a conspicuous true punctuation on the upper surface, and by the finely margined, unimpressed prosternal process.

Syria, Caucasus, Asia Minor, Northern Persia. 835.

780. *Agabus pictipennis*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 49.—Ovalis, subdepressus, pernitidus, sublævigatus, colore variabilis, ferrugineus, capite et thorace plus minusve infuscatis, elytris fuscis, fascia basali maculisque sublateralibus testaceis; prothorace haud brevi, angulis posterioribus subacutis; elytris omnium obsoletissime

reticulatis, etiam ad apicem haud rugulosis, punctis seriatis magnis; prosterni processu lato fere plano, ad basin utrinque crassius marginato, sed haud conspicue longitudinaliter depresso. Long. $7\frac{1}{2}$ lat. $4\frac{1}{8}$ m.m.

The three basal joints of the front and middle tarsi are scarcely incrassate in the male, but are furnished beneath with moderately long glandular hairs, the claws are slender and simple; there seems to be no sexual difference in sculpture.

The species is probably variable in colour, and is no doubt distinct from *Dytiscus maculatus*, by its very polished surface, depressed form, and less sulcate prosternal process: in this species also the coxal lines are more abruptly deflexed outwards before the apex, so that the form of the coxal processes makes a greater approximation to what exists in *Agabus*.

Japan. 836.

I. 53.—Genus *ILYBIUS*.

Posterior tarsi externally with the hind margins of their joints not straight, but lobate produced; prosternal process very compressed laterally.

This genus comprises twenty-four* species peculiar to the Northern portions of the Old and New Worlds; they form two groups, viz:—

Group 1.—Hind tarsi of the male with the joints externally margined at their lower edge, Nos. 781 to 794.

Group 2.—Hind tarsi of the male not margined at the lower edge externally, Nos. 795 to 804.

GROUP 1.

781. *Dytiscus ater*, De Geer, *Ilybius ater*, M.C.—Ovalis, elongatus, convexus, nigricans, subtus piceus, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus piceis; supra subopacus densius reticulatus, elytris guttulis duabus pallidis; coxis posterioribus evidenter reticulatis, margine anteriore externe parum curvato. Long. 14, lat. $7\frac{1}{2}$ m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate and much compressed, and clothed beneath with long hairs, bearing moderately large palettes; on the front feet the anterior claw is thick, slightly emarginate beneath, with the extremity sharp, the posterior one being not so thick

* And in addition to these, the names in the following list probably refer to species of this genus. *Colymbetes fraterculus*, Lec. (No. 1228); North America.—*Colymbetes lateralis*, Geb. (No. 1235); Siberia.—*Colymbetes picipes*, Kirb. (No. 1244)? near No. 789; North America.—*Colymbetes unguicularis*, Lec. (No. 1256)?= No. 781; North America.—*Ilybius badeni*, Wehneke (No. 1470)?= No. 783; Germany.—*Ilybius kiesenwetteri*, Wehneke (No. 1471); Germany.—*Ilybius ovatus*, Hoch. (No. 1472); Russia.—*Ilybius suffusus*, Crotch (No. 1473); North America.

and more distinctly sinuate beneath ; on the hind foot of this sex the outer claw is shorter than the inner one, and has a more acuminate curved-down termination ; the apical ventral segment has an elevated carina along the middle on the hinder part, and is longitudinally plicate-rugose on each side. In the female the outer claw on the hind foot is greatly curved, and the apical ventral segment at the extremity is compressed in the middle, so that its extremity appears to bear a notch.

The species is subject to a little variation in colour, being sometimes more piceous than black, and having the sides of the thorax and basal portion of the elytra more dilute in colour. It has only a very slight trace of an æneous tint on its upper surface.

Europe, (North America?), Sweden ; Finland to 63° 40', Sahlberg ; Britain, France, Germany, Lithuania). 837.

782. *Dytiscus obscurus*, Marsh., *Ilybius obscurus*, M.C.—Ovalis, convexus, niger, subtus piceus, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus piceis, supra sub-opæus densius reticulatus, reticulis ad elytrorum apicem obsoletis, elytris guttulis duabus pallidis ; coxis posterioribus evidenter reticulatis, margine anteriore externe parum curvato. Long. 11½, lat. 6 m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate and much compressed, and clothed beneath with rather long hairs bearing minute palettes ; on the front feet the anterior claw is not thickened but is distinctly emarginate beneath, while the hinder one is slightly more slender and more distinctly bi-emarginate, so that it has in the middle an excessively minute sharp projection ; the posterior claw on the middle feet has a tendency to assume a similar form, but is sometimes quite simple ; the outer claw of the hind tarsus is short, stout and quite obtuse at the apex ; the apical ventral segment has a carina on the middle of its hinder part, but is but little rugose on each side ; the female has the ventral segment plicate-emarginate at the extremity, but so as generally to appear less emarginate than in *Dytiscus ater*, the outer claw of its hind foot is acuminate and curved at the extremity.

This species is smaller than *Dytiscus ater*, (No. 781), and has the reticulation of the elytra more obsolete at the apex, it has no æneous tinge ; the male can be very easily distinguished from that sex of *D. ater* by the much less development of the hairs of the tarsi. It is more variable in form than *D. ater*, some individuals being a good deal more elongate than others. *Ilybius sexdentatus*, Schiodte, is one of the varieties of this species.

Europe ; (Sweden ; Finland to 68°, Sahlberg ; Britain, France, Germany). 832.

783. *Ilybius subæneus*, Er., M.C.—Ovalis, convexus, haud elongatus, subtus piceus vel rufus, supra æneus, limbo anterior plus minusve ferrugineo, antennis

pedibusque rufis, supra subopacus, densius subtiliusque reticulatus. elytris guttulis duabus pallidis; coxis posterioribus margine exteriori externe parum curvato. Long. $11\frac{1}{2}$, lat. 6 m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate, and clothed beneath with rather long hairs which bear minute palettes; the anterior claw of the front feet is very nearly simple, while the posterior one has its basal portion emarginate beneath and slightly more bent; the whole of the apical portion of the last ventral segment is covered with coarse longitudinal striæ, without any trace of central carina; the outer claw of the hind foot is acuminate, and differs but little from the inner one except that it is much shorter: in the female the apical segment is plicate at the apex, and has the appearance of being rather deeply notched, and it has two or three rugæ on each side.

The species may be readily distinguished from *Dytiscus obscurus* by the metallic upper surface, and by its rather shorter form, as well as by the different male characters. It varies considerably in size and colour, and the individuals I have seen from North America seem to vary even more than those from Europe; but I can find no definite characters to distinguish even the extremest specimens that have come under my observation.

Europe; Arctic Siberia; North America. (Finland to 69° , Sahlberg; Britain †; France; Germany; Jenisei; Hudson's Bay; Canada). 839.

784. *Ilybius pleuriticus*, Lec., Agas. Lake Sup. p. 213.—Ovalis, elongatus, vix convexus, subtus piceus et sub-ænescens, supra æneus, limbo anteriori vage ferrugineo, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus piceis, elytrorum epipleuris ferrugineis; supra sub-opacus, densius reticulatus, elytris guttulis duabus pallidis; coxis posterioribus subtiliter strigosulis, margine anteriore externe haud subito curvato. Long. 12, lat. 6 m.m.

The male has the three basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with long hairs which bear distinct rather large palettes, the anterior claws are rather elongate and each is a little emarginate near the base; the outer claw on the hind foot is rather elongate and thickened, but is distinctly shorter than the inner one, its extremity is sub-obtuse, not at all curved; the apical ventral segment has a short carina in the middle at the extremity, and is but little rugose on each side: the same segment in the female is plicate, and appears to bear a rather deep narrow notch, and is quite without lateral rugosities.

North America. 840.

785. *Ilybius inversus*, n. sp.—Ovalis, haud elongatus, convexus, subtus piceus et sub-ænescens, supra æneus, limbo anteriori vage ferrugineo, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus piceis, elytrorum epipleuris ferru-

gineis; supra subnitidus, crebrius vix subtiliter reticulatus, elytris guttulis duabus (quarum anteriore elongata et conspicua) testaceis; coxis posterioribus subtiliter strigosulis, margine anteriore externe haud subito curvato. Long. $12\frac{1}{2}$, lat. $6\frac{7}{8}$ m.m.

The species differs from *Ilybius pleuriticus*, by its more convex less parallel form and the different reticulation of the upper surface. I have one mutilated individual only of the male before me, its sexual characters seem to be quite the same as in *I. pleuriticus*, but its hind feet being quite gone I cannot speak positively on this point; the female has the apical notch broader than it is in *I. pleuriticus*. The form of the species makes it very similar to *I. subæneus*, but it is readily distinguished therefrom by its more shining and coarser reticulated upper surface, and by the rather more slender outer portion of the metasternal wings.

North America. 841.

786. *Ilybius quadrimaculatus*, Aubé, M.C.—Ovalis, sat elongatus, minus convexus, subtus niger, supra nigro-æneus, antennis rufis, articulis 7–10 extrorsum infuscatis, pedibus piceis, elytris guttulis duabus testaceis, epipleuris nigro-æneis, supra subopacus, densius subtiliter reticulatus; coxis posterioribus subtilius strigosulis et punctatis, margine anteriore externe haud abrupte curvato. Long. $11\frac{1}{4}$, lat. 6 m.m.

The male has three basal joints of the front and middle tarsi, distinctly incrassate, and furnished beneath with moderately long hairs, which bear small palettes; of the front claws the anterior one is slightly thickened, and nearly straight beneath, while the hinder one is a good deal emarginate near the base; on the hind feet the outer claw is nearly similar in form to the inner one, except that it is a good deal shorter; the last ventral segment, has a much elevated carina on the middle of its apical portion, and is also coarsely rugose; the female has the last segment also carinate, and appearing to bear only a very small notch, and is without rugosities.

The species is of a more black colour than its near allies.

North America. 842.

787. *Ilybius crassus*, Th., M.C.—Ovalis, haud elongatus, convexus, subtus nigricans, supra nigro-æneus, antennis pedibusque anterioribus rufis, posterioribus piceis; elytris subopacis, densius reticulatis, punctis subseriatis conspicuis; coxis posterioribus subtiliter strigosulis, margine anteriore extus sat abrupte curvato. Long. $11\frac{1}{4}$, lat. $6\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with moderately long hairs bearing small palettes; the claws on the front feet are moderately long, and nearly simple, the hinder one being however distinctly emarginate near the base; the outer claw on the hind foot is thickened, and subobtusate at its apex, without any deflexed point; the male has no

carina on the last ventral segment, and is only indistinctly rugose on each side; the female has the apical segment briefly plicate at the extremity, and forming a somewhat deep notch.

This species should not be mistaken for *I. subæneus*, for its outline is different, it being broadest behind the middle, the colour is darker, and the serial punctures of the elytra more distinct, and the outer claw on the male hind foot is different, and the anterior border of the hind coxa is more arched.

It is also readily distinguished from *Dytiscus obscurus* (No. 782), by a difference of outline, by its more brassy colour, and the quite distinct reticulation at the apex of the elytra, &c., &c. It approaches perhaps more nearly to *I. quadrimaculatus*, but its form is more convex, and broader behind the middle, the serial punctures of the elytra are more distinct, and the front border of the hind coxa approaches nearer to the middle coxa.

Northern Europe. (Sweden and Finland to 67° 30' according to Sahlberg.) 844.

788. *Dytiscus guttiger*, Gyll., *Ilybius guttiger*, M.C.—Ovalis, fere angustus, sat convexus, subopacus, niger, antennis rufis, pedibus piceis, elytris densius subtiliter reticulatis, punctis subseriatis sat conspicuis, guttulis duabus parum conspicuis testaceis; coxis posterioribus parvis obsolete strigosulis, margine anteriore extus minus abrupte deflexo; prosterni processu apice elongato. Long. 9½, lat. 4¾ m.m.

In the male the basal joints of the front and middle tarsi are a little incrassate, and are furnished beneath with moderately long hairs which bear minute palettes; the claws on the front feet are not elongate, and are nearly simple, being slightly emarginate near the base; on the hind feet the outer claw is a good deal shorter than the inner one, and is somewhat thickened, and has a quite obtuse extremity; the male has a short carina on the last ventral segment, and no rugosities; the female has the apex of the last ventral segment with a broad, but shallow emargination, and in the middle of it a thick short projection.

Europe, (Sweden; Finland to 63° 10', Sahlberg; Britain, France, Germany, Lithuania). 846.

789. *Ilybius ignarus*, Lec., M.C.—Ovalis, angustus, haud convexus, subopacus, niger, antennis rufis, pedibus piceis; elytris densius subtiliter reticulatis, punctis subseriatis sat conspicuis, guttulis duabus parum conspicuis testaceis; coxis posterioribus parvis subtiliter strigosulis, margine anteriore extus minus abrupte deflexo; prosterni processu apice elongato. Long. 9, lat. 4¾ m.m.

The male has the basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with moderately long hairs which bear minute palettes; the front claws are moderately elongate and distinctly sinuate beneath; on the hind feet, the outer claw is but little shorter than the inner one, and has a very minute,

deflexed, acute apex ; the apical ventral segment bears a rather short carina, but no lateral rugosities.

This species though excessively similar to *Dytiscus guttiger*, seems to differ by the more sinuate anterior claws of the male, and the less thickened and less obtuse outer claw of the hind foot, as well as by other slight distinctions.

North America. 847.

790. *Ilybius ænescens*, Th. Op. Ent. II, p. 125.—Ovalis, haud elongatus, subdepressus, fere opacus, subtus nigricans, prosterno elytrorumque epipleuris rufo-obscuris, supra æneus, capite antierius prothoracisque lateribus rufescentibus, antennis pedibusque rufis ; elytris densius subtiliter reticulatis, punctis subseriatis minus conspicuis, guttulisque duabus testaceis indistinctis ; coxis posterioribus obsoletissime strigosulis et punctatis, margine anteriore extus fere abrupte deflexo ; impressione metasternali minus elongato. Long. 8 $\frac{3}{4}$, lat. 4 $\frac{3}{8}$ m.m.

The male has the basal joints of the front and middle tarsi slightly incrassate, and furnished beneath with moderately long hairs bearing minute palettes ; the anterior claws are simple ; on the hind feet the outer claw is but little shorter than the inner, and has a subacute apex ; the apical ventral segment has a very short carina at the apex, and no distinct rugosities ; in the female the last ventral segment bears a rather broad but not deep emargination, in the middle of which there is almost no projection.

The species is excessively closely allied to *Dytiscus guttiger* (No. 788), but besides the slight differences in colour and sculpture, the sexual characters are also a little dissimilar.

Northern Europe, Siberia ; (Sweden ; Finland, to 66° 30', Sahlberg ; Scotland, Belgium, France, Germany, Lithuania). 848.

791. *Dytiscus angustior*, Gyll., *Ilybius angustior*, M.C.—Ovalis, subdepressus, subopacus, niger, supra æneus, antennis pedibusque rufis, illis articulis 7–10 sæpius extrorsum infuscatis, elytris densius subtiliter reticulatis, punctis subseriatis minus conspicuis, guttulis duabus testaceis indistinctis ; coxis posterioribus subtiliter strigosulis, margine anteriore externe leviter deflexo ; prosterni processu apice minus elongato. Long. 9 $\frac{1}{2}$, lat. 5 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate and furnished beneath with moderately long hairs which bear minute palettes ; the claws of the front feet are simple : on the hind feet, the outer claw is shorter than the inner, and is obtuse at the extremity ; the apical ventral segment has a rather sharply elevated carina, and is rugose with elongate coarse striæ. In the female the last ventral segment has an emargination at the apex, in the middle of which there is a coarse fold or plica.

The individuals from Eastern Siberia are a little smaller, less elongate in form, and have the reticulation of the upper surface rather finer than the type form from the Arctic regions: the individual from Labrador is slightly larger and is nearly black, and has the reticulation of the surface not so dense.

Northern Europe and Siberia; Eastern Siberia; Labrador, (Sweden: Finland, to 69°, Sahlberg Germany; Siberia, Kantaika, Angara). 849.

792. *Dytiscus fuliginosus*, Fab., *Ilybius fuliginosus*, M.C.—Ovalis, fere angustus, sat convexus, subnitidus, rufo-testaceus, supra æneus, capite thoracisque lateribus plus minusve ferrugineis, elytris late testaceo-marginatis, margine ante apicem obsolescente; supra densius subtiliusque reticulatus; coxis posterioribus parcius obsoletiusque strigosulis, margine anteriore breviter et minus abrupte deflexo. Long. 10, lat. 5 m.m.

The male has the basal joints of the front and middle tarsi a good deal incrassate, and furnished beneath with long hairs, bearing narrow palettes; the claws of the front feet are moderately elongate, and but little curved, the posterior one being rather broadly emarginate near the base; on the hind feet, the outer claw differs from the inner very little, except that it is considerably shorter; the last ventral segment has the apical portion covered with long though not very deep rugæ, and has a short carina in the middle: the female has a large emargination at the apex of this segment, and in the middle a coarse prominence or short fold.

The species varies a good deal in size; and the yellow colour of the under surface and lateral margin of the elytra seems easily stained of a darker colour by decomposition of the contents of the body.

Europe; North America; (Sweden; Finland to 64°, Sahlberg; Britain, France, Germany). 851.

793. *Ilybius meridionalis*, Aubé, M.C.—Ovalis, haud angustus, sat convexus, subnitidus, subtus piceo-ferrugineus, supra æneus, capite anterius, prothoracis lateribus elytrorumque margine (anterius late) ferrugineis, antennis testaceis, pedibus rufo-piceis; supra densius subtiliusque reticulatus; coxis posterioribus parcius obsoletiusque strigosulis, margine anteriore extus longius et sat abrupte deflexo. Long. 11, lat. 6 m.m.

This species is broader than *Dytiscus fuliginosus*, and has the under surface generally darker, and the pale margin of the elytra less developed and less definite; the sexual characteristics of the two species seem almost exactly the same; although so similar in most respects, the two species can be readily and certainly distinguished by the greater development forwards of the hind coxæ in *I. meridionalis*, so that the wings of the metasternum are more abbreviated, especially in their outer portion.

Southern Europe; Corsica; (France, Spain, Portugal, Italy). 852.

794. *Ilybius limbatus*, n. sp.—Minor, ovalis, sat convexus, subnitidus, testaceus, supra æneus, capite thoraceque plus minusve pallescentibus, elytris margine lato testaceo ad apicem obsolescente, dense punctato-reticulatis; coxis posterioribus fere esculpturatis, margine anteriore extus abrupte deflexo; prosterni processu apice brevi. Long. 8, lat. $4\frac{1}{4}$ m.m.

The male has the middle tarsi with the basal joints a little incrassate, and furnished beneath with moderately long hairs bearing minute palettes; on the hind feet the outer claw is considerably shorter than the inner one and has an acuminate extremity; the apical ventral segment bears no carina, and has the hind margin somewhat obsoletely rugose: the only individual I have seen of this sex has lost its front feet. The female has the last ventral segment almost simple.

Eastern Siberia. 854.

GROUP 2.

795. *Ilybius discedens*, n. sp.—Ovalis, angustulus, sat convexus, sat nitidus, niger, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis; elytris ad basin densius parum perspicue punctato-reticulatis, ad apicem punctulatis, punctis subseriatis conspicuis; coxis posterioribus fere levigatis; prosterni processu sat elongato; tarsis posterioribus articulis tantum breviter lobatis. Long. $7\frac{1}{2}$ – $8\frac{1}{2}$ m.m. lat. 4 – $4\frac{3}{4}$ m.m.

The male has the front and middle tarsi almost simple and unincrassate; the claws of the front feet are rather short, equal in length, the anterior rather dilated, with its lower edge nearly straight, the hinder one rather more slender, and with its basal portion distinctly emarginate beneath. The apical ventral segment has its hinder part thin in the middle and smooth, but with some coarse striæ on each side, its hind margin truncate or rather emarginate truncate: in the female this segment has a strong very short plica, and the appearance of a deep narrow notch at its apex. The claws of the hind feet are nearly similar in the two sexes, they are comparatively little unequal, still the outer is a good deal shorter than the inner, they are both rather slender and acuminate, and the outer one has its apex more curved than the other has, this is especially conspicuous in the female, the apical portion of the outer claw being in it strongly curved.

The species is scarcely so large as *I. guttiger*, to which it has at first sight a resemblance: indeed superficially it suggests itself as a connecting link between *Agabus* and the smaller black *Ilybii*; it has a lateral and an apical yellow mark on each wing case; the hind coxæ are not very large, and yet their front border is not very widely separated from the middle coxæ. The swimming legs are feeble (for its genus) and the group of setæ on the femoral angle is very ill developed.

North America, (Hudson's Bay). 930.

796. *Ilybius obtusus*, n. sp.—Ovalis, haud angustus, subdepressus, fere opacus, niger, supra nigro-subæneus, antennis crassiusculis rufis, articulo ultimo apice fusco, pedibus piceis; prothorace margine laterali lato; elytris densius minus subtiliter reticulatis, et versus apicem fere punctatis, punctis subseriatis magnis; coxis posterioribus subobsolete reticulatis, margine anteriore minus curvato; prosterni processu minus elongato. Long. $9\frac{1}{4}$, lat. 5 m.m.

The female has a plica or fold in the middle of the apex of the last ventral segment, which does not project backwards at all.

I have seen only a single individual of this species, which seems to be a very distinct one, only likely to be confounded with *I. ænescens*, and *Dytiscus angustior* (Nos. 790 and 791), which it resembles in size, and its little elongate prosternal process; but the much more conspicuous sculpture of the elytra will make the determination of this species very easy.

Eastern Siberia. 850.

797. *Dytiscus biguttulus*, Germ., *Ins. sp. nov.* p. 29.—Ovalis, fere brevis, convexus, subtus piceus, supra nigro-æneus, limbo anterior minus ferrugineo, elytrorum epipleuris ferrugineo-æneis, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis; supra sub-opacus, elytris densius subtiliusque reticulatis, guttulis duabus pallidis, quarum posteriore conspicua; coxis posterioribus subtiliter strigosulis et punctatis, margine anteriore extus abrupte curvato; prosterni processu elongato. Long. $9\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with moderately long hairs which bear small palettes; the claws of the front feet are not elongate, the anterior one is very slightly, the hinder rather deeply, emarginate near the base; on the hind feet the outer claw is acuminate, and differs only slightly from the inner, except in its length; the apical ventral segment, has a rather short carina along the middle of its apical portion, and its hind margin is only obscurely rugose from a slight elongation of the punctures which it bears; the female has the apex of the last segment, with a short plica, and a rather broad short apical emargination, and is smooth at the sides,

This species is shorter in form than any of the three preceding; and is smaller than *I. subæneus* No. (789), and has the front border of the hind coxæ more abruptly deflexed at its outer part. It greatly resembles *I. oblitus* (No. 801), but is distinguished by the less approximation of the front border of the hind coxæ to the middle coxal cavity.

North America. 843.

798. *Ilybius similis*, Th., M.C.—Ovalis, convexus, niger, subtus nigro-piceus, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus rufo-piceis,

supra subopacus, densius reticulatus; elytris guttulis duabus pallidis, ad apicem parum sinuato-acuminatis; coxis posterioribus evidenter reticulatis, margine anteriore externe parum curvato. Long. $10\frac{1}{2}$, lat. 6 m.m.

This species is excessively similar to *Dytiscus obscurus* (No. 782), but the male claws are slightly different; on its hind feet the outer claw is more slender and rather longer, and has a minute deflexed sharp extremity; while on the front feet the anterior claw is a little thickened near the base, and appears scarcely sinuate beneath, and the posterior claws are without the minute projection in the middle of its hind margin: the apical ventral segment is deeply rugose on each side: the female is very difficult to distinguish from *D. obscurus*, but the apex of the elytra is less sinuate, and the reticulation there is not quite so obsolete.

Europe, (Sweden; France, Limoges; Germany). 928.

799. *Ilybius laramæus*, Lec, M.C.—Ovalis, angustulus, haud brevis, sat convexus, subtus piceus, supra nigro-æneus, limbo anteriori ferrugineo, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis; supra subopacus, elytris densius reticulatis, guttulis duabus pallidis quarum posteriore conspicua; coxis posterioribus subtiliter strigosulis, margine anteriore extus abrupte curvato, prosterni processu elongato. Long. 10, lat. $5\frac{1}{4}$ m.m.

I have only a single immature individual of this species before me; it is a male and its sexual characters seem to be just the same as those of *Dytiscus biguttulus* (No. 797), but the form is so much narrower that I think it will prove to be a distinct species.

North America. 929.

800. *Ilybius confusus*, Aubé, M.C.—(Immaturus); Ovalis, sat convexus, haud elongatus, ferrugineus, supra posteriori ænescens, crebrius subtiliter reticulatus, elytris guttulis duabus pallidis, coxis posterioribus crebrius reticulatis, margine anteriore extus abrupte curvatis. Long. $11\frac{1}{2}$, lat. $6\frac{1}{4}$ m.m.

The male has the basal joints of the front and middle tarsi a little dilated and furnished beneath with moderately long hairs, bearing small palettes; the claws of the front feet are nearly simple, the hinder one however being emarginate near the base, on the hind feet the outer claw differs but little from the inner one, except that it is distinctly shorter. The apical ventral segment is quite destitute of carina or rugosities.

I have seen of this species only one male (from Dejean's collection) very immature and in very bad condition. I should think the species will prove to be most allied to *I. inversus*, (No. 785), but it has the coxæ more densely and distinctly sculptured and the last ventral segment of the male without carina: and the front border of the hind coxa has its outer part rather more abruptly deflexed.

North America. (Coll. de Bonvouloir, ex mus. Dejean). 845.

801. *Ilybius oblitus*, n. sp.—Ovalis, fere brevis, convexus, subtus piceus, supra nigro-æneus, limbo anterior minus ferrugineo, antennis pedibusque rufis; supra subopacus, elytris densius reticulatis, guttulis duabus, quarum posteriore conspicua, pallidis; coxis posterioribus crebre evidententerque strigosulis, margine anteriore ad coxam intermediam approximato extus abrupte longeque deflexo; prosterni processu brevi. Long. $10\frac{1}{2}$, lat. 6 m.m.

The male has the basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with rather long hairs, which bear distinct palettes, the claws of the front feet are elongate and sinuate, the hinder one of the two especially is slender and much sinuate; on the hind feet the outer claw is elongate, slender and very acuminate, similar in fact to that of the female; the last ventral segment is almost without carina or rugosities; in the female the same segment is, comparatively with *D. biguttulus* (No. 797), but little deflexed-emarginate at the extremity.

Though singularly similar to *Dytiscus biguttulus* this species is readily distinguished therefrom by the greater approximation of the front border of the hind coxa to the middle coxal cavity.

North America. 856.

802. *Dytiscus fenestratus*, Fab., *Ilybius fenestratus*, M.C.—Ovalis, convexus, ferrugineus, supra æneus, limbo ferrugineo, supra subnitidus, densius reticulatus, elytris ad medium versus latera guttula elongata testacea; coxis posterioribus fere esculpturatis, margine anteriore ad coxam intermediam approximato, extus per abrupte longeque deflexo; prosterni processu fere brevi. Long. $11\frac{1}{2}$, lat. 6 m.m.

The male has the basal joints of the front and middle tarsi distinctly incrassate, and furnished beneath with long hairs bearing distinct palettes; the claws of the front feet are long, the anterior one being thickened beneath except on the outer portion which is very acuminate, the hinder one is not quite so long, and is slender and subsinuate; the outer claw on the hind feet is thickened, subobtuse, and considerably shorter than the inner one; the last ventral segment has the hinder part rugose, with a strongly elevated carina in the middle; in the female the hinder part of this segment is very deeply deflexed-emarginate.

Colymbetes prescottii, Mann. (*Ilybius prescottii*, Aubé), is a red variety of this species found in the north.

Europe. (Sweden; Finland to 60° 10' Sahlberg; Britain; France; Germany.) 857.

803. *Ilybiuscinctus* (Sharp), n. sp.—Minor, ovalis, subnitidus, testaceus, supra æneus, capite anterior thoraceque ad latera ferrugineis, elytris margine lato ad apicem trihamato testaceo, densius subtiliusque punctato-reticulatis; coxis posterioribus fere

esculpturatis, margine anteriore extus abrupte minus longe deflexo; prosterni processu apice sat elongato. Long. 8, lat. 4 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with rather short hairs bearing minute palettes: the claws of the front feet are rather short, and the anterior one rather strongly curved; there is only a very slight difference between the two claws on the hind feet, the outer being scarcely at all shorter than the inner one, the apical ventral segment is without carina or rugæ.

I have before me only one extremely immature male individual of this very interesting species, the claws of the hind tarsi completing the connexion in this respect with the genus *Agabus*. It is in size, colour and form extremely similar to *I. limbatus* (No. 794), and in respect to the structure of its coxæ and prosternal process connects it with *Dytiscus fuliginosus* (No. 792), the wings of the metasternum being decidedly a little less abbreviate than in *D. fuliginosus*.

Central Asia, (Yanghi-lissar). 853.

804. *Ilybius apicalis*, Sharp, Tr. Ent. Soc. Lond. 1873. p. 51.—Ovalis, sat convexus, sat nitidus, rufus, supra æneus, limbo late ferrugineo ad apicem trihamato; supra densius subtiliusque reticulatus; pedibus posterioribus brevibus et crassis, coxis valde elongatis, fere esculpturatis, margine anteriore extus abrupte longiusque deflexo. Long. 9, lat. $3\frac{3}{4}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with rather short hairs, which bear small palettes; the claws on the front feet are short, and the anterior one rather strongly curved; the outer claw on the hind feet differs little from the inner one, except that it is distinctly shorter; the last ventral segment is simple in both sexes.

This species is in respect of its hind legs the most highly developed of the *Ilybii*, and by its large hind coxæ approximates to *Coptotomus*; the prosternum has the longitudinal ridge along its middle not so acute as in the other *Ilybii*.

Japan. 855.

UNASSOCIATED GENERA. (Nos. 54 to 60).

The following seven genera are not sufficiently accordant *inter se* to justify their establishment as a natural group; but they may readily be recognized by the following negative characters. They none of them possess the group of ciliæ at the angle of the posterior femur, such as exists in the *Agabini*; and they do not possess the stigmatic rugæ of the *Colymbetini*; and their individuals are nearly always inferior in stature to those of the latter group.

The seven genera may be readily distinguished as follows:—

Front of hind coxa very arched, so that the wing of the metasternum is very slender, and deflexed outside the coxa as a linear band.	Coxal lines obliterated.	{	Coxal incision distinct; upper surface with sculpture. American. }	<i>AGYLMBUS.</i> (<i>Vide</i> p. 596.)	
			Coxal incision wanting; upper surface without sculpture. Asiatic. }	<i>LACCONNECTUS.</i> (<i>Vide</i> p. 598.)	
	Coxal lines present.	{	Coxal border very broad. {	Upper surface with sculpture; thorax without lateral margin; prosternum not sulcate. }	<i>AGABETES</i> (<i>Vide</i> p. 599.)
			Coxal border very narrow. {	Prosternum longitudinally sulcate along the middle. }	<i>MATUS.</i> (<i>Vide</i> p. 599.)
			Coxal lines very close to one another; prosternum but little incrassate along the middle. }	<i>COPELATUS.</i> (<i>Vide</i> below.)	
			Coxal lines normally distant; prosternum much incrassate along the middle. }	<i>COPTOTOMUS.</i> (<i>Vide</i> p. 601.)	
Front border of hind coxa but little arched, wing of metasternum rather large, not linear, not deflexed outside coxa. }				<i>LANCETES.</i> (<i>Vide</i> p. 602.)	

I. 54.—Genus *COPELATUS*.

Coxal lines extremely close to one another, especially in their hinder portions, where just before their abrupt divergence to form the borders of the coxal processes they are very nearly contiguous with the central line forming the suture of the two coxæ; at the anterior part of the coxal processes they become excessively fine so that they can with difficulty be perceived, and are abruptly diverted outwards at right angles to their former course.

The species are numerous* and are found in nearly all the warmer parts of the world; the sculpture of the elytra which frequently consists of elongate striæ offers a ready method of arranging them in fourteen groups; seven of these groups possess in addition to the conspicuous regular striæ, a short additional stria placed

* In addition to those enumerated in the succeeding text, it is probable that the following should be referred to the genus. *Colymbetes limaculatus*, Perroud (No. 1216) ? group 1; New Caledonia.—*Copelatus angustatus*, Chev. (No. 1258) near No. 882; Cuba.—*Copelatus australis*, Clark, (No. 1259) near No. 815; Australia.—*Copelatus basalis*, Boh. (No. 1260); Caffraria.—*Copelatus elongatulus*, MacL. (No. 1261) near No. 898; Australia.—*Copelatus externus*, Kirsch, No. 1262; Peru.—*Copelatus formosus*, Woll. (No. 1263); Africa and Cape Verde Islands.—*Copelatus gallapagoensis*, Wat. (No. 1264) near No. 875; Galapagos Islands.—*Copelatus normalis*, Er. (No. 1265); Peru.—*Copelatus obtusus*, Boh. (No. 1266); Caffraria.—*Copelatus quadrisignatus*, Regt. (No. 1167); Manilla.—*Copelatus striatellus*, Boh. (No. 1268) ? Caffraria.—*Copelatus striaticollis*, Luc. (No. 1269); South America.—*Copelatus substriatus*, Kirsch, (No. 1270); Peru.—*Copelatus undecimstriatus*, Aubé. (No. 1271); Cayenne.—*Dytiscus bicolor*, Fab. (No. 1286); Africa.

very near the outside of the wing-case quite close to the irregular punctures near the epipleural margin, this I have called "submarginal stria"; it is of variable length, sometimes very short.

Elytra without a submarginal stria	{	and without any entire striae,	Group 1.	Nos. 805 to 827.
		but with either three, four, or five true striae on each wing-case,	„ 2.	Nos. 828 to 836.
		with six striae on each wing-case,	„ 3.	No. 837.
		with eight striae on each wing-case,	„ 4.	Nos. 838, 839.
		with ten striae on each wing-case,	„ 5.	Nos. 840 to 845.
		with eleven striae on each wing-case,	„ 6.	No. 846.
		with twelve striae on each wing-case,	„ 7.	No. 847.
Elytra with a sub-marginal stria, and	{	with two other striae on each wing-case,	„ 8.	No. 848.
		with five other striae on each,	„ 9.	Nos. 849, 850.
		with six other striae on each,	„ 10.	Nos. 851 to 864.
		with seven or eight other striae on each,	„ 11.	Nos. 865 to 868.
		with nine or ten other striae on each,	„ 12.	Nos. 869 to 886.
		with eleven other striae on each,	„ 13.	Nos. 887 to 895.
		with twelve other striae on each,	„ 14.	No. 896.

GROUP 1. (Nos. 805 to 827).

Elytra without submarginal stria, and without any entire striae.

This group is a composite one, containing many different forms some of which will probably prove to be different genera. No. 806 appears to have the middle coxæ absolutely contiguous, while in the other species they are separated. No. 827 I have placed in this section, the male being without striae, but the female has seven or eight very fine striae.

805. *Copelatus filiformis*, n. sp.—(♂) *Elongatus*, *angustus*, *parallelus*, *subnitidus*, *testaceus*, *prothorace elytrisq[ue] infuscatis*, *limbo elytrorumq[ue] basi testaceis*; *antennis elongatis tenuibus*; *elytris striis duabus interruptis, obsoletis, lineolisq[ue] subtilibus, sparsis, ornatis*. Long. $4\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.

This is a very distinct species, resembling *Celina australis*, Clark (No. 806,) but with the male front and middle tarsi strongly dilated, and but little compressed. The very fine scratches on the elytra have a slightly oblique direction. I have seen only one individual.

Himalaya, (Coll. Wehncke). 717.

806. *Celina australis*, Clk., M.C.—Oblongus, angustulus, elongatus, parallelus, depressus, minus nitidus, ferrugineus, elytris abdomineque piceis, illis lateribus dilutioribus; prothorace elytrisque fere æqualiter breviter strigulosis, his seriebus duabus punctorum distinctis, strigulis ad apicem obliquis. Long. 5½, lat. vix. 2½ m.m.

The few specimens I have seen of this distinct species seem to be all females. The peculiar parallel elongate form, and the distinct, regularly distributed short fine striæ, or scratches, of the upper surface separate it at once from the other Australian species.

Australia, (Melbourne, Rockhampton). 667.

807. *Copelatus hydroporoides*, n. sp.—*Fem.*, Oblongo-ovalis, haud elongatus, subdepressus, minus nitidus, ferrugineus, plus minusve infuscatus, prothoracis lateribus elytrorumque basi dilutioribus, capite sat conspicue punctulato; prothorace medio late sublevigato, ad angulos posteriores punctato; elytris crebre, æqualiter fortiterque punctatis. Long. 5, lat. 2½ m.m.

I have seen only a single female, in bad condition, of this very distinct species; it bears a good deal of resemblance to the European *Hydroporus ferrugineus*, (No. 636).

New Caledonia. 684.

808. *Copelatus gracilis*, n. sp.—Oblongo-ovalis, angustulus, sat parallelus, subdepressus, ferrugineus, elytris abdomineque castaneis, illis basi dilutiore, antennis pedibusque testaceis; elytris seriebus tribus punctorum, prætereaque parce subtilissime punctatis. Long. 4, lat. 2 m.m.

The male differs from the female only by a very slight thickening of the front and middle tarsi.

Australia, (Rockhampton). 661.

809. *Copelatus victoriae*, Clk., M.C.—Ovalis, angustulus, minus depressus, haud parallelus, pone medium evidenter latior, ferrugineus, elytris testaceis, pectore abdomineque nigricantibus, elytris seriebus tribus punctorum sat distinctis, versus apicem sine strigulis transversis distinctis. Long. 4½, lat. 2¼ m.m.

The male is distinguished from the female only by a slight thickening of the front and middle tarsi. The species is readily distinguished from *C. gracilis* by the differences in form and colour.

Australia, (Melbourne). 662.

810. *Copelatus ferrugineus*, n. sp.—Ovalis, angustulus, minus depressus, vix parallelus, ferrugineus, elytris testaceis; elytris seriebus punctorum sat distinctis, et versus apicem strigulis transversis distinctis; prothorace ad angulos posteriores punctis strigulosis paucis. Long. $4\frac{1}{4}$, lat. $2\frac{1}{8}$ m.m.

The male has the front and middle tarsi a little dilated. The species is very closely allied to *C. victoriæ*, but is a little larger; the most important difference seems to be the distinctness of the transverse scratches on the hind part of the elytra.

Australia, (Port Denison). 663.

811. *Copelatus lividus*, n. sp.—Ovalis, angustulus, elongatus, minus depressus, ferrugineus, elytris testaceis, abdomine pectoreque nigris; elytris seriebus punctorum sat distinctis, versus apicem strigulis transversis distinctis; prothorace ad angulos posteriores punctis strigulosis paucis. Long. $5\frac{1}{2}$, lat. $2\frac{5}{8}$ m.m.

The male has the front and middle tarsi a little dilated. The species is very closely allied to the three preceding, but is larger than any of them.

Australia, (Adelaide, Melbourne). 664.

812. *Copelatus labratus*, n. sp.—*Fem.*, Ovalis, angustulus, elongatus, minus depressus, piceus, capite prothoracisque lateribus plus minusve dilutionibus, antennis pedibusque testaceis; prothorace ad latera strigulis brevibus crebribus, disco latius lævigato, medio brevissime canaliculato; elytris seriebus punctorum sat distinctis, crebrius punctulatis, sed ad latera in medio haud conspicue longitudinaliter strigulosis. Long. $5\frac{1}{2}$, lat. $2\frac{5}{8}$ m.m.

I have seen only females of this species which differs from those following by its smaller size, and by the much diminished development of the short longitudinal impressions on the upper surface.

Australia, (Melbourne, Victoria). 665.

813. *Copelatus simplex*, Clk., M.C.—Ovalis, angustus, elongatus, niger, capite anterius prothoracisque lateribus rufis, elytris versus latera dilutionibus, antennis pedibusque testaceis; elytris seriebus punctorum minus distinctis, obsolete punctulatis, in femina (cumque thorace) latius longitudinaliter strigulosis. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

The male has the front and middle tarsi moderately dilated, and the anterior claw on the front feet is thicker than the posterior, but a little before the apex becomes rather suddenly slender; the female has the sides of the thorax broadly,

as well as the basal portion of the elytra, covered with regular, fine, short, distinct longitudinal impressions.

Australia and Tasmania, (Melbourne). 666.

814. *Copelatus ater*, n. sp.—Ovalis, minus angustus, subdepressus, niger, capite thoraceque ad angulos anteriores picco-rufis, antennis pedibusque rufis; prothorace ad latera subtilissime strigoso-punctato; elytris crebre evidenter punctatis, seriebus punctorum sub-distinctis; coxis posterioribus fortiter crebreque strigosis. Long. $7\frac{1}{4}$, lat. $3\frac{3}{4}$ m.m.

The male has the front and middle tarsi a good deal dilated; the anterior claw of the front foot is thicker than the other, and is straight beneath, and has an extremely short, slender termination; there is no difference in the sculpture of the two sexes, except that the female has the strigose punctuation at the sides of the thorax just perceptibly more distinct. The species is about the size of the European *Dytiscus agilis* (No. 825), but is broader and less parallel; of all the *Copelati* it is the species most resembling an *Agabus* by the superficial characters of colour, form, and sculpture.

Australia, (Swan River, K. George Sound). 668.

815. *Copelatus extensus*, n. sp.—*Fem.*, Oblongo-ovalis, elongatus, niger, thorace ad latera picescente, antennis pedibusque rufis; elytris seriebus punctorum distinctis, absque strigulis; coxis posterioribus strigulis crebribus profundis. Long. 10, lat. $4\frac{5}{8}$ m.m.

There are only a very few insignificant scratches on the thorax, and none at all on the elytra. I have only seen a single individual: though it much resembles at first sight *C. aceductus* (No. 819), it is very distinct therefrom by the sculpture of the thorax and elytra.

Australia, (Brisbane). 669.

816. *Copelatus maculatus* (Wehmeke), n. sp.—*Fem.*, Oblongo-ovalis, elongatus, sat depressus, minus nitidus, niger, prothoracis lateribus picescentibus, elytris apice rufo-maculatis, antennis pedibusque rufis; capite crebre evidenter punctato; thorace medio lævigato, versus latera strigulis omnium brevissimis parcioribus; elytris strigulis brevissimis numerosis undique fere æqualiter ornatis. Long. $6\frac{3}{4}$, lat. $3\frac{2}{5}$ m.m.

I have seen only a single, very mutilated, individual of the female sex.

New Caledonia. 683.

817. *Copelatus melanarius*, n. sp.—Oblongo-ovalis, haud parallelus, niger, capite anteriori prothoraceque ad latera rufescentibus, antennis pedibusque rufis; thorace ad latera latius subtilissime striguloso-punctato; elytris seriebus punctorum distinctis, in mare fere sine strigulis, in femina ad latera strigulis subtilissimis densis plus minusve extensis; coxis posterioribus crebre subtiliter strigulosis. Long. 9, lat. $4\frac{1}{4}$ m.m.

The male has the front and middle tarsi dilated; and the anterior claw of the front foot is slightly thickened and bisinuate beneath, the apical portion being more slender than the rest: in the female there are on the sides of the elytra near the middle some very dense and fine scratches which are variable in their extent. The species varies somewhat in size and sculpture; there are sometimes a few scratches in the male on the basal portion of the elytra between the first, second, and third series of punctures. In a small narrow variety from Clarence River, the elytra of the female are covered with the dense fine scratches over a great extent, only the apex and a narrow space along the suture being free from them.

Australia, (Clarence River). 670.

818. *Copelatus nigrutilus*, n. sp.—Oblongo-ovalis, minus depressus, niger, nitidus, capite anteriori prothoraceque ad latera rufescentibus, antennis pedibusque rufis; prothorace strigulis brevibus sparsis conspicuis; elytris seriebus punctorum minus distinctis, strigulis brevibus, minus subtilibus, sat numerosis, ad apicem omnino desinentibus; coxis posterioribus strigulis crebribus profundis. Long. $8\frac{1}{2}$, lat. 4 m.m.

The male has the front and middle tarsi dilated, and the anterior claw of the front feet stouter but with a slender terminal portion. In the female the scratches on the elytra are slightly finer than in the male, and in some specimens their number is increased.

The specimens before me show a great deal of variation especially as to the development and extent of the sculpture of the upper surface. The above diagnosis represents the majority of individuals, but certain forms have quite as extensive a development of the sculpture, as is found in *C. aceductus*. It is very probable that it may ultimately prove there is a series of closely allied species of this group.

Australia, Tasmania. 671.

819. *Copelatus aceductus*, Clk., M.C.—Oblongo-ovalis, minus depressus, elongatus, capite prothoraceque anteriori versus latera rufescentibus, antennis pedibusque rufis; prothorace strigulis brevibus conspicuis; elytris fere sine seriebus punctorum, strigulis brevibus rudis numerosis, posterioribus subtilioribus, et longius versus apicem extensis. Long. 10, lat. $4\frac{1}{2}$ m.m.

The male has the front and middle tarsi dilated, and the claws of the front feet nearly simple: there is no evident difference in the sculpture of the sexes.

I have separated this from the numerous forms I have considered as being *C. nigritulus*, chiefly on account of the less dilated male tarsi, and the simple front claws.

Australia, (Melbourne). 672.

820. *Copelatus subjectus*, n. sp.—Ovalis, sat angustus et elongatus, subdepressus, nigricans, elytris piceis, prothoracis lateribus elytrorumque basi dilutioribus, antennis pedibusque rufis; capite crebre subtilius punctulato; prothorace sublevi; elytris seriebus punctorum tribus vel quatuor distinctis. Long. 6, lat. vix 3 m.m.

In this species there are on the elytra two very distinct series of punctures, and between them is another series less distinct because the punctures composing it are much fewer in number, *i.e.* placed at a greater distance from one another; there is also a more external series which is less regular and distinct. I have seen only two individuals of this species, and suspect they are males, though the tarsi are scarcely perceptibly thickened.

New Caledonia. 673.

821. *Colymbetes parvulus*, Boisd., *Agabus parvulus*, M.C.—Oblongo-ovalis, haud elongatus, sat depressus, subopacus, fusco-rufus, anterius dilutior, antennis pedibusque testaceis; elytris seriebus punctorum obsoletis. Long. $4\frac{1}{2}$, lat. $2\frac{1}{3}$ m.m.

This little species has the upper surface less shining than usual, owing to its being very finely reticulate or coriaceous; other sculpture is nearly absent. The sexes are difficult to distinguish, there being only a slightly greater development of the front and middle tarsi in the male.

Hawaiian Islands. 674.

822. *Copelatus politus*, n. sp.—Oblongo-ovalis, depressus, pernitidus, fere lævis, piceus, supra magis nigricans, antennis pedibusque rufis; fere levigatus. Long. 4, lat. 2 m.m.

The male has the front and middle tarsi very little dilated, but the intermediate joints of the antennæ are broad and flattened, the third joint very strongly so, and the three following ones to a gradually diminished extent.

New Guinea, (Hatam, July, 1875, Dr. Beccari). 660.

823. *Copelatus insolitus*, Chev., M.C.—Oblongus, sat angustus, subdepressus, nitidus, testaceus, prothorace medio late infuscato, elytris fusco-testaceis basi

apiceque pallidis, abdomine pectoreque rufescentibus; elytris seriebus tribus subtilibus punctorum. Long. 5, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi a good deal dilated, and its front tibiæ are slender, with their upper part curved and on the inside broadly but little deeply emarginate below the knee. The female is unknown to me. The smooth surface, with not very distinct series of punctures on the elytra, after the manner so common in *Hydroporus*, renders the species very easy to distinguish.

Cuba, St. Domingo. 658.

824. *Copelatus inornatus*, n. sp.—Ovalis, latiusculus, subdepressus, nitidulus, lævis, niger, prothorace versus angulos anteriores piceo, antennis pedibusque rufotestaceis; elytris seriebus tribus punctorum subtilissimorum. Long. 7, lat. $3\frac{3}{4}$ m.m.

The male has the front and middle tarsi moderately dilated, and the front tibiæ simple. I have not seen the other sex. The species seems allied to *Copelatus ater*, (No. 814), but the upper surface is smooth, not punctulate as in that species.

South America? I am not at all sure that this locality will prove to be the correct habitat for this distinct species. 682.

825. *Dytiscus agilis*, Fab., *Liopterus agilis*, M.C.—Sub-oblongus, minus depressus, sat nitidus, castaneus, capite infra utrinque, abdomine pectoreque nigris, antennis pedibusque rufis; capite fortiter punctato, anterius sublævigato; thorace maris subtiliter punctulato, feminae dense brevissime striguloso; elytris in utroque sexu dense brevissime striguloso, sed ad apicem punctato, seriebus punctorum sub-distinctis; coxis posterioribus crebre conspicue strigulosis. Long. $7\frac{1}{2}$, lat. $3\frac{1}{2}$ m.m.

Besides the difference in the sculpture of the thorax there is also a slight but positive sexual difference in the sculpture of the basal part of the elytra; the male moreover, is readily distinguished by the broadly dilated front and middle tarsi; its front tibiæ are simple. The species seems subject to little or no variation.

Europe; (Sweden, Denmark, England, France, Corsica, Germany, Sarepta). 687.

826. *Copelatus atriceps*, n. sp.—Oblongo-ovalis, minus depressus, nitidus, testaceo-castaneus, capite plus minusve evidenter nigricante, prosterno in medio, abdomine pectoreque nigris, antennis pedibusque testaceis; subtilissime punctulatus, elytris seriebus punctorum subdistinctis; coxis posterioribus vix conspicue strigulosis. Long. 7, lat. $3\frac{1}{2}$ m.m.

The male has the front and middle tarsi broadly dilated, and the front tibiæ simple; the anterior claw of the front foot is shorter than the other claw. The female when carefully examined, is seen to have on each wing-case towards the

humeral portion numerous excessively fine and short scratches, and similar marks may also be perceived on the sides of the prothorax.

Algeria, Corsica. 826.

827. *Copelatus dimorphus*, n. sp.—Oblongo-ovalis, minus parallelus et depressus, haud elongatus, nigricans, capite elytrorumque apice piceis, prothoracis lateribus antennis pedibusque rufis; elytris maris seriebus quatuor subtilibus punctorum, feminae striis subtilibus circiter decem plus minusve interruptis, alternis posterioribus longe abbreviatis. Long. $4\frac{3}{4}$, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi a good deal dilated, and the front tibiae thick, short and nearly simple, the thorax with very little sculpture, the elytra with about four series of fine elongate punctures. The female has rather numerous fine short striae on the lateral portions of the thorax, and on the elytra very fine striae which have a somewhat interrupted or subpunctate appearance, the first of them is remote from the suture and the alternate ones extend little more than half way to the apex, while the others reach within a short distance of the apex. This species has the prosternal process a good deal raised in the middle and very strongly margined at the sides.

South America, (Parana). 659.

GROUP 2. (Nos. 828 to 836).

Elytra without submarginal stria, but with either three, four or five true striae on each wing case.

Most of the species of this group are known to me only by one or two specimens, they are mostly of elongate parallel form.

828. *Copelatus longicornis*, n. sp.—Oblongus, angustulus, subparallelus, nitidus, obsolete punctulatus, rufus, elytris magis castaneis, basi rufo, striis tribus, prima a sutura, tertia a margine laterali, æqualiter remotis. Long. 5, lat. $2\frac{1}{4}$ m.m.

In this species there are three elongate striae on the elytra, the first of which is about as far from the suture as the outer one is from the lateral margin; the male has the front and middle tarsi much dilated; the front tibiae rather short and stout, a little bent and distinctly notched below the knee; the female differs only by the structure of the legs and feet.

The species is perhaps a variable one, as females from Brazil and Pernambuco, differ from the Santa Rita specimens in size and colour.

Brazil, (Santa Rita, Sepr., 1850, Sahlberg). 655.

829. *Copelatus restrictus*, n. sp.—Oblongus, elongatus, angustus, depressus, parallelus, fusco-rufus, capite, prothoracis lateribus, elytrorum basi, antennis pedibusque rufis, prothorace elytrisque crebre subtiliter strigulosis, his striis 3 vel 5 obsolete. Long. 5 m.m. lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are a good deal dilated, the front tibiæ are rather stout and simple. I have seen but a single individual.

Monte Video, (Sivori, Genoa Mus.) 657.

830. *Copelatus sexstriatus*, n. sp.—Oblongus, sat angustus, subtus nigricans, supra magis fusco-castaneus, crebre punctulatus, capite, prothorace ad angulos anteriores elytrisque ad basin ad apicem et ad latera rufescentibus, his striis tribus, intermedia ad apicem desinente, prima et tertia a sutura et a margine laterali æqualiter remotis. Long. 6, lat. 3 m.m.

In the male the front and middle tarsi are greatly dilated, the front tibiæ are much, though gently, curved on their outside, and broadly emarginate a little distance below the knee. I do not know the female of this very distinct species.

South America, (Columbia). 656.

831. *Copelatus punctulatus*, n. sp.—Oblongus, angustulus, subparallelus, piccus, capite prothoracis lateribus, elytrorum basi antennis pedibusque rufis; prothorace obsolete punctulato; elytris parce punctulatis, striis quatuor elongatis, prima a sutura remota. Long $5\frac{3}{4}$, lat. $2\frac{3}{4}$ m.m.

In this species the four striae on the elytra are elongate, the second and fourth being a little shorter; the first is twice as distant from the suture as it is from the second, while the outer one is almost equidistant from the third and from the lateral margin. The specimens before me are four in number and vary in length, and somewhat in depth of colour and in the distinctness of the fine punctuation of the upper surface. In the male the front and middle tarsi are a good deal dilated, and the front tibiæ a good deal bent below the knee and with a notch on their inner edge.

Brazil, (Santa Rita, Aug., 1850, R. F. Sahlberg). 653.

832. *Copelatus prolixus*, n. sp.—Oblongus, perelongatus, angustulus, subparallelus, piccus, capite, prothoracis lateribus elytrorumque apice rufescentibus, antennis, pedibus elytrorumque basi rufis; prothorace fere lævigato; elytris parce punctulatis, striis quatuor fere æqualibus; coxis posterioribus minus fortiter aciculatis; antennis valde elongatis. Long. 7, lat. 3 m.m.

This is a species of remarkably elongate form; the four striae of the elytra are nearly of equal length and terminate a little before the extremity, the first of them

is equidistant from the suture and the second stria, while the outer one is three times farther from the lateral margin than it is from the third stria. The male has the front and middle tarsi broadly dilated, the front tibiæ much bent at the base, and very distinctly notched at some little distance below the knee.

Amazons; found by Professor Trail in the water standing in the bottom of a canoe in the Rio Sappo, 21st. Nov., 1874. 650.

833. *Copelatus tibialis*, n. sp.—Oblongus, elongatus, angustulus, fere parallelus, capite, prothoracis lateribus, elytrorum basi, antennis pedibusque rufis, prothorace medio elytrisque vitta sublaterali rufescentibus; prothorace fere lævigato; elytris striis quatuor sat profundis; antennis subelongatis. Long. $5\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

In the male the front and middle tarsi are broadly dilated, and the front tibiæ are so abruptly bent near the base as almost to appear angulate, and they have a very distinct notch on the inner face below the knee; the female I do not know. The species is closely allied to *Copelatus prolixus*, but is much less elongate, and has numerous minor points of distinction; the disposition of the striæ on the elytra is about the same in the two species, but in the present one they are deeper, and the sutural stria seems rather shorter.

South America, (Brazil.) 651.

834. *Copelatus nitidus*, n. sp.—Oblongus, sat elongatus et angustus, minus depressus, nitidior, niger, elytris castaneis, antennis pedibusque rufis; prothorace parce punctulato; elytris striis quatuor sat profundis, prima (a sutura haud remota) quam ceteris paulo longiore. Long. $5\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

In the male the front and middle tarsi are moderately dilated, and the front tibiæ are nearly simple; the female I do not know. The only individual I have seen is in very bad condition, but the species is a clearly distinct one, the hind coxæ being shorter and rather different in form from the rest of its allies. In the collection of the Brussels Museum there is a specimen which is probably the female of this species, but it is considerably smaller, and has the striæ of the elytra finer.

South America (Columbia, coll. de Bonvouloir). 652.

835. *Copelatus guerini*, Aubé, M.C.—Oblongus, sat angustus, fusco-castaneus, capite, prothoracis lateribus elytrorumque basi rufescentibus; antennis pedibusque rufis; prothorace obsolete punctato; elytris parce obsolete punctulatis, striis quatuor elongatis, prima a sutura remota. Long. $5\frac{1}{2}$, lat. 3 m.m.

In the male the front and middle tarsi are a good deal dilated, the front tibiæ are bent below the knee, and their basal part is slender, and is broadly and indistinctly emarginate below the knee. I have seen only one specimen, in bad condition;

the disposition of the striæ on the elytra is much the same as in the *C. punctulatus* (No. 831), the outer one being however rather shorter, but the present species is much larger.

Ile de France, (coll. Bonvouloir). I have some doubts whether this locality be correct. 654.

836. *Copelatus coxalis*, n. sp.—Oblongus, elongatus, angustulus, subparallelus, piceus, prothoracis lateribus dilutioribus, elytrorum basi, antennis pedibusque rufis; prothorace fere lævigato; elytris striis quinque sat profundis, prima (a sutura haud remota) quintaque posterius brevioribus, hoc basin haud attingente; coxis posterioribus profundius aciculatis; antennis elongatis. Long. 6, lat. $2\frac{3}{4}$ m.m.

This species is very distinct on account of the coarse sculpture of the coxæ and the fine striæ on each elytron. I have seen but a single female.

South America, (Amazonia). 649.

GROUP 3. (No. 837).

Elytra without submarginal stria, but with six other striæ on each.

A single species of short form is the only one known to me; except for the absence of the submarginal stria it completely resembles the species of Group 10.

837. *Copelatus duodecemstriatus*, Aubé, M.C.—Oblongo-ovalis, angustulus, sat depressus, piceus, capite et prothoracis elytrorumque lateribus dilutioribus, antennis pedibusque rufis; prothorace vix punctulato; elytris striis sex profundis, suturali anterior desinente, et 3° , 5° que ad basin paulo abbreviatis. Long. 5, lat. $2\frac{1}{2}$ m.m.

This species is known to me only from the fragments of two specimens from Déjean's collection. It bears much resemblance to *Copelatus pusillus* (No. 854), but the striæ of the elytra are deeper, and the marginal one is absent. I have great doubts whether the specimen in Chevrolat's collection from Guadeloupe (referred to by Aubé, Spec. p. 378), is the same species, though it is certainly very similar.

Ile de France.

GROUP 4. (Nos. 838 and 839).

Elytra without submarginal stria, but with eight other striæ on each wing-case.

The striæ deficient are the internal ones, and of the eight present some are very much abbreviated.

838. *Copelatus inæqualis* (Chev.), n. sp.—Ovalis, subdepressus, nitidus, fuscocastaneus, capite prothoracisque lateribus dilutioribus, antennis pedibusque testaceis; prothorace lævigato; elytris striis quinque elongatis, (prima a sutura remota), cum tribus brevioribus alternantibus. Long. 6, lat. 3 m.m.

In this species the 1st, 3rd, and 8th striæ are elongate, and reach to within a short distance of the extremity, the 2nd, 4th, and 6th are in the male very short, existing only on the basal third or fourth of the length of the elytra, while in the female they extend to about half its length; the 7th stria in each sex extends rather more than half way to the extremity. The male has the front and middle tarsi moderately dilated, the front tibiæ simple, and the thorax without sculpture; in the female the sides of the thorax bear some exceedingly fine, short, and almost obsolete scratches.

South America, (Columbia). 646.

839. *Copelatus mundus*, n. sp.—Robustus, ovalis, latus, subdepressus, nitidus, niger, capite, prothoracis lateribus elytrorumque basi rufis, his apice utrinque testaceo; prothorace feminae ad latera latius dense subtiliterque striguloso; elytris striis octo, prima a sutura remota, alternis multo brevioribus. Long. 7½ lat. 4 m.m.

I have seen but one individual which is a female, and has the sides of the thorax with dense fine scratches, and has besides a very few shorter and coarser scratches distributed over its surface: and the three or four external interstices of the elytra have in front of the middle some fine anastomosing scratches.

Mexico, (Brussels Mus. from Chevrolat's collection). 648.

GROUP 5. (Nos. 840 to 845).

Elytra without submarginal stria, but with ten other striæ on each wing-case.

In all the species of this group the striæ are elongate and regular, and well developed.

840. *Copelatus consors*, n. sp.—Oblongo-ovalis, sat angustus, piceus, capite, prothoracis elytrorumque lateribus rufis, his apice dilutiore, antennis pedibusque testaceis; prothorace vel subtiliter punctato et versus latera vix conspicue striguloso, vel dense striguloso; elytris striis decem subtilibus, alternis (præsertim octavo) multo brevioribus. Long. 5, lat. 2½ m.m.

In the male the front and middle tarsi are rather strongly dilated, and the

prothorax is finely punctulate, with a few fine, very short scratches near the sides. There are two forms of the female, in one of them the thorax and the whole of the elytra, except the apices, are densely covered with fine anastomosing striæ; while the second form only differs from the male by the simple tarsi, and by the fact that the fine short scratches on the sides of the thorax have a rather greater extension towards the middle. The species is extremely closely allied to *Copelatus neglectus* (No. 841), but is less elongate in shape, has the scratches of the thorax in the second form of the female much less developed; and has the elytral striæ finer, with the alternate ones more abbreviate behind, so that indeed the sixth and especially the eighth are more or less reduced; this character is however variable, for in some individuals, the sixth and eighth striæ are nearly entirely absent, while in others they are but little shorter than the fourth. I have seen of the male only a single very mutilated example.

South America, (Pampas, Germain). 642.

841. *Copelatus neglectus*, n. sp.—Oblongo-ovalis, angustulus, elongatus, nigricans, capite, prothoracis lateribus elytrorumque basi et apice rufis, antennis pedibusque testaceis; prothorace in mare fere lævigato, versus latera indistincte punctato, in femina dense striguloso; elytris striis decem sat subtilibus, alternis brevioribus. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

The male has the front and middle tarsi rather broadly dilated, and the front tibiæ nearly simple. There are two forms of the female, in one of them the thorax and the whole of the elytra, except the apices, are densely covered with fine anastomosing striæ, while in the second form there is no trace of such a sculpture to be detected, in this latter form the scratches on the thorax are not so dense and distinct as in the first.

South America. (Venezuela, Cumana). 641.

842. *Copelatus coneolor*, n. sp.—Ovalis, sub-depressus, sat latus, nitidus, castaneo-testaceus; prothorace lævigato; elytris striis decem subtilibus, alternis brevioribus. Long. 6, lat 3 m.m.

In the male the front and middle tarsi are moderately dilated; the front tibiæ are stout and simple. In the female there are some very fine scratches at the sides of the thorax, and some more distinct ones on the external parts of the elytra a little in front of the middle; in one of the females these scratches on the elytra are very much diminished.

South America, (Amazonia, Pebas, Rio Purus, 25. 10. 1874, Dr. Trail). 640.

843. *Copelatus alternatus*, n. sp.—Ovalis, subdepressus, angustulus, nitidus, piceus, capite, prothoracis lateribus elytrisque castaneis, his basi dilutiore; thorace strigulis numerosis distinctis æqualiter distributis; elytris striis decem haud subtilibus, alternis evidenter brevioribus. Long. 6, lat. $2\frac{1}{4}$ m.m.

In the male the front and middle tarsi are moderately dilated, the front tibiæ are rather stout, and very indistinctly emarginate below the knee. In the female the upper surface bears rather numerous very fine punctures which are not to be observed in the male. The females show a good deal of variation in the prothoracic scratches, these in the individuals from Petropolis being finer and less numerous than in the specimens from other localities; I have seen but a single male and four females.

South America, (Brazil). 639.

844. *Copelatus duponti*, Aubé, M.C.—Ovalis, subdepressus, nitidus, subtus rufopiceus, supra rufescens, prothorace medio late nigricante, elytris lateribus fasciaque lata transversa pone medium nigris; prothorace strigulis parvis distinctis sed brevibus; elytris striis decem subtilibus, quarum secunda quam ceteris versus apicem paulo brevior, antennis pedibusque rufis. Long. $6\frac{3}{4}$, lat. $3\frac{5}{8}$ m.m.

In this species the elytra are of an obscure yellowish or reddish colour, with a dark mark extending along the side but not reaching the extremity, this mark is broader near the shoulder, and beyond the middle is connected with a dark mark which extends inwards but does not reach the suture. In the male the front and middle tarsi are moderately dilated, the front tibiæ are rather stout and simple. In the female the sides of the thorax bear numerous dense fine striae, in addition to those that are distributed over the rest of the surface.

South America, (Cayenne, Petropolis, Decr., 1850. R. F. Sahlberg.) 638.

845. *Copelatus bonvouloiri*, n. sp.—*Fem.*, Robustus, ovalis, sat latus et elongatus, nitidus, niger, capite, prothoracis lateribus anguste, elytrorum basi et apice, antennis pedibusque rufis, corpore subtus piceo; prothorace undique dense strigoso; elytris striis decem subtilibus, alternis (præsertim secunda) brevioribus. Long. 7, lat. $3\frac{2}{3}$ m.m.

Readily distinguished amongst its allies by the very dense and distinct scratches on the thorax and by its large size: the red colour at the base of the elytra is not extensive and therefore not very striking, on the other hand the yellowish apex is very conspicuous. I have seen only a single specimen.

South America, (Brazil, Sta. Catherina, coll. Bonvouloir.) 647.

GROUP 6. (No. 846).

Elytra without submarginal stria, but with eleven striae on each.
The striae in this species are very perfect.

846. *Copelatus nigrolineatus*, n. sp.—Ovalis, sat angustus, subdepressus, supra testaceus, prothorace medio late fusco, elytris sordide testaceis basi lateribusque dilutionibus, corpore subtus ferrugineo: elytris striis undecim elongatis, tribus internis antè obsoletis. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

The elytra in this species have eleven equidistant lines, of which the three internal become so fine as to disappear before reaching the base, all the lines extend nearly to the apex, but some, notably the first and outer one, are a little shorter than the others, there is no trace of a marginal stria. The male has the front and middle tarsi a little dilated, the front tibiae simple. There are no sexual disparities in the sculpture.

Australia, (Champion Bay, Carpentaria, Port Denison, Port Bowen). 677.

GROUP 7. (No. 847).

Elytra without submarginal striae but with about twelve other striae on each, which however are more or less broken or irregular.

The very peculiar species I have thus isolated might almost have been placed among the species destitute of true striae, for the deep lines on its elytra are much broken and irregular; nevertheless as it is not closely allied to any species of the group destitute of true striae and as moreover the linear arrangement of the broken striae is quite conspicuous in spite of their irregularity, I have placed it amongst the striate groups.

847. *Copelatus interruptus*, n. sp.—Ovalis, angustulus, sat depressus, picescens, prothorace ad angulos anteriores dilutiore, elytris piceo-testaceis, antennis pedibusque sordide testaceis; capite prothoraceque obsolete punctulatis; elytris striis undecim vel duodecim conspicuis sed disintegratis. Long. 6, lat. 3 m.m.

This species is very easily distinguished by the peculiar, broken-up striae of the elytra. The male has the front and middle tarsi a little incrassate; the only female I have seen has the striae of the elytra finer and still more broken-up than they are in the male.

It is possible, but not clear to me, that this may be the *Agabus interruptus* Perroud, (see description No. 1,192).

New Caledonia. 681.

GROUP 8. (No. 848).

Elytra with a submarginal stria, and two other striæ on each.

The striæ present in this species are those which, if the complement were complete, would be the sixth and tenth.

848. *Copelatus capensis*, (Chev.) n. sp.—Suboblongus, sat depressus, elongatus, nitidus, nigricans, capite antèrius prothoraceque versus angulos anteriores plus minusve dilute rufescentibus, antennis pedibusque testaceis; clytris versus latera striis duabus elongatis, alteraque marginali valde abbreviata, et in disco stria quarta plus minusve interrupta et obsoletescente; prosterno in medio alte compresso-carinato. Long. 7, lat. $3\frac{1}{2}$ m.m.

The male differs from the female by its slightly dilated tarsi, and the form of the front tibiæ which are curved at the base, and are on the inner edge bisinuate on their basal portion.

Caffraria, (Adeo Bush). 689.

GROUP 9. (Nos. 849 and 850).

Elytra with a submarginal stria and five other striæ on each.

The two species although agreeing in the striation of the elytra are probably not really allied to one another.

849. *Copelatus dorie*, n. sp.—*Fem.*, Elongatus, angustulus, subparallelus, minus nitidus, subtus rufo-piceus, abdomine piceo, supra piceo-niger, capite, prothoracis lateribus clytrorumque basi lateribus et apice dilutionibus; antennis pedibusque testaceis; clytris striis quinque elongatis, 1^a ad 4^{am} fere æqualibus, quinto paulo breviorè, striaque marginali antèrius valde abbreviata; supra punctulatus, et in prothorace clytrisque strigulis brevissimis numerosis; prosterno in medio fortiter compresso-elevato. Long. $5\frac{1}{4}$, lat. $2\frac{1}{2}$ m.m.

This is a very distinct species, of which I have seen but a single female: the first stria is remote from the suture; the numerous very short scratches on the elytra are absent at the apex, and replaced by some distant punctures.

Borneo, (Sarawak; found by the Marquis G. Doria in 1865 or '67). 709.

850. *Copelatus debilis*, n. sp.—Ovalis, depressus, nitidus, piceo-testaceus, capite, prothorace lateribus, elytrorum basi et apice, antennis pedibusque testaceis; elytris striis quinque elongatis, prima a sutura remota, striaque marginali anterie abbreviata. Long. 4, lat. 2 m.m.

The male has the front and middle tarsi a good deal dilated, the front tibiae are much curved inwardly and the basal portion slender: the upper surface is very smooth except for the striae on the wing-cases: the female differs a little from the male, the striae being slightly deeper, and there being a very fine and obsolete punctuation on the upper surface, but no scratches.

The species is of small size and cannot be very easily mistaken for any other, on account of the number of the striae—five on each wing-case; the first of these is quite twice as far from the suture as it is from the second stria; then the three inner interstices are of about the one width, the fourth, or outer one, being a little narrower than the others; the submarginal stria is elongate, but stops short a good deal behind the shoulder.

Central America, (Chontales, Belt; S. Geronimo, Guatemala, Champion). 1158.

GROUP 10. (Nos. 851 to 864).

Elytra with a submarginal stria and six other striae on each.

In this group the striae are equidistant, and it is the alternate ones that are wanting; very frequently the first stria is much abbreviated in front, or indeed only exists on the posterior portion of the wing-case.

851. *Copelatus marginatus* (Wehncke), n. sp.—Ovalis, latiusculus, haud elongatus, subdepressus, piceus, capite et prothoracis elytrorumque lateribus dilutioribus, antennis pedibusque testaceis; prothorace sublaevigato, ad angulos posteriores subtilius punctulato; elytris striis sex ad apicem prolongatis, interna posterior tantum exstat, ceteris elongatis, aliaque marginali valde abbreviata. Long. 6, lat. $3\frac{1}{4}$ m.m.

In the male the front and middle tarsi are a good deal dilated; the basal portion of the front tibia is quite slender, and its inner edge sinuate, the lower part of the tibia is broad; the elytra have a subobsolete punctuation, which in the female is replaced by the numerous very short and extremely fine scratches.

Australia, (Rockhampton, Port Denison). 675.

852. *Copelatus striatulus*, Aubé, M.C.—Oblongo-ovalis, sat angustus, subdepressus, sat nitidus, piceus, elytris nigricantibus, antennis pedibusque rufis; fere impunctatus; elytris striis quinque elongatis, stria marginali valde abbreviata, aliaque suturali versus apicem tantum exstante; prosterno medio alte carinato compresso. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

A single female in my own collection agrees exactly with the type (in very bad condition) of this species from Chevrolat's collection in the Brussels Museum.

Africa, (Senegal). 690.

853. *Copelatus latipes*, n. sp.—Oblongo-ovalis, latiusculus, subdepressus, sat nitidus, piceus, elytris nigricantibus, antennis pedibusque rufis; subtiliter punctatus, prothorace ad latera sat fortiter punctato; elytris striis quinque elongatis, stria marginali valde abbreviata, aliaque suturali ad apicem tantum exstante; prosterno medio mediocriter compresso-carinato. Long. 6, lat. $3\frac{1}{4}$ m.m.

The male has the front and middle tarsi rather broadly dilated; the front tibiæ are very abruptly bent below the knee, the basal part being slender and bisinuate on the inner edge, while the apical portion is broad. The female I do not know.

Malacca. 691.

854. *Copelatus pusillus*, n. sp.—Oblongo-ovalis, sat elongatus, angustulus, subdepressus, piceus, supra magis nigricans, marginibus (præsertim elytrorum lateribus) dilutionibus, antennis pedibusque rufo-testaceis; obsolete punctatus, prothorace ad latera ante angulos posteriores area parva strigulosa; elytris striis subtilibus sex, aliaque marginali brevissima, striis prima et externa antè desinentibus. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

The male has the front and middle tarsi somewhat broadly dilated, the front tibiæ are curved, the basal portion being very slender, and much emarginate below the knee: the female shows no difference in sculpture from the male.

Siam, (Bangkok). 692.

855. *Copelatus fuscipennis*, n. sp.—*Fem.*, Ovalis, vix angustus, subdepressus, nitidus subtus rufescens, supra fuscescens, capite, prothoracis lateribus elytrorumque basi rufis, harum apice, antennis pedibusque testaceis; fere lævigatus, prothorace versus latera strigulis parcissimis brevissimisque; elytris striis sex sat profundis et fere integris, aliaque marginali brevissima. Long. 5, lat. $2\frac{3}{4}$ m.m.

The very few scattered and distant scratches on the thorax are inconspicuous, sometimes in fact nearly entirely absent, the striæ on the elytra are all continued nearly to the base, the internal and the outer ones being only very slightly

abbreviated there; at the base there may be seen between the striæ some short marks or scratches representing rudimentary intermediate striæ. In this species the lateral part of the wing-case is darker than the other parts. I have seen only the female.

Celebes. 693.

856. *Colymbetes lineatus*, Guer., M.C.—*Fem.*, Ovalis, sat angustus et elongatus, pieus, supra nigricans, capite prothoracisque lateribus dilutioribus, elytris ad apicem testaceo-maculatis, antennis pedibusque rufis; prothorace ad latera area parva strigulosa; elytris striis sex sat profundis et fere integris, aliaque marginali brevissima. Long. $5\frac{2}{3}$, lat. 3 m.m.

The only individual I have seen is a typical specimen from Dejean's collection, it is a female. The species appears to be closely allied to *Copelatus fuscipennis*, but is more elongate in form, and darker in colour, and instead of having a few distant scratches on the thorax, has at the sides a small patch of crowded scratches.

Amboyna. 707.

857. *Copelatus gentilis*, n. sp.—*Fem.*, Ovalis, haud angustus, subdepressus, nitidus, subtilissime punctulatus, nigricans, antennis, pedibus, capite, prothoracis lateribus elytrorumque basi rufis, his apice testaceis; prothorace lateribus ante angulos posteriores area parva strigulosa; elytris striis sex, integris, minus subtilibus, aliaque marginali abbreviata. Long. $5\frac{2}{3}$, lat. 3 m.m.

I have seen but a single female. Though closely allied to *Copelatus fuscipennis*, this is undoubtedly a distinct species, being larger and darker, and having the prosternal process considerably larger.

Batchian, (Wallace). 694.

858. *Copelatus geniculatus*, n. sp.—*Mas*, Ovalis, vix latus, subdepressus, nitidus, pieus, supra nigricans, capite anteriori prothoraceque ad angulos anteriores rufescentibus, elytris ante apicem sat discrete rufo-maculatis, antennis pedibusque rufis; sublævigatus, prothorace ante angulos posteriores strigulis paucissimis; elytris striis sex integris, inter se fere æqualiter distantibus, aliaque marginali abbreviata. Long. 6, lat. $3\frac{1}{2}$ m.m.

In the male the front and middle tarsi are much dilated, and the front tibiæ are comparatively slender and are greatly curved at the base, and not very distinctly bisinuate inwardly.

Malay Archipelago. 706.

859. *Copelatus oblitus*, n. sp.—Oblongo-ovalis, nec angustus neque elongatus sat depressus, subnitidus, obsolete punctatus, rufescens, thorace elytris que nigricantibus, illis lateribus, harum basi et lateribus rufis; prothorace ad latera ipsa angustius striguloso; elytris striis sex sat subtilibus integris, (suturali basi desinente) aliaque marginali brevissima; coxis posterioribus subtiliter aciculatis. Long. $4\frac{3}{4}$, lat. $2\frac{3}{8}$ m.m.

The male has the front and middle tarsi moderately dilated, the front tibiae a little curved at the base, and rather broadly emarginate on the inner edge below the knee. I have seen but a single individual.

Singapore. 695.

860. *Copelatus indicus*, n. sp.—Oblongo-ovalis, haud elongatus, sat latus, minus nitidus, ferrugineus, supra piceus, prothoracis elytrorumque lateribus ferrugineis; capite subtiliter punctulato; prothorace subtilius punctulato, ad latera anguste striguloso; elytris striis sex integris, profundis, aliaque marginali valde abbreviata; coxis posterioribus breviter sed rude aciculatis. Long. $5\frac{1}{4}$, lat. $2\frac{7}{8}$ m.m.

The male has the front and middle tarsi a good deal dilated, the front tibiae are curved at the base, and on their inner edge are bisinuate; in the female the basal portion of the elytra bears between the striae numerous, very distinct anastomosing lines; these become scanty and less extensive towards the sutural portion and are altogether wanting close to the suture.

India. 696.

861. *Copelatus discoideus*, n. sp.—Ovalis, latiusculus, subdepressus, ferrugineus, abdomine, capite thoraceque nigricantibus, elytris testaceis, plaga magna discoidali nigra, capite anterieus prothoraceque ad latera ferrugineis; capite subtiliter sed evidenter punctato; thorace ad latera punctato-strigoso; elytris striis sex integris sat profundis, suturali multo subtiliore, aliaque marginali brevissima; coxis posterioribus indistincte aciculatis. Long. $5\frac{3}{4}$, lat. 3 m.m.

The male has the front and middle tarsi broadly dilated, the front tibiae much curved at the base, the basal portion being slender and bisinuate on the inner edge; the female differs only by its simple tarsi and tibiae.

Mesopotamia. 697.

862. *Copelatus strigulosus*, n. sp.—*Fem.*, Ovalis, latiusculus, sat elongatus, piceus, capite anterieus prothoraceque ad latera dilutioribus, elytris ad apicem (vix ad basin) antennis pedibusque testaceis; thorace ad latera et basi utrinque densissime striguloso; elytris lineis anastomozantibus undique excepte in partem quintam

apicalem tectis, striisque sex in partem apicalem sat profundis sed inter lineas anastomozantes obsolescentibus. Long. 6, lat. $3\frac{1}{4}$ m.m.

Though allied to *Copelatus discoideus*, this species in the female sex (which is the only one I know), is readily distinguished by the great extent of the dark colour on the elytra, by its rather more elongate oval form, by the scratched surface of the elytra, and by the entire absence of the marginal stria.

Mesopotamia. 698.

863. *Copelatus africanus*, n. sp.—Ovalis, sat elongatus, vix angustulus, sat depressus, piceus, capite anteriori prothoracis elytrorumque lateribus ferrugineis, antennis pedibusque rufis; capite subtiliter punctulato; prothorace ad latera distinctius punctato; elytris striis sex integris (suturali anteriori desinente) profundis, aliaque marginali valde abbreviata. Long. $6\frac{1}{4}$, lat. $3\frac{1}{2}$ m.m.

I have seen but a single male individual of this species which has lost most of its tarsi, the front ones appear to be moderately dilated, and the front tibia is rather broad, and a little curved at the knee.

Africa, (N' Gami). 699.

864. *Copelatus pulchellus*, Klug, M.C.—Oblongo-ovalis, latiusculus, haud elongatus, subdepressus, piceus, capite anteriori, prothoracis lateribus elytrisque rufescentibus, his disco plus minusve infuscato, basi discrete dilutiore, antennis pedibusque rufis; thorace ad angulos posteriores strigoso-punctato; elytris striis sex profundis, suturali prope scutellum desinente, aliaque marginali valde abbreviata. Long. $5\frac{2}{3}$, lat. $3\frac{1}{8}$ m.m.

The male has the front and middle tarsi a good deal dilated, and the front tibiae a good deal curved, the basal portion being rather deeply bisinuate inwardly, the lower part of the tibia is broad: the female has a very few, not easily detected, scratches about the middle of the elytra.

Though Aubé states that this species occurs in Senegal as well as in Bourbon, I am inclined to think that the few specimens (in very bad condition) which I have seen from the former locality indicate one or two distinct allied species: I have also seen in the Brussels Mus. collection a specimen of a variety or closely allied species said to be from Cuba, and have another in my own possession said to be from N. America, but I consider confirmation is wanted of these localities. I may add that I am not quite sure that Klug's description of *C. pulchellus* really refers to this species.

Bourbon. (?Senegal). 700.

GROUP 11. (Nos. 865 to 868).

Elytra with a submarginal stria and with seven or eight other striæ on each.

The striæ absent are those near the suture, but although the species agree fairly in this respect, it is pretty certain they are not really allied to one another; No. 867 indeed seems by the nature of the coxal lines to approximate to *C. australis* of the first or estriate group; and No. 868 is more probably allied to No. 848 (eighth group).

865. *Copelatus chevrolati*, Aubé, M.C.—Ovalis, elongatus, subdepressus, subtus nigro-piceus, capite thoraceque rufescentibus, hoc lateribus dilutioribus, elytris magis castaneis; prothorace fere lævi (in femina ad latera subtiliter strigoso); elytris striis octo subtilibus, alternis posterioribus abbreviatis, aliaque marginali anterioribus abbreviata. Long. 6, lat. 3½ m.m.

The male has the front and middle tarsi a good deal dilated, the front tibiae nearly simple; the female has the sides of the thorax covered over a broad space with fine anastomosing striæ.

North America. (California, Arizona, Texas, Kansas, Lake Superior, sec. Crotch). 643.

866. *Copelatus validus*, n. sp.—Oblongo-ovalis, sat latus, depressus, nitidus, niger, antennis pedibusque rufis, prothorace lateribus elytrorumque apice dilutioribus; elytris striis octo ante apicem desinentibus, prima a sutura remota, secunda disintegrata, aliaque marginali anterioribus et posterioribus abbreviata. Long. 7¼, lat. 4 m.m.

I have seen but a single individual; it is a female, and has the sides of the thorax rather densely covered with elongate scratches, but the disc is quite smooth; a rather small area near the side of each wing case also is rather closely covered with distinct scratches.

This species seems to be a large and dark-coloured one; the first stria is about as far from the suture as the width of the first, second, third, and fourth interstices together; the second stria is disintegrated and rudimentary, the second, fourth and sixth are considerably shorter than the others, and stop short about two-thirds of the length of the wing cases, the first, third, fifth, seventh and eighth are longer, but still stop short a good distance before the apex; at the base the alternate striæ are more or less abbreviated: the submarginal stria is short and placed about the middle of the length.

Central America, (Chontales, T. Belt). 1159.

867. *Copelatus clarki* (Wehneke), n. sp.—Ovalis, elongatus, sat depressus piceus, capite prothoracisque lateribus dilutioribus, antennis pedibusque testaceis; elytris striis plurimis (circiter septem) posterioribus abbreviatis, alternis subtilioribus et versus apicem brevioribus, aliaque marginali brevissima. Long. 7, lat. $3\frac{1}{2}$ m.m.

In this species the first stria is remote from the suture, and the other striæ are narrowly separated from one another, the interval between the first and second being however double that between the others, because the intervening stria is absent, or is represented only by some widely separated linear marks. The male has the front and middle tarsi greatly dilated, the front tibiæ slightly curved at the base, so that the basal portion is a little more slender and is slightly sinuate internally. The sculpture does not differ in the sexes.

Australia, (Cape York). 676.

868. *Copelatus carinatus*, n. sp.—*Fem.*, Oblongo-ovalis, vix angustulus vel elongatus, minus depressus, sat nitidus, piceus, supra nigro piceus, capite et prothoracis elytrorumque lateribus dilutioribus, antennis pedibusque rufis; prothorace strigulis subtilissimis paucis; elytris striis octo subtilibus, interna a sutura remota, 2^a, 4^a, 6^aque posterioribus multo brevioribus; striaque marginali brevissima; prosterno in medio alte compresso-carinato. Long. 7, lat. $3\frac{1}{2}$ m.m.

The striæ of the elytra are rather peculiar in this species, there are eight distinct fine striæ on each wing-case the first of which is placed far from the suture; between it and the suture there is however, quite at the base, the commencement of another stria; the 2nd, 4th, and 6th striæ are much shorter behind than the others, while the 7th is obsolete in front. I have seen only a single individual.

Africa, (Guinée Portugaise, coll. Bonvouloir). 705.

GROUP 12. (Nos. 869 to 886).

Elytra with a submarginal stria and nine or ten other striæ on each.

In Nos. 869 and 870, the second stria is nearly or altogether wanting, and the first is much abbreviate at the base; in the other species the ten striæ are present, but some of them (especially the internal ones) may be more or less abbreviate at the base.

869. *Copelatus prolongatus*, n. sp.—Robustus, ovalis, sat latus et elongatus, nitidior, niger, capite piceo, prothorace lateribus anguste ferrugineis, elytris apice sordide testaceo; antennis pedibusque rufis; prothorace maris fere lævigato,

feminae ad latera crebrius latiusque striguloso; elytris striis duabus suturalibus anterioribus longe desinentibus, octo subtilibus ad apicem fere prolongatis (alternis brevioribus), aliaque marginali anterioribus valde abbreviata. Long. $7\frac{1}{4}$, lat. $3\frac{3}{4}$ m.m.

The male has the front and middle tarsi broadly dilated, and the front tibiae simple, and the thorax almost without sculpture (except the marginal series): the female has the sides of the thorax covered over a rather broad space with fine but quite distinct scratches or striae. The species has the second stria from the suture indicated only by some small interrupted remnants, the first stria is less obliterated. I have seen only a single pair.

Panama. 644.

870. *Copelatus nigricans*, n. sp.—Robustus, ovalis, latus, nitidior, niger, capite piceo, prothorace lateribus anguste ferrugineis, elytris apice sordide testaceo, antennis pedibusque rufis, corpore subtus piceo; prothorace feminae ad latera striguloso: elytris striis duabus suturalibus anterioribus longe desinentibus, octo ad apicem fere prolongatis (alternis brevioribus), aliaque marginali anterioribus valde abbreviata. Long. $7\frac{3}{4}$, lat. 4 m.m.

I have seen but one individual, which is a female; besides the scratches on the thorax there are numerous very distinct scratches on the sides of the elytra, not extending to the base or apex. The species is closely allied to *Copelatus prolongatus* but is much broader.

South America, (New Granada, coll. de Bonvouloir). 645.

871. *Copelatus vigintistriatus*, Fairm., Ann. Soc. Ent. Fr. 1869, p. 188.—Oblongo-ovalis, angustulus, sat depressus, piceus, capite thorace elytrorumque lateribus dilutioribus, antennis pedibusque rufis; prothorace sublævigato, strigulis brevissimis per-paucis; elytris striis decem sat profundis, suturali anterioribus, alternis posterioribus, brevioribus, aliaque marginali brevissima. Long. $5\frac{1}{4}$, lat. $2\frac{3}{4}$ m.m.

I have seen only the female of this species.

Madagascar. 702.

872. *Copelatus polystrigus*, n. sp.—Ovalis, sat angustus, subdepressus, nitidus, nigropiceus, elytris vitta intra-laterali cum macula ante-apicali fere conjuncta testacea, prothoracis lateribus dilutioribus, antennis pedibusque rufis; prothorace sublævigato, strigulis brevissimis per-paucis; elytris striis decem profundis, alternis posterioribus brevioribus, aliaque marginali valde abbreviata. Long. 6, lat. 3 m.m.

I have seen only females of this species. The individuals from Senegal have a fascia of a red colour at the base of the elytra which is scarcely to be seen in

the individuals from Madagascar: but I cannot at present find other marks to distinguish them. In some individuals the internal striae of the elytra becomes obsolete in front.

Madagascar; Senegal. 703.

873. *Copelatus erichsoni*, Guer., M.C.—Ovalis, haud angustus, subdepressus, nitidus, piceo-rufus, thorace elytrisq̄ue nigricantibus, illo versus angulos anteriores rufescente, his fascia basali, et vitta intra-laterali cum macula ante-apicali fere conjuncta, testaceis, antennis pedibusq̄ue rufis; thorace strigulis brevibus numerosis; elytris striis decem per-profundis alternis posterius paulo brevioribus, aliaque marginali valde abbreviata. Long. $6\frac{1}{4}$, lat. $3\frac{1}{4}$ m.m.

The male has the front and middle tarsi a little dilated, and the front tibiæ a little curved at the base, and a little bisinuate internally below the knee; the female does not depart in sculpture from the male. The species is closely allied to *Copelatus polystrigus*, but is readily distinguished by the greater sculpture of the thorax, and the very deep striae of the elytra.

Abyssinia. 704.

874. *Copelatus obscurus*, n. sp.—Ovalis, subdepressus, piceus, capite, prothorace elytrorumque apice dilutioribus, antennis pedibusq̄ue rufis; prothorace strigulis subtilioribus brevioribusq̄ue, in disco lævigato; elytris striis decem sat subtilibus, 2^a quam ceteris paulo brevioribus, aliaque marginali antè abbreviata. Long. $5\frac{1}{4}$, lat. $2\frac{3}{4}$ m.m.

This species is closely allied to *Dytiscus posticatus* (No. 875), but is smaller than its smallest forms, and has the scratches of the thorax more reduced; on the other hand the alternate striae of the elytra are less abbreviate behind, and the colour seems more obscure; though on this latter point I do not feel very sure as I have seen but a single female in rather bad condition; there are no traces of any fine scratches on the elytra of this species.

Amazons, (Rio Sappo, found in water standing in a canoe by Prof. Traill, 21st November, 1874). 637.

875. *Dytiscus posticatus*, Fab., *Copelatus posticatus*, M.C.—Ovalis, subdepressus, nitidus, piceus, capite piceo-rufo, prothoracis lateribus elytrorumque basi ferrugineis, his apice (sæpiusq̄ue macula laterali) dilutiore vel rufescente; prothorace strigulis distinctis sat numerosis fere æqualiter distributis; elytris striis decem sat subtilibus, alternis posterius evidenter abbreviatis, 2^a quam ceteris brevioribus, aliaque marginali, antè abbreviata. Long. 6, lat. 3 m.m.

The male has the front and middle tarsi distinctly dilated, the front tibiæ are

rather broad and simple. The species includes numerous forms or varieties, but the material before me does not justify me in considering them as distinct species. The female has sometimes the greater part of the elytra and the thorax at the sides covered with very fine anastomosing striæ, which in other specimens are quite wanting, and various intermediate gradations occur. The size also varies a good deal, as does also the colour, the largest form found in Central America and Mexico (*C. signatus*, Sharp) having the red marks of the elytra pale and distinct. The scratches on the thorax also vary somewhat in number and depth: and the striæ of the elytra are also variable in depth. I have considered as the type of the species the form occurring in the Antilles, which was the one to which Fabricius gave the name *Dytiscus posticatus*.

Antilles, (Cuba, Guadelope); Mexico; Central America; Cayenne; Brazil. 636.

876. *Copelatus terminalis*, n. sp.—Ovalis, latus, depressus, nitidus, subtus rufotestaceus, supra nigricans, capite, prothorace ad latera, elytris basi et apice (sæpiusque macula laterali) antennis pedibusque testaceis; prothorace strigulis brevibus impressis; elytris striis decem subtilibus, alternis posterius abbreviatis, aliaque marginali brevissima. Long. 6½, lat. 3½ m.m.

The male has the front and middle tarsi distinctly dilated, and the front tibiae broad and simple; it has the thorax scattered over with short linear punctures, which become obsolete towards the sides, in the female these punctures are more elongate, and are more developed near the side than they are on the middle.

The striæ of the wing-cases are quite regular at the base, the first is a little more distant from the suture than it is from the second, and is carried on nearer to the apex than any of the others are, the alternate ones are distinctly shorter than the others, and nearly of one length; the submarginal stria is very short, and placed nearly entirely behind the middle.

The distinct yellow marks on the elytra are variable, besides the spot near the side (on the 8th and 9th interstices) there is generally another on the 5th interstice, and this may become elongate and connected with the basal band.

The species is very similar to a variety of *Dytiscus posticatus*, which resembles it in markings, (*C. signatus*, Sharp), but *C. terminalis* is broader, the striæ of the elytra are finer, and the alternate ones, (especially the second), are less abbreviate behind.

Central America, (S. Geronimo, and El Jicaro, Vera Paz, Guatemala; Champion). 1162.

877. *Copelatus depressus*, n. sp.—Oblongo-ovalis, parum latus, depressus, subtus rufotestaceus, abdomine fuscescente, supra fusco-piceus, capite, prothorace late ad latera, elytris basi apiceque testaceis, antennis pedibusque testaceis; elytris striis

decem ante apicem abbreviatis, alternis brevioribus et ad basin plus minusve abbreviatis et disintegratis, striaque marginali brevissima. Long. 6, lat. $3\frac{1}{2}$ m.m.

I have not seen the male of this species; the female has the thorax densely covered with elongate scratches, which however are absent from the disc; there are also a few very fine scratches on the back of the head; near the outside of the elytron, about the middle, there is an elongate area covered rather densely with very fine scratches.

The striæ on the wing-cases in this species are rather fine, and the inner one is nearly as near to the suture as it is to the second stria; they are more or less abbreviated and broken up at the base, especially the second and fourth, while the third, fifth, seventh, ninth and tenth, reach very nearly to the base; none of the striæ extend to near the apex, but leave nearly one-sixth of the length free, and the alternate ones are considerably shorter than this; the submarginal stria is extremely short and fine, and may easily be overlooked.

Central America, (S. Geronimo, Guatemala, Champion). 1160.

878. *Copelatus impressicollis*, n. sp.—Oblongo-ovalis, angustulus, parum convexus, fusco-niger, capite thoraceque sordide testaceis, supra fuscis, hoc lateribus, elytris basi, antennis pedibusque testaceis; elytris striis decem sat profundis, ad apicem paulo abbreviatis, (alternis brevioribus), aliaque marginali valde abbreviata. Long. $5\frac{1}{2}$, lat. $2\frac{2}{3}$ m.m.

The male has the front and middle tarsi much dilated, and the front tibiæ are simple: the female has on the thorax very numerous short, isolated scratches, which however do not extend to the disc.

The species a good deal resembles *Copelatus glyphicus*, but is darker in colour, and the striæ of the elytra are less prolonged both at base and apex, and the sexual characters are different.

The distance of the first stria from the suture is nearly twice as great as that between it and the second stria; at the base the striæ are rather irregular, the two internal and the ninth being there distinctly abbreviate. The submarginal stria is very short, and placed behind the middle.

Central America. (Guatemala City and S. Geronimo, Champion). 1161.

879. *Colymbetes glyphicus*, Say, *Copelatus glyphicus*, M.C.—Oblongo-ovalis, angustulus, subdepressus, fusco-rufus, vel castaneus, antennis pedibusque rufis; prothorace fere lævigato, tantum parcissime punctulato, sine strigulis; elytris striis decem plus minusve profundis ad apicem fere prolongatis, aliaque marginali antè abbreviata. Long. 5, lat. $2\frac{1}{2}$ m.m.

The male has the front and middle tarsi only slightly dilated; the front tibiæ are

stout, and are scarcely bent at the knee, but are emarginate on the inner edge at some distance below it. The female is without sexual sculpture. The species seems to be variable in size, colour, and the depth of the striæ on the elytra: some specimens from Cuba have the scratches on the hind coxæ elongate, while in the individuals from the United States there are only short marks on that part.

Copelatus punctulatus is referred as a synonym of this species on the authority of Crotch.

United States, (Massachusetts, Texas); Cuba; Guadeloupe. 655.

880. *Copelatus advena*, n. sp.—Ovalis, subdepressus, niger, nitidus, capite, prothoracis lateribus angustius, antennis pedibusque rufis; prothorace strigis brevibus sparsis, disco fere lævigato; elytris striis minus profundis decem ad apicem fere prolongatis, aliaque marginali antè abbreviata; corpore subtus piceo. Long. $6\frac{3}{4}$, lat. $5\frac{1}{2}$ m.m.

In this species the thorax bears distinct, but short and distant striæ, which are not wanting in the middle near the base, but are nearly absent from a space anterior to this. In the male the front and middle tarsi are a little dilated, and the front tibiæ are curved and notched at the knee. The female is unknown.

The habitat of this species is uncertain, but it is probably South America. 634.

881. *Copelatus integer*, n. sp.—Ovalis, subdepressus, nitidus, piceus, capite dilutiore, prothorace ad latera. elytrorum basi, antennis pedibusque rufis; prothorace strigis minus numerosis haud subtilibus ornato; elytris striis decem sat profundis, ad apicem fere prolongatis, aliaque marginali antè abbreviata. Long. $5\frac{1}{2}$, lat. $2\frac{7}{8}$ m.m.

The sculpture of the thorax consists of rather deep but distant scratches some of which are long and others short, they extend all across the thorax, the base in front of the scutellum being however more free from them than anywhere else. The male has the front and middle tarsi distinctly dilated, and its front tibiæ are rather stout and simple, that is they are not curved or notched near the knee.

Nicaragua, (Chontales, Belt). 633.

882. *Copelatus distinctus*, Aubé, M.C.—*Fem.*, Oblongo-ovalis, subdepressus, angustulus, piceus, prothoracis lateribus elytrorumque basi et lateribus ferrugineis, pedibus rufis; prothorace ad latera latius dense strigoso; elytris striis decem subtilibus, aliaque marginali antè abbreviata; stria suturali antè desinente. Long 5, lat. $2\frac{1}{2}$ m.m.

The sculpture of the thorax in this species is very characteristic, the sides are densely covered with fine scratches, which extend so far inwards as to leave a

comparatively small space along the middle smooth; this smooth space reaches however completely to the base: the striæ of the elytra are rather fine, the sutural one is rather distant from the suture and becomes very fine in its basal portion and indeed altogether obliterated near the base; between the ninth and tenth striæ may be seen the rudiments of another stria. I have seen only the type specimen from Chevrolat's collection, which is a mutilated female; but I have received from Herr Wehncke two individuals which may probably be the males of *C. distinctus*; the scratches on the thorax are absent but its surface is finely and sparingly punctured; the striæ of the elytra are not so fine, and the size is rather larger; they have the front and middle tarsi moderately dilated, and the front tibiæ nearly simple.

Mexico, (Coll. Brussels Mus.) 632.

883. *Copelatus cœlatipennis*, Aubé, M.C.—Ovalis, subdepressus, angustulus, nitidus, fuscescens, capite, thoracis lateribus elytrorumque basi, antennis pedibusque rufis; prothorace strigis minutissimis subtilissimisque; elytris striis sat profundis ad apicem fere continuatis, marginalique minus abbreviata; corpore subtus rufescente, abdomine obscuriore. Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m.

The male has the front and middle tarsi dilated, but not broad, and the front tibiæ are bent at the base, and have a notch below the knee: the female differs only in the structure of the legs, the sculpture being quite similar in the two sexes.

Brazil, (Santa Rita, Aug. Sepr., 1850, Sahlberg; Espirito Santo). 630.

884. *Copelatus buqueti*, Aubé, M.C.—Ovalis, subdepressus, piceo-niger, capite, thoracis lateribus elytrorumque basi extremo (hoc minus distincte) rufescentibus, antennis pedibusque rufis, tibiis tarsisque posterioribus piceis; prothorace strigis sat numerosis sed haud rudis, basi lævigato; elytris striis profundis, ad apicem fere continuatis, marginali antèrius valde abbreviata. Long. 6, lat. $3\frac{1}{2}$ m.m.

This species is smaller than *Copelatus sulcatus*, (No. 886) and has the sculpture of the thorax less developed; the striæ of the elytra though deep and broad do not form such distinct grooves, and the elytra are indistinctly reddish at the base. The male has the front and middle tarsi but little dilated: and the female seems to differ from it only by the simple tarsi.

South America, (Cayenne; Columbia). 629.

885. *Copelatus exaratus*, n. sp.—Oblongo-ovalis, subdepressus, piceo-niger, nitidus, capite thoraceque versus latera dilutioribus, antennis pedibusque rufis, tarsis posterioribus piceis; prothorace crebre profundeque strigoso; elytris singulo striis decem per-profundis, ad apicem fere continuatis, aliaque ad marginem exteriorem antèrius valde abbreviata. Long. $6\frac{1}{2}$, lat. $3\frac{1}{2}$ m.m.

As in *Copelatus sulcatus*, the striae are very deep so as to form grooves in their anterior part; the present species is however more elongate and parallel, and the striae of the elytra do not commence at the base quite so close to the front part; the antennae are considerably longer, and the male tarsi a little broader.

South America, (Amazonia). 628.

886. *Copelatus sulcatus*, n. sp.—Ovalis, subdepressus, piceo-niger, capite thoraceque versus latera paulo dilutioribus, antennis pedibusque rufis, tibiis tarsisque posterioribus piceis; prothorace crebre profundeque strigose, basi utrinque ad angulos posteriores levigato; elytris singulo striis decem ad basin (etiam internis) perprofundis, ad apicem fere continuatis, aliaque ad marginem anteriorem anterieus valde abbreviata. Long. $6\frac{1}{2}$, lat $3\frac{1}{4}$ m.m.

This species is much smaller than *Colymbetes strigipennis*, (No. 894), but like it has all the striae excessively deep at the base; there is a stria less however in the present species; the one that in *Col. strigipennis* is the tenth and is more abbreviated posteriorly than the others is that wanting in the present species. The dilatation of the male tarsi is not great.

Upper Amazons, found by Bates. 626.

GROUP 13. (Nos. 887 to 895).

Elytra with a submarginal stria, and with eleven other striae, on each.

The extra stria possessed by this group in contrast to the preceding one seems to be the tenth; this is rather shorter than the others, and if it were supposed absent, the other striae would at their terminations be similar to those of group 12.

887. *Copelatus badeni* (Wehncke), n. sp.—♂ Oblongo-ovalis, sat depressus, nitidus, castaneus, (plus minusve infuscatus?) antennis pedibusque rufo-testaceis; capite inter oculos serie transversa strigulorum paucorum; prothorace fere undique strigulis sparsis et profundis; elytris striis undecim profundis et fere integris, aliaque marginali abbreviata. Long. $6\frac{1}{2}$, lat. $3\frac{1}{2}$ m.m.

The male has the front and middle tarsi greatly dilated; and the front tibiae curved at the base and much emarginate on the inner edge near the knee. The female I have not seen.

The species to judge from a single individual is very closely allied to *C. irregularis* (No. 890), but is differently coloured, and has a few short marks on the head.

Fiji Islands. 686.

888. *Copelatus daemeli* (Wehncke), n. sp.—*Fem.*, Oblongo-ovalis, sat depressus, nitidus, piceus, prothoracis lateribus dilutionibus, elytris nigricantibus, antennis pedibusque testaceis; capite lævigato; prothorace sublævigato, basi utrinque strigulis paucis; elytris striis undecim profundis, alternis posterioribus abbreviatis, aliaque marginali abbreviata, (stria suturali quam ceteris multo brevior). Long. $6\frac{1}{3}$, lat. 3 m.m.

I have seen only a single female.

Australia, (Cape York). 685.

889. *Copelatus perfectus*, n. sp.—Ovalis, sat depressus, piceus, capite piceo-testaceo, prothoracis lateribus, elytris, antennis pedibusque testaceis; capite transversim in vertice prothoraceque strigulis brevibus conspicuis; elytris striis undecim profundis, aliaque marginali abbreviata. Long. $4\frac{1}{2}$, lat. $2\frac{1}{8}$ m.m.

Though allied to *Colymbetes aubei* (No. 896), the present species is quite distinct by the smaller size, paler colour, and by the eleven instead of twelve-striate elytra. The sexes are very difficult to distinguish.

New Caledonia. 680.

890. *Copelatus irregularis*, Macleay, Tr. N. S. W. 1871, p. 126.—Ovalis, sat depressus, nitidus, supra nigricans, capite medio, prothorace lateribus elytrorumque basi et apice, antennis et pedibus testaceis, subtus rufescens; prothorace strigulis in mare sparsis et profundis, in femina densis et subtilibus; elytris striis undecim profundis et integris, aliaque marginali abbreviata. Long. $6\frac{1}{2}$, lat. $3\frac{1}{3}$ m.m.

The male has the front and middle tarsi greatly dilated, and the front tibiæ curved and with the basal part slender and sinuate inwardly.

Australia, (N.W.; Rockhampton, Port Bowen). 678.

891. *Copelatus brullei*, Aubé, M.C.—Oblongo-ovalis, subdepressus, angustulus, nitidus, nigricans, antennis pedibusque rufescentibus; prothorace ad margines striis brevissimis subtilibus, medio late lævigato; elytris striis undecim sat profundis, suturali posterioribus abbreviata, marginali anterioribus haud abbreviata. Long. 5, lat. $2\frac{5}{8}$ m.m.

In the male the anterior tibiæ are curved at the knee and have a slight notch there, the front and middle tarsi are dilated, but narrow. The specimens I have seen of this species are few in number, and are all in excessively bad condition, but the marginal stria not abbreviated in front while the sutural one is shorter behind than the others, the other striæ, nine in number, continued till near the apex, except that the alternate ones are shorter than in the allied species, facilitate the recognition of the species; the antennæ are very elongate, the front tibiæ are slender, and the

smooth thorax, with short linear punctures near the margins are also prominent characters.

South America, (Cayenne). 631.

892. *Copelatus striatopterus*, Aubé, M.C.—Oblongo-ovalis, subdepressus, piceoniger, nitidus, prothorace versus latera dilutiore, pedibus rufis, prothorace strigis impressis brevibus et parvis; elytris striis undecim profundis sed angustis, alternis ad apicem evidenter abbreviatis (suturali dimidiata), striaque duodecima externa antèrius haud abbreviata. Long. 6, lat. 3 m.m.

The striae of the elytra are regular and distinct in this species, but are not grooves, the sutural one scarcely reaches half way to the apex, while on the other hand the stria close to the side margin extends from the shoulder to near the extremity; the hind legs are slender. In the male the front tibiae are curved at the knee, and have a slight notch near the base, and the front and middle tarsi are a little dilated.

South America, (Brazil, Sahlberg). 627.

893. *Copelatus oberthuri*, n. sp.—Ovalis, sub-depressus, nitidus, subtus testaceus, supra infuscatus, prothoracis lateribus, elytrorum basi et apice dilutioribus; prothorace strigis impressis sparsis; elytris striis undecim profundis ad summum basin attingentibus, alternis ante apicem magis abbreviatis, (suturali quam ceteris vix brevioribus), striaque duodecima externa antèrius abbreviata. Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ m.m.

The male has the prothoracic scratches more scanty than the female, and has the basal joints of the front and middle tarsi a good deal dilated, and the claw joint of the front feet is thickened in a peculiar manner; the front tibiae are simple. In this species the first stria is equidistant from the suture and the second stria.

I have named this very distinct species in honour of M. René Oberthur, to whose kindness I owe three individuals.

South America, (Bragance near Para; de Mathan). 708.

894. *Colymbetes strigipennis*, Cast. Et. Ent. p. 103.—Ovalis, subdepressus, niger, prothorace ad latera, antennis pedibusque anterioribus rufis, posterioribus piceis; prothorace crebre profundeque strigoso; elytris singulo striis undecim basi (etiam internis) perprofundis, ad apicem fere continuatis, aliaque ad marginem exteriorè antèrius abbreviata. Long. $8\frac{1}{2}$, lat. $4\frac{1}{2}$ m.m.

This species is usually mixed with the preceding in collections, but the present one is smaller, and has the internal striae of the elytra deeper at the base,

the male tarsi are less dilated, and the fine aciculations or scratches on the elytra of the female are even less conspicuous, so that they can be scarcely said to be present.

South America, (Cayenne). 625.

895. *Colymbetes sulcipennis*, Cast., M.C.—Ovalis, subdepressus, niger, prothorace ad angulum anteriorem, antennis pedibusque anterioribus rufis, posterioribus nigropiceis; prothorace crebre profundeque strigoso; elytris singulo striis undecim basi perprofundis, ad apicem fere continuatis, aliaque ad marginem exteriorem anterie abbreviata. Long. 9, lat. $4\frac{3}{4}$ m.m.

The male of this species has the three basal joints of the front and middle tarsi greatly dilated; and the interstices of the elytra quite smooth; in the female the interstices, except the three or four sutural ones, bear extremely fine scratches or aciculations, these however are confined to the basal portion.

South America, Cayenne. 624.

GROUP 14. (No. 896).

Elytra with a submarginal stria, and twelve other strie on each.

In this interesting species the striation of the elytra attains its maximum; the strie are very regular and equidistant and deep, except that at the apex there are some detached fragments, which strongly suggest that this species has arrived at its perfect striation by a development from a condition similar to that still existing in No. 847 (*C. interruptus*).

896. *Copelatus aubei* (Montr. forte), M.C.—Ovalis, sat depressus, niger, capite prothoracisque lateribus piceo-testaceis, antennis pedibusque rufescentibus; capite transversim in medio prothoraceque strigulis brevibus profundis; elytris striis duodecim per-profundis, vix ad apicem disintegratis, aliaque marginali anterie abbreviata. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.

This species is very distinct by the coarse sculpture of the upper surface. The male is not easy to distinguish from the female, there being no differences of sculpture, and the front and middle tarsi are only obscurely incrassate (not dilated). Montrouzier's description can scarcely be cited as the authority for the name of this insect.

New Caledonia. 679.

I. 55.—Genus *AGLYMBUS*.

Coxal lines quite obliterated ; upper surface bearing a sculpture of short lines.

The seven species of this genus are with two exceptions South American, and are extremely rare in collections. The two Abyssinian species will probably prove another genus.

897. *Copelatus rufipes*, Brullé, *Agabus rufipes*, M.C.—Ovalis, elongatus, sat angustus, nitidus, subtus piceo-rufus, supra niger, capite, prothoracis lateribus, elytris fascia basali, macula laterali signaturaque apicali, antennis pedibusque testaceis ; prothorace strigis haud subtilibus numerosis impressis, elytris in parte basali strigis similibus, in parte apicali fere lævigatis. Long. 7½, lat. 2¾ m.m.

The male has the second and third joints of the front and middle tarsi a good deal thickened. The female I have not seen. A variety occurs (in the same localities as the type form) having no trace of the basal fascia on the elytra.

South America, (Brazil). 710.

898. *Agabus leprieuri*, Aubé, M.C.—Ovalis, minus nitidus, piceus, supra nigricante, capite elytrisque apice dilutioribus, prothoracis lateribus antennis pedibusque ferrugineis ; thorace elytrisque lineolis brevibus, profundis et numerosis impressis, illis versus elytrorum apicem obliquis. Long. 6½, lat. vix 3½ m.m.

The male differs from the female only by a slight incrassation of the basal joints of the front and middle tarsi. The species is readily recognized by its peculiar sculpture ; the specimens before me show some variation in size and form, and also in the number of the scratches on the thorax and elytra.

South America, (Cayenne). 711.

899. *Aglymbus sculpturatus*, n. sp.—Ovalis, fere opacus, piceus, supra nigricante, capite elytrisque limbo dilutioribus, prothoracis lateribus antennis pedibusque ferrugineis ; thorace elytrisque lineolis profundis densis, impressis, illis versus apicem obliquis. Long. 6, lat. 3¼ m.m.

This species is narrower in front and therefore more oval in form than in *Agabus leprieuri* (No. 898) and has the sculpture of the upper surface denser. The single individual I have seen is a male, and has the front and middle tarsi very little incrassate.

South America, (Para, Bragança, de Mathan). 712.

900. *Aglymbus optatus*, n. sp.—Ovalis, sat nitidus, piceus, supra nigricante, capite elytrisq. apice dilutioribus, prothoracis lateribus antennis pedibusq. ferrugineis; thorace lineolis brevibus fere subtilibus, minus numerosis; elytris lineolis brevibus haud densis, versus apicem obliquis. Long. 6, lat. $3\frac{1}{2}$ m.m.

Rather broader than *Agabus leprieuri* (No. 898), and with the sculpture of the upper surface less dense; in other respects excessively similar. The only individual I have seen is I think a female.

South America, (Columbia). 713.

901. *Agabus pallidiventris*, Aubé, M.C.—♂ Oblongo-ovalis, minus elongatus, depressiusculus, nitidus, subtus rufescens, supra nigro-piceus, capite prothoracis lateribus antennis pedibusq. rufis, elytris ad basin et apicem testaceo-maculatis; thorace elytrisq. lineolis subtilissimis brevibus impressis; antennis fere elongatis. Long. 4½, lat. $2\frac{1}{2}$ m.m.

The only individual I have seen is from Déjean's collection and is in bad preservation; it is a male and has the basal joints of the front and middle tarsi distinctly thickened. In this species the hind border of the posterior femora is straight and its apical angle nearly rectangular.

South America, (Cayenne). 715.

902. *Aglymbus gestroi*, n. sp.—*Fem.*, Elongatus, subparallelus, depressus, subopacus, fere impunctatus, subtus rufescens, abdomine versus apicem infuscato, supra nigricante, capite prothoracisque lateribus rufescentibus, elytris ad apicem dilutioribus, basi testaceo, antennis pedibusq. rufis; elytris striis obsolete quatuor subdisintegratis. Long. $6\frac{1}{2}$, lat. $3\frac{1}{8}$ m.m.

The antennæ are elongate. The head is very finely punctured; the thorax is even more indistinctly punctured, and has a fine channel on the disc. The striae of the elytra are fine and indistinct, the first is remote from the suture, the second does not reach to the base, between the third and fourth there are some remote punctures in place of a stria which is absent.

I have seen but a single individual of this very distinct species.

Abyssinia, (Seiotel, Bogos; Beccari, 1870; Genoa Mus.) 714.

903. *Aglymbus brevicornis*, n. sp.—*Fem.*, Oblongo-ovalis, haud elongatus, depressiusculus, nitidus, impunctatus, piceus, capite anterius prothoracisque lateribus rufescentibus, antennis pedibusq. testaceis; prothorace ad latera lineolis subtilissimis; elytris striis quatuor abbreviatis a punctis sat conspicuis haud interruptis; antennis brevibus crassiusculis. Long. 4, lat. $2\frac{1}{4}$ m.m.

The first of the elytral striae is remote from the suture, it and the third reach nearly to the base but are abbreviated a good distance from the apex, the second does not reach to the base; these striae are very fine and have some distant punctures placed on their course, the fourth (or external) stria is more broken-up than the others, and is remote from the third one. In this species the extremity of the posterior femora is rounded, so that both the front and hind angles are rounded. The only individual I have seen is a female.

Abyssinia, (Raffray, in Mus. civ. Genoa). 716.

I. 56.—Genus *LACCONNECTUS*.

Coxal lines quite obliterated; coxal lobes without incision, upper surface without any sculpture except the three series of punctures; prothorax with a fine lateral margin.

The two species are from the East Indian region, and are small insects, having much the appearance of the *Laccophilus*.

904. *Lacconnectus basalis*, n. sp.—Late ovalis, fere depressus, politus, nitidus, testaceus, vertice utrinque ad oculos fusco, elytris vage infuscatis, fascia basali testacea, basi summo lateribusque fuscis, vitta fusca laterali in medio a macula testacea subinterrupta; elytris seriebus subtilibus punctorum tribus; corpore subtus per-laevigato, nitido; antennis fere elongatis. Long. 5½, lat. 3½ m.m.

This species has the appearance of a broad depressed *Laccophilus*. The surface is very smooth and shining; the series on the elytra consist of fine very closely placed punctures, between the first and second of these series there is a row of distant punctures; the points forming the third or outer series are not nearly so dense as those of the other two series. The male differs from the female only by having the basal joints of the front and middle tarsi a little incrassate.

Siam, Cambodia. 718.

905. *Lacconnectus fulvescens*, Motsch., M.C.—Ovalis, sat latus, nitidissimus, castaneo-testaceus, antennis pedibusque testaceis; elytris seriebus subtilissimis punctorum duabus; antennis haud elongatis. Long. 4, lat. 2¾ m.m.

Very closely allied to *Lacconnectus basalis*, but much smaller, without any distinct markings, and with the punctures of the elytra finer; the outer series of punctures is therefore scarcely to be detected. The male characters are much the same as in *Lacconnectus basalis*.

India, orientalis. 719.

I. 57.—Genus *AGABETES*.

Prothorax without lateral margin; upper surface with a dense remarkable sculpture. Coxal lines conspicuous, parallel in front, gently divergent behind, and marking off a large, broad, coxal border.

The only species known is found in North America, but is apparently very rare.

906. *Colymbetes acuductus*, Harr., *Agabus acuductus*, M.C.—Ovalis, latus, subdepressus, subopacus vel opacus, rufescens, pectore, abdomine, prothorace elytris que infuscatis, thorace elytris que versus latera rufescentibus; supra striolis disjunctis, brevibus, sat profundis crebre ornatus; prothorace brevi, sine margine laterali, angulis posterioribus rotundatis. Long. $7\frac{1}{2}$, lat. $4\frac{1}{3}$ m.m.

The male has the basal joints of the front and middle tarsi much incrassate and greatly compressed, and furnished beneath with scanty, long hairs, mixed with which are other rather short hairs bearing rather large palettes; the claws of the anterior feet are very elongate, and little curved; they are also rather thick, the front one being somewhat more thickened than the other, but it becomes slender near the extremity so as to cause the outline beneath to appear sinuate: the apical ventral segment is traversed along the middle for its whole length, with two very remarkable perfectly parallel deep grooves. There is also a sexual disparity in the sculpture of the upper surface, the female being more dull than the male, and having the short impressions on the elytra more densely packed.

In this species the obliteration of the subserial punctures of the elytra is complete.

North America, (Pennsylvania, Canada). 820.

I. 58.—Genus *MATUS*.

Prosternum sulcate along the middle.

Three species are known, two of them Australian, the other North American.

907. *Colymbetes bicarinatus*, Say, *Matus bicarinatus*, M.C.—Oblongo-ovalis, minus convexus, nitidus; ferrugineus, fere unicoloratus, elytris vix obscurioribus, corpore supra parce subtiliter punctulato; capite minus brevi; thorace ad latera marginato, prope marginem late, subobsolete, longitudinaliter impresso; prosterno

a margine anteriore ad apicem fere plano, medio longitudinaliter sulcato. Long. 8, lat. $3\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and well furnished beneath with hairs which are not much elongate, and bear quite minute palettes; the claws on the front feet are curved and rather short, the anterior one being thicker than the other.

North America, (United States, Massachusetts). 858.

908. *Matus* (*Batrachomatus*) *wingi*, Clk., M.C.—Oblongo-ovalis, depressus, nitidus, piceus, antennis pedibusque rufis, capite minus brevi, anterieus ferrugineo, prothorace ad latera elytrisque vittis duabus longitudinalibus testaceis, his haud conjunctis, vitta basali ad latera minus approximata; corpore sublævigato, elytris seriebus punctorum sat distinctis; prosterno a margine anteriore ad apicem fere plano, medio longitudinaliter sulcato. Long. $7\frac{3}{4}$, lat. $3\frac{3}{4}$ m.m.

In the male the basal joints of the front and middle tarsi are slightly incrassate, and are furnished beneath with rather short hairs bearing very minute palettes; the front claws are rather short, the anterior one being rather more curved than the other.

Australia, (Port Denison). 859.

909. *Matus daemeli*, n. sp.—Oblongo-ovalis, subdepressus, nitidus, niger, antennis rufis, pedibus rufo-obscuris; corpore sublævigato, elytris seriebus punctorum sat distinctis; prosterno medio sulcato, processu utrinque ad marginem longitudinaliter impresso. Long. 8, lat. 4 m.m.

The male characters seem the same as in *Matus wingi*, except that the front claws are simple and similar.

Although this species is so similar to *Matus wingi*, that it would probably without careful examination be passed over as a mere colour variety thereof, it nevertheless is well distinguished by some structural characters; thus besides the difference of sulcation at the sides of the prosternal process, *Matus daemeli* has the coxal lines slightly divergent in front, while they are absolutely parallel in *M. wingi*; on the other hand the apical portion of these lines is less flexed outwards in *M. daemeli*, so that the form of the coxal processes is a little different in the two species.

Australia, (Sidney). 860.

I. 59.—Genus *COPTOTOMUS*.

Palpi with their terminal joints a little incrassate, and rather deeply notched at the extremity ; prosternum thickened along the middle.

The three species* are North American.

910. *Coptotomus obscurus*, n. sp.—Ovalis, convexus, minus elongatus, nitidus, testaceus, subtus rufo-testaceus, vertice, prothorace anterieus et posterius in medio elytrisqve vittis irregularibus plus minusve coalescentibus nigris ; corpore supra crebre subtiliter punctato ; prosterno in medio crasso, anterieus perpendiculari ; coxis posterioribus magnis. Long. 7, lat. 3 $\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with moderately long hairs, bearing small palettes ; the claws on the front feet are slender and moderately long, the front one having beneath in the middle a very minute thickening, while the hinder has the basal portion more distinctly emarginate ; there is a slight difference in the sculpture of the elytra in the two sexes ; in the female the punctuation on the basal portion of the elytra is more distinct and regular than in the male, the punctures being slightly elongated so as to form excessively short striae.

The species is excessively similar to the two following, but is smaller and darker in colour, especially beneath, and has the hind coxae more free from sculpture, and their front border nearer to the middle coxal cavities ; the sexual distinctions are also less conspicuous.

North America. (Texas, Florida). 910.

911. *Dytiscus interrogatus*, Fab., *Coptotomus interrogatus*, M.C.—Ovalis, convexus, sat elongatus, nitidus, testaceus, vertice, thorace anterieus et posterius in medio, elytrisqve vittis irregularibus plus minusve coalescentibus nigris ; corpore supra crebre subtiliter punctato ; prosterno in medio crasso, anterieus perpendiculari, coxis posterioribus magnis, subrugosulis. Long. 8, lat. 4 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and furnished beneath with long hairs, bearing small palettes, the claws of the front feet are rather long, and have their basal portion slightly emarginate beneath, this is more distinct on the posterior than on the anterior one. In the female the basal

*The two following species unknown to me are probably closely allied to, if distinct from, one or other of those described in the text. *Coptotomus dillicilis*, Lec., (No. 1272 Luj. op.)? No. 911 var. North America.—*Coptotomus serripalpus*, Say, (No. 1273) ; Mexico.

portion of the elytra is less shining than in the male, and the sculpture consists of short, dense, indistinct striae.

This species seems quite intermediate between *Coptotomus obscurus*, and *C. longulus*.

North America. (Massachusetts). 862.

912. *Coptotomus longulus*, Lec., M.C.—*Fem.*, Ovalis, convexus, elongatus, supra minus nitidus, testaceus, vertice, thorace anterieus et posteriorius in medio, elytrisque vittis irregularibus plus minusve coalescentibus nigris; corpore supra densius subtiliter strigosulo, elytris versus apicem subtiliter punctatis ibidemque nitidis; prosterno in medio crasse, anterieus perpendiculari; coxis posterioribus magnis, conspicue rugoso-punctatis. Long $8\frac{1}{2}$, lat. 4 m.m.

I have seen only a single female of this species; it is more elongate and narrower than that preceding, has the sculpture of the elytra denser, and that of the hind coxæ coarser; the interval between the middle coxal cavities and the front border of the hind coxæ is rather larger.

North America, (Laramie, Nebraska, Colorado; sec. Crotch). 863.

I. 60.—Genus *LANCETES*.

Extremity of elytra sinuate-truncate. Palpi scarcely or not at all emarginate at the apex of the last joint: coxal processes elongate, deeply divided and much divergent.

Five species* are known, three from Chili, one from southern South America, the other from Australia and New Zealand: although resembling in colour and appearance the species of *Rhantus*, these insects may readily be distinguished therefrom by the truncate elytra.

913. *Colymbetes lanceolatus*, Clk., M.C.—Ovalis elongatus, aurantiaco-testaceus, vertice late, prothorace anterieus et posteriorius in medio, elytris vittis elongatis nigris; elytris subtiliter undulatum strigosulis, punctis seriatis conspicuis, apice subtruncatis; prosterno in medio anterieus sub-prominulo, vix rotundato. Long. $10\frac{3}{4}$, lat. 5 m.m.

The male has the basal joints of the front tarsi a good deal dilated and moderately

* In addition to these the following probably belong to the genus. *Agabus truncatipennis*, Sol. (No. 1205, *huj. op.*)? = No. 915; Chili.—*Colymbetes angusticollis*, Curt. (No. 1211); Chili.—*Colymbetes rotundicollis*, Bab. (No. 1245) near No. 916; Patagonia.

compressed, and furnished beneath with rather long hairs and rows of distinct palettes, their claws are rather long and unequal, the anterior one being very slender, while the posterior is stouter, and thickened from the apex to the base and near the base has a sharp projecting tooth; the middle tarsi are incrassate and strongly compressed, and furnished beneath with long hairs and palettes; the apical ventral segment in this sex is deeply strigose on its apical portion, while in the female these striae are quite obsolete; there is also a very slight sexual difference in the sculpture of the elytra, the female being slightly less shining, and having the sculpture near the shoulders forming more or less distinct, obliquely transverse, elongated scratches.

The New Zealand specimens are smaller and more slender than those from Australia and Tasmania, and have the black stripes of the elytra not quite so broad and less coalesced at the apex, and the female sculpture more distinct; as the Australian specimens however show in various degrees an approach to all these points, it seems to me they form but one species.

Australia, Tasmania, New Zealand. 864.

914. *Lancetes unguicularis*, n. sp.—Ovalis, elongatus, sat angustus, testaceus, pectore, abdomine, et capitis vertice nigricantibus, thorace in medio fusco-bimaculato, elytris nigro-reticulatis; corpore supra fere lævigato, elytris punctis seriatis conspicuis, ad apicem conspicue oblique truncatis, angulo externo dentato, acuminato. Long. 11, lat. $5\frac{1}{2}$ m.m.

The male has the basal joints of the front tarsi much incrassate and strongly compressed, and furnished beneath with rather long hairs, and with palettes; their claws show an unequalled amount of disparity, the front one being slender, elongate, and nearly straight, while the posterior is enormously developed, it is about twice as long as the front one, and is extremely incrassate in the vertical direction its upper edge being much arched, its external terminal portion is however elongate and slender and very acuminate; the middle tarsi have their basal joints much incrassate and greatly compressed, and furnished beneath with elongate hairs, and with palettes, their fifth joint is elongate and its claws are slender, elongate and equal; the last ventral segment is so cut away on each side, that its middle portion forms a projecting lobe; this segment towards its apex is closely, but rather finely and irregularly strigose. The other sex is unknown to me.

Chili. 865.

915. *Colymbetes nigriceps*, Er., *Rhantus nigriceps*, M.C.—Ovalis, sat elongatus, vix angustus, niger, antennis testaceis articulis 5–11 extrorsum plus minusve infuscatis, thorace elytrisq. testaceis, illo medio fascia transversa nigra, his nigro-

reticulatis, punctis seriatis conspicuis, ad apicem oblique truncatis, angulo externo nullo. Long. $10\frac{1}{2}$, lat. $5\frac{1}{8}$ m.m.

The male has the basal joints of the front tarsi a good deal incrassate and compressed, and furnished beneath with long hairs and with palleites, their claws are elongate, sinuate, and unequal, the posterior being incrassate, and a little longer than the front one, this latter being only moderately slender; the middle tarsi have the basal joints incrassate and greatly compressed, and clothed beneath in a manner similar to the front ones; the apical ventral plate is sinuate on each side, so as to appear produced in the middle, and this central part bears long deep rugæ. In the female this segment is but little sinuate at the sides, and the hinder part is marked with moderately short rugæ; in this sex the elytra have on their basal portion some short irregular scratches, which appear to vary in their number and extent in different individuals.

Chili. 866.

916. *Colymbetes præmorsus*, Er., *Rhantus varius*, M.C.—Ovalis, sat elongatus, angustulus, rufo-testaceus, pectore, (maris sed non femine abdomine) verticeque nigris, elytris nigro-reticulatis, ad apicem truncatis, angulo externo rotundato; prosterno in medio crasse compresso-elevato. Long. 9, lat. $4\frac{1}{2}$ m.m.

The male has the basal joints of the front tarsi much incrassate and compressed, and furnished beneath with long hairs and with large palleites; their claws are very unequal the front one being slender, moderately long, nearly straight, and very acuminate, while the hinder one is a good deal longer and is thickened, sinuate and acuminate, and has a projecting tooth close to the articulation; the middle tarsi have their basal joints much incrassate and compressed, and clothed beneath in a similar manner to the front feet, their terminal joint is elongate, and bears long, slender, nearly equal claws; the apical ventral segment in each sex is deeply sinuate on each side, and in the male is longitudinally strigose, but in a variable manner. The female has numerous very short scratches on the elytra, and the serial punctures are less distinct than in the male.

The species is somewhat variable in colour; besides the sexual disparity in the colour of the ventral segments, there is also a variation independent of sex, the breast being sometimes but little black, and occasionally in the male the black colour does not entirely cover the ventral segments, while on the other hand in certain females, the black colour is not entirely wanting; the prothorax is sometimes blackish at the base, and occasionally has traces of two black spots on the disc. The size and the thickness of the hinder of the two front claws of the male also vary somewhat.

South America, (Chili, Bolivia, Monte Video). 867.

917. *Rhantus marginatus*, Steinh. Atti. Soc. Ital. Sci. Nat. XII, p. 250.—Ovalis, colore variabilis, testaceus, pectore plus minusve nigricante, abdomine, vertice, prothorace anterior et posterior elytris que nigris, his margine externo lineisque sæpius obsoletis testaceis, punctis seriatis parum conspicuis, ad apicem truncatis; prosterno in medio valde compresso-elevato, anterior rotundato declivo. Long. 9, lat. 4 m.m.

The male has the basal joints of the front tarsi incrassate and compressed, and furnished beneath with long hairs, and with minute palettes; their claws are short, and the front one is slender and nearly straight, while the hinder, though about of similar length is thicker, and is strongly curved and armed with a large tooth beneath near the base; the middle tarsi have the basal joints incrassate and greatly compressed and clothed beneath in a similar manner to the front feet; the apical ventral segment is almost without sinuation at the sides, and is longitudinally strigose. The female seems to be considerably larger and broader than the male, and has the hind coxæ more yellow, and the elytra very finely and obsoletely punctulate, while in the male they are nearly smooth.

South America, (Monte Video). 868.

II. 11.—Group COLYMBETINI.

The semi-membranous side piece of the first segment of the hind body (interposed between the stigma and the edge of the ventral segment) marked by transverse rugæ or furrows; setigerous punctures of hind femur, when present, forming an irregular patch at the extremity, widely separated from the posterior margin.

The four genera may be thus distinguished:—

Ventral side pieces broad (as this character cannot be seen without raising the wing-cases, it may be supplemented by these, viz.:—upper surface conspicuously reticulate; wings of metasternum rather short); two species peculiar to North America.	}	<i>SCUTOPTERUS</i> , (<i>Vide</i> p. 606.)
Side-piece of fourth ventral segment narrow; upper surface not reticulate, but wing-cases either nearly smooth, transversely aciculate, or quasi-imbricate (subtuberculate).	{	Metasternal groove broad and definite; thorax usually margined at sides; size not more than 15 m.m. long; last joint of hind tarsus subequal to the preceding joint; many species with great distribution.
	}	<i>RHANTUS</i> , (<i>Vide</i> p. 607.)
	{	Metasternal groove very narrow and indistinct; eighteen species, chiefly boreal.
	}	<i>COLYMBETES</i> , (<i>Vide</i> p. 624.)
	{	Metasternal groove moderately distinct; size large (20 m.m. long); swimming legs elongate, the last joint of their tarsi longer than the preceding one. Two Mediterranean and Atlantic island species.
	}	<i>MELADEMA</i> , (<i>Vide</i> p. 631.)

I. 61.—Genus *SCUTOPTERUS*.

Side pieces of the fourth and following ventral segments comparatively broad, that of the fourth segment being only about twice as long as broad. Upper surface reticulate, black in colour.

The two species are North American

· 918. *Agabus angustus*, Lec., *Scutopterus angustus*, M.C.—Suboblongus, parum convexus, vix nitidus, nigro-piceus, antennis palpisque piceo-rufis, pedibus piceis, capite anterieus anguste rufescente, in medio verticis macula parva, prothoracis marginibus vage picescentibus; prothorace basi subtruncato; corpore supra (in elytris profundius) reticulato, elytris punctis seriatis tantum anterieus sat conspicuis. Long. 16, lat. 8 m.m.

The male has the three basal joints of the front and middle tarsi much dilated and scarcely compressed, and furnished beneath with four series of palettes, and with a large basal patch of glandular pubescence, their fourth joint is also dilated and short, the claws are simple and rather short: the anterior tibiæ have a deep emargination on their inner edge a little below the knee, the female I have not seen.

The species is very distinct by a number of characters, from *S. horni*; it is of rather narrower and more depressed form, and less intensely black in colour and less shining; the reticulation on the elytra forms smaller meshes, and the serial punctures are less distinct especially behind; the thorax shows a sharper lateral margin; the antennæ are rather more slender and elongate; the hind coxæ are rather larger, but their anterior border is less arched, the wings of the metasternum are considerably larger, and the hind legs are more elongate and slender.

North America, (Lake Superior, Kansas, Canada; fide Crotch). 927.

919. *Scutopterus horni*, Crotch, Tr. Am. Ent. Soc. IV, p. 405.—Suboblongus, niger, nitidus, antennis palpisque rufis, pedibus piceis, capite ad angulos clypei et in medio verticis parum discrete rufescente; prothorace basi subtruncato; corpore supra, (in elytris profundius) reticulato, elytris punctis seriatis etiam ad apicem conspicuis. Long. 16, lat. 8 m.m.

The male has the three basal joints of the front and middle tarsi much dilated, and scarcely at all compressed, and furnished beneath with four series of palettes, and with a large basal patch of glandular pubescence, their fourth joint is also dilated and short, the claws are simple and rather short; the anterior tibiæ have a deep emargination on their inner edge a little below the knee. The female

resembles the male in sculpture: it has no ciliae on the outer edge of the hind tarsi beneath, whereas in the male, both sides of the tarsi are ciliate.

North America, (Hudson's Bay). 1165.

I. 62.—Genus *RHANTUS*.

Side piece of fourth and following ventral segments very narrow; metasternal groove distinct and well defined; terminal joint of hind tarsus not longer, (or but little longer) than the preceding one; thorax nearly always margined; colour of wing-cases frequently yellow speckled with black.

This genus as known to me comprises about forty species*; there are but few parts of the world where it is not represented by one or more species. They are difficult to determine, and I cannot at present arrange them in natural groups that would make the task more easy.

920. *Colymbetes pacificus*, Boisd. M.C.—Ovalis, minus convexus et elongatus, nigricans, vix nitidus, sublævigatus, subtilissime punctulatus, nullo modo reticulatus, nigricans, vertice rufo-bimaculato, prothoracis lateribus rufis, elytris nigro rufoque vermiculatis, punctis seriatis magnis; antennis pedibusque rufis, pedibus posterioribus picescentibus; prosterno in medio minus incrassato, processu brevi, sat compresso; unguiculis posterioribus longitudine parum dissimilibus. Long. 9 $\frac{3}{4}$, lat. 5 m.m.

The male characters are very slight, the basal joints of the front and middle tarsi being a little incrassate, and furnished beneath with four series of extremely rudimentary palettes. The claws are rather short, simple, and equal.

This very interesting species has the outer claw of the hind foot just visibly

* The following names should probably also be assigned to the genus:—*Colymbetes assimilis*, Kirb. (No. 1,213); North America.—*Colymbetes darwinii*, Bab. (No. 1,219), near No. 926; Patagonia.—*Colymbetes discicollis*, Aubé (No. 1,221) ?=No. 924; Java.—*Colymbetes distigma*, Brullé (No. 1,223), gen. dub.; South America.—*Colymbetes duponti*, Aubé (No. 1,225), near No. 926; South America.—*Colymbetes fonticola*, Phil. (No. 1,226); near No. 926; Chili.—*Colymbetes gutticollis*, Say. (No. 1,230) ? No. 935 Var.; Mexico.—*Colymbetes interelus*, Walk. (No. 1,234); Ceylon.—*Colymbetes marmoratus*, Ferroud, (No. 1,239), gen. dub.; New Caledonia.—*Colymbetes obscuricollis*, Aubé (No. 1,241) ? near No. 926; Chili.—*Colymbetes socialis*, Wat. (No. 1,250); Rodriguez Island.—*Colymbetes suturalis*, Macl. (No. 1,254) ?=No. 1,221; Java.—*Colymbetes vibicollis*, Hoch. (No. 1,257) ?=No. 924; Caucasus.—*Hydaticus richli*, Welcke (No. 1,320); Cuba.—*Rhantus* (?) *consimilis*, Motsch. (No. 1,500) ? near No. 944; California.—*Rhantus flavo-griseus*, Crotch (No. 1,501) near No. 935; North America.—*Rhantus luteicollis*, Gebl. (No. 1,502), near No. 951; Siberia.—*Rhantus nigriventris*, Motsch. (No. 1,503), near No. 924; Kamtschatka.—*Rhantus nigropunctatus*, Motsch. (No. 1,504; near No. 954); Songoria.

shorter than the inner one, and its extremity a little more slender and more curved.

The two individuals before me are from different sources; one was recently collected by Mr. Blackburn, the other was formerly in Dejean's collection; they differ in size and minor details, and may very probably prove to be two distinct species.

Sandwich Islands. 869.

921. *Rhantus debilis*, n. sp.—Ovalis, haud elongatus, depressus, nitidus, supra subtiliter reticulatus, nigricans, capite antierius et in vertice thoraceque rufescentibus, hoc disco infuscato, elytris nigro testaceoque vermiculatis; prosterno antierius parum elevato, processu brevi, vix compresso, metasterni lateribus brevibus; tarsis posterioribus unguiculo externo quam interno fere duplo brevior. Long. 8, lat. vix 4 m.m.

The male has the basal joints of the front and middle tarsi slightly incrassate, compressed, and furnished beneath with four rows of narrow palettes; the claws of the front feet are rather short, strongly curved, the anterior one slightly longer than the other.

Tahiti. 871.

922. *Rhantus annectens*, n. sp.—Ovalis, haud elongatus, subdepressus, nitidus, sublævigatus, omnium subtilissime reticulatus, pectore abdomineque nigris, supra rufescens, capite in medio prothoracisque macula discoidali nigricantibus, elytris nigro testaceoque vermiculatis; prosterno piceo, medio minus alte elevato, processu sat elongato, minus compresso. Long. 11, lat. 5 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and compressed, and furnished beneath with four rows of narrow palettes.

I have seen only two very mutilated individuals; the species approximates to *Colymbetes pulverosus*, Steph., but is rather smaller, and the black marks on the elytra are larger, and form tortuous markings rather than spots: the prosternal process is a little shorter and less compressed, and the front border of the hind coxæ approaches nearer to the middle coxæ.

Navigators Islands. 872.

923. *Rhantus plantaris*, n. sp.—Ovalis, sat elongatus, angustulus, nitidus, sublævigatus, subtilissime punctulatus, nullo modo reticulatus, testaceus, pectore, abdomine et capite utrinque ad oculos nigris, elytris nigro-irroratis, punctis seriatis conspicuis; prosterno in medio minus elevato, processu sat elongato, parum com-

presso; metasterni lateribus brevibus; tarsi posterioribus elongatis, unguiculis valde inæqualibus. Long. 10, lat. 5 m.m.

The male has the front tarsi rather broadly dilated, and not compressed, the fourth joint being triangular; they are clothed beneath with four series of narrow palettes, and on the basal portion with short setæ; their claws are rather short and stout, and strongly curved, the front one being rather shorter than the hind one; the middle tarsi are also dilated and clothed like the front feet, their fifth joint is elongate, but the claws are wanting in the only specimen known. The female is unknown.

New Zealand. (Dunedin, Castlenau). 870.

924. *Colymbetes pulverosus*, Steph., *Rhantus pulverosus*, M.C.—Ovalis, haud convexus, nitidus, subtus niger, prosterni processu plus minusve dilutiore, antennis pedibusque anterioribus testaceis, pedibus posterioribus piceis, supra testaceus, vertice nigro rufoque variegato, thorace in medio macula transversa fusco-nigra, elytris creberime nigro-irroratis; tarsi posterioribus haud elongatis, articulo quarto inferne haud posterius lobato-producto, unguiculo interno quam externo vix duplo longiore. Long. 12, lat. 6½ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate and very compressed, and furnished beneath with four rows of narrow elongate palettes, the marginal hairs are but little developed; the claws on the front feet are short but unequal, the anterior one is a little the longer, and is swollen at the base and bent at a little distance beyond the swelling so as to give the appearance of an emargination close to the base, the hinder one is shorter and its basal thickening extends for about half the length of the claw; the claws of the middle tarsi are longer than those of the front feet, and are rather slender and nearly equal, the inner one however is rather shorter than the other, and is distinctly bisinuate beneath.

The Australian specimens are generally larger and in proportion narrower than those from other localities, and often have the front claw on the middle male feet thicker; these differences however are neither important nor constant.

Australia, very abundant; New Zealand, common; New Caledonia, common; South Japan, China, Java, Assam, Himalaya, Mesopotamia, Egypt, Algeria, Southern and Central Europe, but wanting or extremely rare in Northern Europe. 873.

925. *Rhantus elevatus*, n. sp.—Ovalis, latiusculus, sat convexus, nitidus, subtus niger, prosterno rufescente, antennis pedibusque anterioribus testaceis, posterioribus piceis, supra testaceus, capite posterius nigro, rufo-bimaculato, prothorace in medio transversim fusciscente, elytris creberrime nigro-irroratis; tarsi posterioribus brevibus, articulo quarto inferne leviter posterius lobato-producto, unguiculo interno quam externo haud duplo longiore. Long. 11½, lat. 6 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate and extremely compressed, and furnished beneath with four rows of narrow elongate palettes, the marginal hairs are but little developed; the claws on the front foot are moderately long and slender, and are nearly equal and simple, the front one being obscurely bisinuate beneath; the claws of the middle feet are nearly as long as those of the front feet, and are simple and equal.

Although closely allied to *Colymbetes pulverosus*, this is an undoubtedly distinct species, it is rather more convex, and has the hind legs thicker and shorter, and the male anterior claws much longer.

Arabia, (El Hedjaz, Dr. Millingen). 874.

926. *Dytiscus signatus*, Fab., *Rhantus signatus*, M.C.—Ovalis, haud convexus, nitidus, subtus niger, prosterno rufo, antennis pedibusque testaceis, pedibus posterioribus magis obscuris, supra testaceus, vertice rufo nigroque variegato, thorace in medio macula fusca plus minusve transversim extensa, elytris creberrime nigro-irroratis, tarsis posterioribus minus elongatis, articulo quarto inferne leviter posterius lobato-producto, unguiculo interno quam externo duplo longiore. Long. 10, lat. 5 m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and very compressed, and furnished beneath with four rows of narrow palettes, the marginal hairs are but little developed; the claws on the front feet, are slender and rather elongate, the anterior one is obscurely bisinuate beneath, and is slightly longer than the other; the claws on the middle feet are are not so long as those of the front feet, and are rather slender, the inner one being a little shorter and more curved than the outer.

This species is excessively similar to *Colymbetes pulverosus* (No. 924) but is smaller, and has the prosternum paler, and the male front claws longer: it is smaller than *R. elevatus*, and has the claws on the hind tarsi, more especially the outer one, shorter.

This species varies considerably in size, and in the black colour of the upper surface: the dark mark of the thorax is in small narrow individuals generally extensive, and the black dots of the elytra close and more or less confluent; in very broad individuals the thoracic mark sometimes becomes so indistinct that it is represented only by two small fuscous spots close to one another on the middle of the thorax, and in these individuals, the black dots or irrorations on the elytra are more sharply defined. I can find no trace of a division into two species. There is an individual in my collection in which the claws of the right hind foot are subequal in length, those of the left foot being of the form general in the species.

South America, (Monte Video, Buenos Ayres, Chili, Peru). 875.

927. *Rhantus remator*, n. sp.—Ovalis, haud convexus, nitidus, subtus niger, prosterno rufo, antennis pedibusque testaceis, pedibus posterioribus magis obscuris; supra testaceus, vertice nigro rufoque variegato, thorace in medio late transversim fuscescente, elytris crebre nigro-irroratis, tarsis posterioribus brevibus, articulo quarto vix perspicue lobato-producto. Long. $10\frac{1}{2}$, lat. $5\frac{1}{4}$ m.m.

This species is excessively closely allied to *Dytiscus signatus*, but I have not been able to reduce the individuals I have seen of it to a variety thereof; the form in the present species is broader in front, and the greatest width is nearer the extremity of the elytra, and the black dots of the wing-cases are of larger size, the thoracic dark mark is extensive, while in the broader varieties of *Dytiscus signatus* it is always diminished; the male characters are exceedingly similar, but the claws of the middle and front feet appear a little thicker than in the corresponding sex of *Dytiscus signatus*; it is very probable however that this will prove to be only another variety of that variable species.

South America, (Peru). 876.

928. *Colymbetes vicinus*, Aubé, *Rhantus vicinus*, M. C.—Ovalis, sat convexus, nitidus, niger, supra testaceus, capite nigro anterieus et in vertice testaceo, thorace in medio vitta transversa nigra, basique plus minusve nigricante, elytris crebre nigro-irroratis, antennis pedibusque rufis, illis extrorsum, et femoribus præsertim posterioribus, infuscatis; tarsis posterioribus haud brevibus, articulo 4° gracili brevius lobato-producto, unguiculo interno quam externo duplo longiore. Long. $9\frac{3}{4}$, lat. 5 m.m.

The male has the basal joints of the front and middle tarsi a good deal incassate and compressed, and clothed beneath with moderately small palettes; the front claws are unequal, the anterior being moderately long, and rather thick, with well marked basal lobe, the hind one a good deal longer, and thickened between the base and middle; the claws of the middle feet are thick beneath and rather short and nearly equal: the female often has the thorax very deeply sinuate at the sides close to the front angles.

South America, (Columbia). 877.

929. *Rhantus advena*, n. sp.—Ovalis, sat angustus, haud convexus, nitidus, subtus niger, prosterno in medio piceo, supra testaceus, capite nigro-rufoque variegato, thorace in medio vitta transversa nigra, basique nigricante, elytris creberrime nigro irroratis, antennis testaceis articulo ultimo infuscato, pedibus rufis, femoribus infuscatis; tarsis posterioribus haud brevibus, articulo 4° gracili posterius lobato-producto, unguiculis parum elongatis, crassiusculis, interno quam externo haud duplo longiore. Long. 10, lat. 5 m.m.

The male has the front and middle tarsi a little incrassate and compressed, and furnished beneath with moderately small palettes, the front claws are moderately long and slender, and nearly equal, the front one being nearly straight, the hind one scarcely longer, but more bisinuate; the middle claws are short, and of about equal lengths, the outer one being remarkably thick.

I have seen but a single male individual of this species, it seems allied to *Colymbetes vicinus*, but to be rather longer and less convex, to have the claws on the hind tarsi shorter and thicker, and the claws on the front and middle feet different: a female in Wehneke's collection, probably belonging to this species, has the posterior tarsi shorter; in other respects it resembles the male, the thorax not being in the least constricted in front.

I obtained this species in the collection of W. W. Saunders, Esq. Although labelled Peru. I think it may possibly be from Mexico: Wehneke's female is labelled "Chili?"

South America, (Peru). 878.

930. *Colymbetes divisus*, Aubé, *Rhantus divisus*, M.C.—Ovalis, elongatus, haud convexus, sat nitidus, subtus niger, supra testaceus, vertice nigro rufoque variegato, thorace in disco maculis duabus parvulis fuscis, elytris creberrime nigro-irroratis, minus subtiliter reticulatis, antennis fusco-testaceis, basi testaceo, pedibus rufis, posterioribus magis obscuris; prosterno in medio minus elevato; pedibus posterioribus gracilibus, articulo 4^o gracili, unguiculo externo parvo quam interno triplo brevior. Long. 10½, lat. 5½ m.m.

The male has the front and middle tarsi considerably incrassate and moderately compressed, and furnished beneath with rather large palettes, the claws of the front feet are moderately long and stout, and are somewhat thickened and bisinuate beneath, the front one being a little longer, and less sinuate than the other; the middle claws are of very unequal length, the outer one being about twice as long as the greatly curved inner one. The species is known to me only from the type out of Dejean's collection; it is remarkable from the fact that the coxal processes are deeply divided, and the coxal lines less turned outwards, so that the form of the coxal processes is more slender in the transverse direction, than it is in the allied species; this character is a slight approximation to *Lancetes*.

North America. (Norfolk Sound). 879.

931. *Rhantus longipes*, n. sp.—Ovalis, elongatus, haud convexus, sat nitidus, subtus niger, prosterno anterius cum processu testaceo, supra testaceus, vertice rufo nigroque variegato, thorace in disco maculis duabus parvulis fuscis, elytris creberrime nigro-irroratis, antennis fusco-testaceis basi testaceo; pedibus rufis

posterioribus gracilibus, articulo 4^o gracili, unguiculo externo parvo quam interno triplo brevior. Long. $10\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

This species seems to be very closely allied to *Colymbetes divisus*, but has the anterior band of and the middle part of the prosternum yellow (the large posterior side pieces being black) and the coxal processes of more ordinary form; the male characters seem quite the same; there is no sexual difference of sculpture.

Russian America; British Columbia. 880.

932. *Rhantus obscurus*, n. sp.—Ovalis, elongatus, haud convexus, sat nitidus, subtus niger, supra testaceus, vertice rufo nigroque variegato, thorace in medio maculis duabus transversim extensis, elytris creberrime nigro-irroratis, antennis fusco-testaceis basi testaceo, pedibus rufo-fuscis, posterioribus fere nigris, tarsis gracilibus, unguiculo externo parvo quam interno triplo brevior. Long. $10\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

I see very little to distinguish this species from *Rhantus longipes*, except the colour distinctions; the black spots on the thorax have assumed a greater transverse extension, the prosternum is nearly quite black, and the legs are darker; the male characters seem to be the same as in *Colymbetes vicinus* and *Rhantus longipes*, and there is no sexual difference in sculpture.

North America, (California). 881

933. *Rhantus suffusus*, n. sp.—Ovalis, elongatus, haud convexus, subtus niger, supra testaceus, vertice rufo-nigroque variegato thorace in medio fascia transversa nigro-fusca, elytris creberrime nigro-irroratis, antennis pedibusque testaceis; tarsis posterioribus parum gracilibus, unguiculo interno quam externo duplo longiore. Long. 11, lat. 6 m.m.

I have not seen the male of this species; the female has the upper surface finely reticulate, and there is an elongate patch of coarse reticulation on the wing-case behind the shoulder.

In this species the prosternum is nearly black, except at the sides, and the wings of the metasternum are rather short. It will probably prove to be closely allied to *R. anisonychus* (No. 937), but it is smaller and narrower, and the sexual sculpture of the female is less developed.

Mexico, (discovered by Mr. Flohr). 1163.

934. *Rhantus plebeius*, n. sp.—Ovalis, sat elongatus, haud convexus, sat nitidus, prosterno testaceo, pectore nigro, abdomine feminae rufo, nigro-fasciato, maris magis nigricante, supra testaceus, vertice nigro-variegato, thorace medio maculis duabus transversim extensis nigris, elytris creberrime nigro-irroratis, pedibus testaceis; tarsis posterioribus sat gracilibus, unguiculo interno crassiusculo quam externo fere triplo longiore; prothorace margine laterali bene discreto. Long. 11, lat. $5\frac{3}{4}$ m.m.

The male characters seem to be the same as those of *Colymbetes divisus* (No. 930); in the female the reticulation on the sides of the elytra near the middle is deeper, and in some individuals there is also a development of patches of this deeper reticulation along the lines of indistinct serial punctures.

North America, (Hermit Lake). 882.

935. *Colymbetes binotatus*, Harris. *Rhantus binotatus*, M.C.—Ovalis, robustus, sat convexus, subopacus, subtus niger, prosterno rufo abdominis lateribus rufo-variegatis, supra testaceo vertice nigro-variegato, prothorace medio maculis duabus nigris, elytris creberrime nigro-irroratis, antennis pedibusque testaceis, illis extrorsum leviter infuscatis; prothorace margine laterali tenui anterie obsoleto; elytris creberrime subtilissimeque reticulatis; pedibus posterioribus crassis, unguiculo interno quam externo duplo longiore. Long. 11, lat. 6 m.m.

The male has the front and middle tarsi a good deal incrassate, and rather strongly compressed, and furnished beneath with four rows of rather large palettes, the claws of the front feet are rather short, and are bisinuate beneath, the anterior being rather the longer; on the middle feet the outer claw is a good deal longer than the abruptly curved inner one.

Though this species much resembles the shorter and more robust forms of *R. plebeius*, it is abundantly distinct, and besides the characters mentioned above has the side wings of the metasternum shorter. It varies a good deal in size and form, and a little in sculpture. The females from the United States have the reticulation on the middle and front part of the outer portion of the elytra coarse, but in the specimens from Mexico I find only slight traces of this coarser sculpture.

Mexico, Guatemala, Western United States, (Peru?). 883.

936. *Colymbetes mexicanus*, Cast., *Rhantus mexicanus*, M.C.—Ovalis, robustus, sat convexus, subopacus, subtus niger, prosterno rufo, abdominis lateribus rufo-variegatis, capite thoraceque rufis, illo vertice nigro-variegato, hoc maculis duabus parvis nigris, elytris nigricantibus, margine laterali apiceque testaceis, hoc nigro-irrorato, antennis pedibusque rufis, illis extrorsum leviter infuscatis; prothorace margine laterali tenui anterie obsoleto; elytris omnium densissime subtilissimeque reticulatis; pedibus posterioribus crassis, unguiculo interno quam externo vix duplo longiore. Long. 11, lat. 6 m.m.

This species is very closely allied to the preceding one, but has the elytra black, and their sculpture still denser and finer. The male characters seem to be nearly the same. I find no difference in the sculpture of the females.

Mexico; Guatemala. 884.

937. *Rhantus anisonychus*, Crotch, Tr. Am. Ent. Soc. IV, p. 409.—Ovalis, fere elongatus, sat convexus, sat nitidus, subtus niger, supra testaceus, vertice nigro-variegato, prothorace in disco maculis duabus coalescentibus nigris, clytris creberrime nigro-irroratis, antennis testaceis, extrorsum parum infuscat's, pedibus piceo testaceis: prothorace margine laterali sat discreto; tarsis posterioribus sat gracilibus, unguiculo interno quam externo duplo longiore; metasterni laciniis extrorsum brevibus. Long. $11\frac{1}{2}$, lat. 6 m.m.

The male has the front and middle tarsi a good deal incrassate, and moderately compressed, with the under surface bearing large palettes, and the marginal hairs largely developed and curled at their terminations; the front claws are excessively elongate, appearing when viewed from the front quite slender, the anterior one is much longer than the other and is slightly bisinuate beneath; the middle claws are thick, the outer being much longer than the more curved inner one: the female has the lateral portion of the wing cases from the shoulder to the middle, and also the lateral portion of the thorax, with the reticulate sculpture much deeper.

North America, (California). 885.

938. *Rhantus discedens*, n. sp.—Ovalis, fere elongatus, sat convexus, subtus piceo-rufus, capite in medio prosternoque rufis, supra testaceus, capite nigro, anterieus rufo, prothorace plaga transversa discoidali nigra, clytris creberrime nigro-irroratis, antennis pedibusque rufis, illis extrorsum leviter fuscescentibus; prothorace lateribus curvatis, margine laterali sat discreto; tarsis posterioribus subrobustis, articulo quarto vix lobato-producto, unguiculo interno quam externo plus duplo longiore: metasterni laciniis brevibus. Long. $11\frac{1}{2}$, lat. 6 m.m.

I have seen but a single female of this, which is no doubt a very distinct species; this individual has the basal portion of the clytra covered with deep coarse impressions, rendering the surface very rugose, the apical half of the wing cases bearing the usual fine reticulations; the thorax has on each side a large patch of coarse sculpture.

North America, (California). 886.

939. *Colymbetes atricolor*, Aubé, M.C.—Ovalis, niger, nitidus, vertice testaceo-bimaculato, antennis rufis, pedibus piceis; supra crebrius punctato-reticulatus, subtus lævigatus, nitidus, neque strigosulus nec punctatus; prothoracis margine laterali subobsoleto; tarsis posterioribus robustis, articulis haud lobato-productis, unguiculo externo elongato, quam interno haud duplo brevior. Long. 14, lat. $7\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi a little incrassate, and greatly compressed, and clothed beneath with rather long hairs and four rows of

quite small palettes, the claws are rather long and slender and nearly equal and simple, the anterior one of each pair being notched beneath close to the base.

Mexico. 887.

940. *Colymbetes nitidus*, Brullé, M.C.—Ovalis, robustus, latus, convexus, nitidus, niger, supra vix subæne-cens, vertice rufo-bimaculato, prothoracis elytrorumque lateribus plus minusve late ferrugineis, his in parte ferruginea plus minusve discrete nigro-irroratis; antennis palpisque rufis, pedibus piceis; corpore supra subtilissime punctulato, haud reticulato; abdomine basi subtiliter strigosulo, strigiculis utrinque ad marginem posteriorem versus medium segmenti secundi magis confertis; tarsis posterioribus robustis, articulis extus inferne breviter lobato-productis, unguiculo interno quam externo duplo longiore. Long. $13\frac{1}{2}$, lat. $7\frac{1}{2}$ m.m.

The male has the basal joints of the front and middle tarsi moderately incrassate and compressed, and furnished beneath with four series of quite small palettes, with the marginal hairs but little developed; the claws of the front feet are short and equal, the middle claws are also equal but are a good deal longer than those of the front feet; the apical ventral segment is obliquely strigose on each side in this sex.

South America, (Chili). 888.

941. *Colymbetes limbatus*, Aubé, M.C.—Ovalis, convexus, latus, niger, supra vix subænescens, capite antice et in vertice, prothoracis elytrorumque lateribus, antennis pedibusque anterioribus ferrugineis, pedibus posterioribus piceis; corpore supra subtilissime punctulato, haud reticulato; prosterno anterieus in medio valde compresso-elevato; tarsis posterioribus brevibus robustis, articulis extus inferne breviter lobato-productis, unguiculis crassis, interno quam externo duplo longiore. Long. 14, lat. 8 m.m.

I have seen only a single individual of this species, it is a female; the same individual that served Aubé for his description. It seems to be really allied to *Colymbetes nitidus*, but is of broader form, more narrowed in front, the prosternum is more acutely elevated in the middle, there is no abdominal file, the hind legs, especially the tarsi, are shorter and thicker, and the epipleuræ behind the middle are considerably broader.

Brazil, (coll. Mnizech). 1164.

942. *Dytiscus calidus*, Fab., *Colymbetes calidus*, M.C.—Ovalis, sat convexus, fere lævigatus, niger, capite anterieus verticeque minus discrete rufescentibus, prothoracis lateribus elytrisque ferrugineis, his confertim nigro-irroratis, versus basin sæpe omnino nigris, in irrorationes lineis pallidis plus minusve distinctis fasciaque basali

variabili, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis, crassis, tarsorum articulis lobato-productis, unguiculo interno quam externo crassiusculo plus duplo longiore. Long. $12\frac{1}{2}$, lat. $6\frac{1}{4}$ m.m.

The male has the front and middle tarsi only very slightly incrassate and entirely compressed, and furnished beneath with minute palettes, their claws are nearly equal and simple. The species varies a good deal in size and in the colouring of the upper surface, but very little in other respects.

America, from Brazil to the United States of North America, (Rio de Janeiro, Amazons, Venezuela, Peru, Guatemala, Mexico, Texas). 889.

943. *Dytiscus grapii*, Gyll., *Colymbetes grapii*, M.C.—Ovalis, parum convexus, niger, subopacus, antennis palpisque testaceis, pedibus, prothoracis lateribus elytrorumque epipleuris piceis, supra creberrime subtilissimeque reticulatus; prothorace basi utrinque profunde sinuato, angulis posterioribus prolongatis; prosterno medio anterius parum elevato; tarsis posterioribus articulis extus inferne bene lobatis, unguiculo interno quam externo duplo longiore. Long. 11, lat. $5\frac{3}{4}$ m.m.

The male has the front and middle tarsi a good deal incrassate but quite compressed, and furnished beneath with four rows of small palettes, the marginal hairs are moderately long; on the front feet the basal portion of the tarsus beneath is quite bare and shining, and the claws are moderately long and nearly equal and simple; on the middle feet the basal portion of the tarsus beneath is occupied by a large patch of dense glandular pubescence, and the claws are thick, the outer one especially being much incrassate beneath, and quite distinctly longer than the inner one.

Europe, (Sweden, Finland, Lapland, England, France, Germany; Constantine, Algeria, teste Bedel). 890.

944. *Colymbetes sinuatus*, Lec., Proc. Ac. Phil. 1866, p. 522.—Ovalis, parum convexus, niger, subopacus, antennis palpisque testaceis, prothoracis lateribus elytrorumque epipleuris piceis, supra creberrime subtilissimeque reticulatus; prothorace basi utrinque profunde sinuato, angulis posterioribus prolongatis; prosterno medio anterius parum elevato; tarsis posterioribus articulis extus inferne bene lobatis, unguiculo interno quam externo plus duplo longiore. Long. 10, lat. 5 m.m.

Extremely closely allied to the preceding, but much smaller.

North America, (Dacotah, Illinois). 895.

945. *Dytiscus pustulatus*, Rossi, *Scutopterus pustulatus*, M.C.—Ovalis, convexus, nigricans, vix supra subænescens, limbo piceo, antennis palpisque rufis, pedibus

piceis, vertice vage piceo-maculato; corpore supra densius subtiliter reticulato, subtus strigosulo, prosterno piceo. Long. 14, lat. 8 m.m.

The male has the three basal joints of the front and middle tarsi greatly incrassate and but little compressed, and furnished beneath with four series of large palettes, and with very long marginal hairs with curled extremities, they have a small basal patch of glandular pubescence; the front claws are long and rather slender, abruptly bent at the base, and unequal, the anterior one being considerably smaller than the posterior; the fourth and fifth joints of the middle feet are very elongate, and the claws are thick and unequal, the outer one being much longer and thicker than the inner: the female has a small development of rugose sculpture, along the two outer lines or subserial punctures on the elytra.

Europe, (Italy and Corsica). 892.

946. *Colymbetes notaticollis*, Aubé, *Rhantus notaticollis*, M.C.—Ovalis, sat convexus, nitidus, subtus niger, prosterno testaceo, supra testaceus, vertice nigro-variegato, thorace disco plaga transversa nigra, elytris creberrime nigro-irroratis, antennis pedibusque rufis, illis extrorsum fusciscentibus, femoribus posterioribus plus minusve picescentibus; elytris creberrime æqualiter reticulatis: prothorace margine laterali conspicue elevato. Long. 10½, lat. 5½ m.m.

The male has the basal joints of the front tarsi incrassate and much compressed and furnished beneath with four rows of rather small palettes, the marginal hairs are but little developed, and their extremities are not curled; the claws are moderately long and about equal; the middle tarsi are clothed beneath in a manner similar to the front ones, and their claws are short and of about equal lengths, the outer being however stouter than the inner.

The species is very similar to *Dytiscus notatus*; but the entirely black ventral segments, and the fact that the spots of the elytra are so disposed as not to leave the least trace of the two vein-like yellow lines which may be generally seen in *D. notatus*, allow it to be easily distinguished; besides this it wants the dense strigulose sculpture seen on the basal portion of the elytra of *D. notatus*, and has the male tarsi less dilated, their under clothing much less developed, and their claws shorter and nearly equal, and the side margin of the prothorax in both sexes more distinct: it is really much closer allied to *D. bistriatus* (No. 949), from which it is distinguished only by the black mark of the thorax being on the disc instead of at the base, and by the male tarsi being rather less developed.

Europe, and Eastern Siberia, (Sweden, Finland, Northern Germany, Amurland). 893.

947. *Dytiscus notatus*, Fab., *Rhantus notatus*, M.C.—Ovalis, sat convexus, nitidus, subtus niger, prosterno laminaque communi coxarum posticarum testaceis, abdomine maris nigro, segmentis rufo-fasciatis, feminae rufo lateraliter nigro-

maculato, supra testaceus, vertice nigro-variegato, thorace disco plaga transversa nigra, elytris creberrime nigro-irroratis, antennis pedibusque flavis, illis extrorsum fusciscentibus; elytris creberrime reticulatis, parte basali magis strigosulo; prothorace margine laterali parum elevato; tarsis posterioribus articulo quarto longius lobato-producto. Long. $10\frac{1}{4}$, lat. $5\frac{1}{2}$ m.m.

The male has the basal joints of the front tarsi much incrassate, and comparatively little compressed, and presenting therefore a broad sole, clothed with moderately large palettes, and with long marginal hairs having beautifully curled extremities; the front claws are long and very unequal, the anterior being much longer than the other; the middle tarsi are clothed beneath in a similar manner to the front ones, and have their terminal joints elongate, and bearing rather long unequal claws.

The females are often quite similar in sculpture to the males, but sometimes bear on the basal part of the elytra very short deep impressions, varying greatly in number and extent.

Europe, (Sweden, Finland, England, France, Belgium, Germany, Northern and Southern Russia). 894.

948. *Rhantus sericans*, n. sp.—Ovalis, sat convexus, nitidus, subtus niger, prosterno laminaque communi coxarum posticarum testaceis, abdomine maris nigro, segmentis vix rufo-fasciatis, (feminae invisio); supra testaceus, vertice nigro-variegato, thorace disco plaga transversa nigra, elytris creberrime nigro-irroratis, antennis pedibusque flavis, illis extrorsum fusciscentibus; elytris creberrime reticulatis, parte basali magis strigosulo; tarsis posterioribus articulo quarto vix lobato-producto. Long. 10, lat. $5\frac{1}{3}$ m.m.

This species seems excessively close to *Dytiscus notatus*, and differs chiefly by the more truncate external hind margin of the fourth joint of the hind tarsi; according to the two males before me it is rather smaller in size and has the ventral segments less variegated with red.

North America, (British Columbia). 895.

949. *Dytiscus bistratus*, Berg., *Rhantus bistratus*, M.C.—Ovalis, parum convexus, subtus niger, prosterno testaceo, coxarum posticarum processibus plus minusve rufescentibus, abdominis segmentis parum distincte rufo-marginatis; supra testaceus, vertice nigro-variegato, prothorace basi in medio argute nigro, elytris creberrime nigro-irroratis, antennis pedibusque rufis, illis extrorsum fusciscentibus, elytris creberrime æqualiter reticulatis. Long. 10, lat. $5\frac{1}{2}$ m.m.

The male has the front tarsi a good deal incrassate and moderately compressed and bearing beneath four rows of moderately large palettes, and well developed marginal hairs with curved extremities, their claws are long and about equal; the

middle tarsi are clothed beneath in a similar manner to the front feet, and their claws are moderately long, the outer being a good deal thicker and longer than the inner one. The females have a slight difference of sculpture from the males, the reticulations of the elytra on the basal portion becoming a little coarser in a stripe-like manner; this sculpture is very distinct in the specimens from North America and Lapland, but in individuals from Central Europe can often be scarcely detected.

Europe, Siberia, and North America. (Sweden; Lapland; Finland to $68^{\circ} 30'$ Sahilberg; Britain; Belgium; Northern France; Germany; Hudson's Bay; Massachusetts). 896.

950. *Colymbetes tostus*, Lec., M.C.—Ovalis, elongatus, minus convexus, testaceus, vertice late nigro, elytris nigro-irroratis; tarsi posterioribus articulo quarto extus vix lobato-producto. Long. $10\frac{1}{2}$, lat $5\frac{1}{4}$ m.m.

The male has the front tarsi much incrassate, and comparatively little compressed, and furnished beneath with large palettes, the marginal hairs are largely developed and have beautifully curved extremities; the claws are elongate and slender, the hinder being a little shorter than the front one; the middle tarsi are clothed beneath in a similar manner to the front feet, their claws are rather long and not thickened, the inner distinctly shorter than the outer one.

North America, (Missouri). 897.

951. *Dytiscus exoletus*, Forst., *Rhantus exoletus*, M.C.—Ovalis, parum convexus, testaceus, vertice nigro-variegato, elytris nigro-irroratis; tarsi posterioribus articulo quarto extus lobato-producto. Long. 10, lat. $5\frac{1}{2}$ m.m.

The male has the front tarsi moderately incrassate and a good deal compressed, and furnished beneath with moderately large palettes, the marginal hairs are not highly developed, the claws are very long and slender, the hinder one a little shorter than the other; the middle tarsi are clothed beneath in a similar manner to the front feet, and their claws are rather long and slender, the inner one being a good deal shorter than the outer. There is no sexual difference in the sculpture of the elytra; the apical ventral segment is in each sex indistinctly strigose in the longitudinal direction.

Although the thorax in this species is generally immaculate, it has sometimes a round dark spot on each side of the middle near the base, and these spots are connected together by a fuscous basal mark. *Dytiscus melanopterus*, Zett. (Faun. Lapp. I, p. 211) is considered to be a colour variety of this species.

Europe, (Sweden, Finland, Lapland, Britain, France, Belgium, Germany, Algeria). 898.

952. *Rhantus latitans*, n. sp.—Ovalis, parum convexus, testaceus, vertice nigro-variegato, elytris nigro-irroratis, prothorace basi in medio breviter nigricante; tarsis posterioribus articulo quarto extus lobato-producto. Long. $10\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

The male has the front tarsi moderately incrassate and a good deal compressed, and furnished beneath with rather small palettes, the marginal hairs but little developed, the claws are only moderately long and slender, the hinder one slightly shorter than the other; the middle feet are clothed beneath in a similar manner to the front feet, their claws are rather short, the thickened outer one being scarcely longer than the inner one, this, however, is more curved at its termination; there is not the least trace of any strigosity in the middle of the apical part of the last ventral plate.

This species is extremely closely allied to that preceding, with which it is always mixed in collections, the male has the front and middle claws much shorter, and the tarsal palettes rather smaller; the females are not so easily distinguished, but the constant black mark at the base of the thorax, and the smoother apical ventral segment, allow it to be recognized; there is also a slight difference in the form, which is generally narrower in front in the present species, and the produced lobe on the fourth joint of the hind tarsus is a little broader and shorter, and the longer of the two posterior claws is a little shorter and thicker. The female has generally a slight tendency towards a coarser reticulation near the outside of the elytra about the middle. Whether this be really a distinct species from the preceding is doubtful, for none of the characters except that of the male claws appear to be constant, and the females are always very difficult to distinguish.

Europe, (Germany, Belgium). 899.

953. *Colymbetes consputus*, Sturm, *Rhantus consputus*, M.C.—Ovalis, sat convexus, nitidus, testaceo-ferrugineus, vertice nigro-variegato, elytris nigro-irroratis, Long. $11\frac{1}{2}$, lat. $6\frac{1}{4}$ m.m.

The male has the front tarsi much incrassate and comparatively little compressed, and furnished beneath with large palettes, the marginal hairs largely developed and with beautifully curled extremities, the claws are moderately long, and very nearly equal in length; the middle tarsi are clothed beneath in a similar manner to the front feet, their claws are rather short and of about equal lengths, the outer however is thicker than the more curved inner one; the apical ventral segment is quite smooth along the middle; the female has the outer portion of the elytra more coarsely reticulate especially about the middle, the apical ventral segment has the extremity quite smooth in the middle.

The species is readily distinguished from *D. exoletus* and *R. latitans*, by its greater size, and by the greater development of the male tarsi.

Europe, (Germany). 900.

954. *Dytiscus adpersus*, Fab., *Rhantus aberratus*, M.C.—Ovalis, latus, parum convexus, testaceus, pectore nigro, medio rufo, abdomine fasciis nigricantibus, vertice nigro-variegato, elytris nigro-irroratis. Long. $9\frac{1}{2}$, lat. $5\frac{1}{2}$ m.m.

The male has the front tarsi a good deal incrassate, and comparatively little compressed, and furnished beneath with moderately large palettes, the marginal hairs are largely developed, and have beautifully curled extremities: their claws are moderately long, the front one a little shorter, and considerably thicker than the hinder one; the middle tarsi are clothed beneath in a similar manner to the front feet, their claws are rather short, the outer one is greatly thickened beneath, so that its lower edge is quite straight, with a minute, slightly deflexed apex, the inner claw is rather shorter and more curved. The female has a slight tendency to more coarse reticulation on the outer part of the elytra.

This species is much smaller than *Colymbetes consputus*; its short, broad form, and the colouration of its under surface should prevent its being confounded with any of its allies: it has sometimes a fuscous mark at the extreme base of the thorax in the middle.

Europe, Corsica, Sardinia, Algeria. (Sweden; Finland $60^{\circ} 20'$ Sahlberg); England; France; Germany; Hungary). 901.

955. *Rhantus hispanicus*, n. sp.—Ovalis, latus, subdepressus, testaceus, vertice angustius nigro-variegato, elytris nigro-irroratis. Long. $9\frac{1}{4}$, lat $5\frac{1}{2}$ m.m.

The male has the front tarsi a good deal incrassate, and comparatively little compressed, and furnished beneath with rather small palettes placed on long hairs, the marginal hairs are largely developed and have beautifully curved extremities, the claws are slender and moderately long and nearly similar in length and thickness; the middle tarsi are clothed beneath in a similar manner to the front feet, their outer claw is more elongate and less thick than in *Dytiscus adpersus* and is decidedly longer than the more slender and more curved inner one: the female has the reticulation on the outer parts of the wing-case deeper than it is in the male.

This species is very similar in form to *Dytiscus adpersus*, but is entirely pale beneath, and the anterior claw on the front and middle feet of the male is more elongate and slender; it is smaller and more depressed than *Colymbetes consputus*, and the male tarsi are less incrassate.

Europe, (Spain, Escorial, Valladolid). 902.

956. *Dytiscus cicurus*, Fab., *Colymbetes cicur*, M.C.—Suboblongus, per-elongatus, nitidus, subtus piceus, supra capite nigricante, anterior et in medio verticis rufescente, prothorace nigricante, disco vage dilutiore, lateribus late rufis, elytris testaceis, punctis nigris magnis irroratis, his punctis subvittatim confluentibus; antennis

pedibusque anterioribus rufis, pedibus posterioribus piceis; corpore fere lævigato in elytris obsolete reticulato; prothoracis margine laterali distincto; tarsorum posteriorum articulis extus fere truncatis. Long. 16, lat. $7\frac{1}{4}$ m.m.

The male has the front and middle tarsi with the three basal joints distinctly incrassate but much compressed, and furnished beneath with four series of quite small palettes, the marginal hairs only moderately developed, the claws are only moderately long, simple and equal. There is no sexual distinction in sculpture.

South Africa, (Cape of Good Hope). 903.

957. *Colymbetes capensis*, Aubé, *Rhantus capensis*, M.C.—Ovalis, convexus, nitidus, subtus piceus, prosterno, pectore medio abdominisque fasciis transversis rufescentibus, supra capite thoraceque rufo-testaceis, illo vertice nigro-variegato, hujus disco plaga nigra in medio divisa, elytris testaceis, maculis parvis nigris creberrime irroratis, antennis pedibusque testaceis, pedibus posterioribus rufis; corpore fere lævigato, elytris feminae exterius in parte basali conspicue reticulatis; prothorace margine laterali lato et obsolete; tarsis posterioribus articulis extus breviter lobatis. Long 15, lat. $7\frac{1}{4}$ m.m.

The male has the basal joints of the front and middle tarsi much incrassate and compressed, and furnished beneath with moderately large palettes placed on long hairs, the marginal hairs very elongate and with curled extremities; the front claws are elongate, the anterior one with its basal portion incrassate, the posterior distinctly shorter and nearly simple; the claws of the middle feet are very unequal the outer being much longer and thicker than the more curved inner one. The upper surface of this species might be described as smooth, were it not for the reticulate sculpture of the outer portion of the elytra in the female; these reticulations are indistinctly divided into two patches by a smooth space.

South Africa, (Caffraria). 904.

958. *Rhantus goudoti*, (Dej.) n. sp.—Ovalis, convexus, nitidus, sublævigatus, subtus nigricans, supra rufus, vertice nigro-variegato, prothorace lateribus pallidioribus, vitta discoidali nigricante, elytris versus suturam nigro-vermiculatis, versus latera nigro-irroratis, antennis rufis, pedibus piceo-rufis, posterioribus piceis; prothorace sine margine laterali; tarsis posterioribus extus vix lobatis. Long. $13\frac{1}{4}$, lat. $7\frac{1}{4}$ m.m.

In the male the front tarsi are distinctly incrassate and much compressed, and are furnished beneath with four rows of narrow palettes placed on long stalks, the marginal hairs inconspicuous, the front claws are very slender and elongate, the posterior one is a little shorter than the anterior and has its basal portion more arched, and its outline more sinuate; the middle tarsi are clothed beneath in a

similar manner to the front feet, their claws are very unequal, the outer one being very thick and moderately long, twice the length and twice the thickness of the more areuate inner one. In the female there is a distinctly reticulate area on the elytra in front of the middle towards each outside.

Madagascar. 905.

959. *Rhantus validus*, n. sp.—Ovalis, sat convexus, elongatus, nec latus, nitidus, fere lævigatus, subtus nigricans, prosterno rufescente, supra testaceus, vertice nigro-variegato, thorace disco plaga parum discreta fusca, elytris nigro-irroratis, antennis pedibusque anterioribus rufis, pedibus posterioribus piceo-rufis: prothorace sine margine laterali; tarsi posterioribus extus vix lobatis. Long. $15\frac{1}{2}$, lat. 8 m.m.

The male has the front and middle tarsi a good deal incrassate and much compressed, and furnished beneath with long hairs, bearing narrow palettes, and the claws are moderately long, simple and equal. The female shows scarcely any greater development of sculpture than the male.

South America, (Chili). 906.

I. 63.—Genus *COLYMBETES*.

Side pieces of fourth and following ventral segments very narrow; metasternal groove narrow and indistinct; terminal joint of hind tarsus not longer than the preceding one. Wing-cases marked with transverse scratches, or (more rarely) smooth.

The eighteen species* of this genus are found in the northern parts of the Old and New Worlds: but one or two extend as far to the South-east as North-western Arabia.

960. *Colymbetes dahuricus*, Aubé, *Scutopterus dahuricus*, M.C.—Ovalis, in medio dilatatus, convexus, niger, antennarum basi testaceo, clypeo rufo, vertice rufobinaculato, thorace elytrisq; testaceis, his infuseatis margine pallidiori, illo in medio nigricante; corpore strigoso, strigis in elytris transversis, haud profundis; elytrorum epipleuris in medio latioribus et magis elevatis. Long. $19\frac{1}{2}$, lat. 10 m.m.

* The following species also no doubt belong to this genus, viz.—*Colymbetes drewseni*, Lec. (No. 1224 *huj. op.*)? No. 967 var.; Greenland.—*Colymbetes inequalis*, Horn, (No. 1232) near No. 963; North America.—*Colymbetes simplex*, Walk. (No. 1248)? near No. 975; Arabia.—*Colymbetes strigosus*, Lec. (No. 1251) ?=No. 964; North America.—*Cymatopterus obscuratus*, Mann. (No. 1284) near No. 961; North America.—whether *Colymbetes includens*, Walk. (No. 1233; Arabia) belong to the genus or not is doubtful.

The male has the upper surface shining, while in the female the elytra are very dull, with the apical parts shining; the sculpture of the latter sex is scarcely so deep as it is in the male. The male front and middle tarsi have the whole of the three basal joints densely and uniformly clothed beneath with one kind of glandular pubescence.

Siberia. 907.

961. *Colymbetes paykulli*, Er., *Cymatopterus paykulli*, M.C.—Elongato-ovalis, convexus, niger, antennarum basi testaceo, clypeo rufo, vertice parum conspicue rufo-bimaculato, thorace lateribus fasciaque mediali parum discreta in medio late interrupta rufis, elytris marginibus rufescentibus; corpore strigoso, strigis transversis elytrorum sat profundis. Long. 19, lat. 10 m.m.

Each sex in this species has the elytra shining, and similarly sculptured: the male tarsi are hardly so broad as in the preceding species, and the pubescence of the basal portion of the first joint is of a distinctly different character to that beyond it, this distinction is greater on the middle than it is on the front feet.

Europe; North America, (Sweden; Finland 68° 30', Sahlberg; North Germany, western North America). 908.

962. *Colymbetes longulus*, Lec., *Cymatopterus longulus*, M.C.—Elongato-ovalis, angustulus, sat convexus, niger, antennarum basi testaceo, clypeo rufo, vertice rufo-bimaculato, prothorace lateribus testaceis, elytris fuscis, marginibus testaceis; corpore strigoso, prothorace disco profundius vermiculato, strigis transversis elytrorum sat profundis. Long. 16½, lat. 8 m.m.

I have seen only the male of this species, the front and middle tarsi are rather narrow, and more compressed than in *C. paykulli*; the pubescence at the heel of the basal joint of each is of a quite different character from the glandular pubescence beyond it; the emargination of the last ventral segment is slight.

The species cannot be considered closely allied to *C. paykulli*, it is smaller, narrower, and more parallel, less sombre in the colour of the upper surface; with the sculpture of the thorax of a different character, and the male tarsi different.

North America. (Lake Superior, Kansas). 909.

963. *Colymbetes seminiger*, Lec., *Cymatopterus seminiger*, M.C.—Ovalis, haud angustulus, convexus, niger, antennarum basi testaceo, clypeo rufo, vertice rufo-bimaculato, prothorace testaceo, plaga transversa discoidali nigra, elytris fuscis marginibus testaceis; corpore strigoso, prothorace disco vermiculato, strigis transversis elytrorum sat profundis. Long. 18, lat. 9¾ m.m.

Of this species I have seen only the male; it does not appear to me very closely

allied to the preceding, it is larger, broader, and less parallel, has the thorax largely pale above, and presents slight differences in nearly all respects; the male tarsi are slightly broader than in *C. paykulli*, and the pubescence on the heel of the basal joint forms a comparatively small patch, and is quite different in character from the glandular pubescence beyond it.

North America, (Saskatchewan). 910.

964. *Colymbetes strigatus*, Lec., *Cymatopterus strigatus*, M.C.—Ovalis, latiusculus, convexus, subtus niger, prosterni coxarumque posticarum processibus et segmentorum ventralium marginibus posterioribus rufescentibus, supra capite anterius testaceo, posterius nigro, rufo-bimaculato, prothorace testaceo, vitta discoidali nigra, elytris fusco-testaceis, marginibus anguste testaceis, antennis fusco-testaceis, basi testaceo, pedibus rufis, femoribus medio infuscatis; prothorace parum vermiculato, elytris strigis transversis profundis, remotis. Long. $17\frac{1}{2}$, lat. 9 m.m.

This species is similar in size to *Colymbetes paykulli*, but is broader in front. I have seen only the male; it has the three basal joints of the front tarsi broadly dilated, and but little compressed, and furnished beneath with only three series of large round palettes, the basal series being replaced by a band of glandular pubescence, the large basal portion of the tarsus is bare, except for two longitudinal series of asperities; the middle tarsi are similar to the front ones, but are a little more compressed and not quite so broad, their clothing is also almost similar to that of the front feet, but instead of two longitudinal series of asperities on the basal portion there is one patch placed not on the middle but quite at the inner edge of the heel.

North America, (California). 911.

965. *Colymbetes crotchi*, n. sp.—Ovalis, haud latus, convexus, subtus niger, prosterni coxarumque posticarum processibus et segmentorum ventralium marginibus posterioribus rufescentibus, supra capite nigro anterius testaceo, medio rufo-bimaculato, prothorace testaceo, vitta discoidali nigra, elytris fuscis, pedibus rufis, femoribus medio fuscis; prothorace parum vermiculato, elytris strigis transversis profundis remotis. Long. 17, lat. $8\frac{1}{2}$ m.m.

I have seen but a single individual, it is a male, and has the tarsi similar to those of the preceding species but not so broad.

Although undoubtedly very closely allied to the preceding, this seems to me a distinct species by its narrower form, as well as by minor peculiarities; the second ventral suture seems to be more distorted and its file better developed than in the larger species. This specimen is just similar in size and appearance to the smallest male of the European *Dytiscus striatus* (No. 972), from which it differs however not

only by the male tarsi, but by the small development of the vermiculate sculpture of the prothorax, and by the wider spaces separating the transverse striæ of the elytra.

North America, (Western portion ; Cal. sec. Crotch). 912.

966. *Colymbetes exaratus*, Lee., *Cymatopterus exaratus*, M.C.—Ovalis, elongatus, convexus, subtus niger, eoxarum posticarum processibus rufescentibus, supra capite nigro, antè testaceo, medio rufo-bimaculato, thorace testaceo, vitta discoidali nigra, elytris fuscis, margine laterali testaceo; pedibus testaceis, femoribus medio fuscis, prothorace æqualiter conspicue vermiculato, elytris strigis transversis profundis remotis. Long. 17, lat. $8\frac{1}{2}$ m.m.

The male has the elytra moderately shining, and the transverse striæ of about one depth throughout; while in the female the elytra are very dull with a large apical portion shining, the transverse furrows on the dull portion are deeper and coarser than on the shining portion, so that the spaces between them are less. The male tarsi seem to be almost the same as in the preceding species. The species is very similar to *Dytiscus striatus* (No. 972), but the male may be readily distinguished by the basal band of glandular pubescence on its tarsi, and the female by its sculpture, the furrows being finer, and the apical shining portion more clearly differentiated from the dull part.

Western North America, (Nebraska, Kansas, Oregon, Dacotah, Hudson's Bay, sec. Crotch). 913.

967. *Colymbetes groenlandicus*, Aubé, Spec. p. 233.—Ovalis, angustulus, parum convexus, nitidus, subtus niger, supra capite antè rufo, posterius nigro rufo-bimaculato, prothorace testaceo medio plaga nigro-fusea, elytris fuscis lateribus testaceis, pedibus rufis, femoribus medio infuscatis; prothorace parum vermiculato, elytris sat profunde transversim strigosis, strigis parum approximatis. Long. $14\frac{1}{2}$, lat. 7 m.m.

The male has the prothorax almost smooth, while in the female it bears fine vermiculate scratches: the sculpture of the elytra is almost similar in the two sexes.

Greenland. 914.

968. *Colymbetes sculptilis*, Harr., *Cymatopterus sculptilis*, M.C.—Elongato-ovalis, angustulus, sat convexus, subtus niger, supra capite antè rufo, posterius nigro, rufo-bimaculato, prothorace testaceo, medio plaga nigra, elytris fuscis, lateribus testaceis, pedibus rufis femoribus medio leviter infuscatis; prothorace crebrius, æqualiter, undulatim reticulato, lateribus versus angulos posteriores parum rotundatis; elytris profunde transversim strigosis, strigis approximatis. Long. 16, lat. 8 m.m.

There is no perceptible difference of sculpture in the sexes of this species, either on the thorax or elytra. The male has the front tarsi moderately dilated and a little compressed, and furnished beneath with four rows of rather large, and closely placed, round palettes.

The species is somewhat variable in form, size, colour, and sculpture.

North America, (Massachusetts, Canada, Red River). 915.

969. *Colymbetes rugipennis*, n. sp.—Ovalis, parum convexus, subtus niger, supra capite antèrius rufo, posteriùs nigro rufo-bimaculato, prothorace testaceo, medio plaga nigro-fusca, elytris fuscis lateribus testaceis, pedibus rufis; prothorace crebriùs reticulato, lateribus versus angulos posteriores parum rotundatis; elytris profunde transversim strigosis, strigis secundum sexum profundis. Long. $15\frac{3}{4}$, lat. $7\frac{3}{4}$ m.m.

The male differs very little in sculpture from *Colymbetes sculptilis*, but the female departs considerably in sculpture from the male, the reticulations of the thorax being very deep, and the transverse grooves on the elytra being considerably deeper on the basal half, while on the apical half they are hardly so deep or approximate as they are in *Colymbetes sculptilis*. The male tarsi are strongly dilated and very little compressed.

Although closely allied to *Colymbetes sculptilis*, this appears to me a distinct species, it is smaller and less elongate, and less convex, the male tarsi are broader, less compressed, and the female is easily distinguished by its sculpture.

North America. (Northern boundary of Nebraska, Sepr. 1874). 916.

970. *Colymbetes thomsoni*, n. sp.—Ovalis, parum convexus, subtus niger, supra capite antèrius rufo, posteriùs nigro, rufo-bimaculato, prothorace testaceo, medio plaga nigro-fusca, elytris fuscis lateribus testaceis, pedibus rufis; prothorace haud profunde reticulato, elytris profunde transversim strigosis. Long. 15, lat. $7\frac{1}{2}$ m.m.

The male has the front tarsi only moderately dilated and quite distinctly compressed; in the female the reticulations of the thorax are deeper than in the male, and the striæ on the basal portion of the elytra are deeper and less distant.

Lapland, Iceland, (Greenland?). 917.

971. *Dytiscus dolabratus*, Payk., *Cymatopterus dolabratus*, M.C.—Ovalis, parum convexus, subtus niger, segmentis ventralibus anguste rufo-fasciatis, ultimo dimidio parte rufo, supra capite antèrius rufo, posteriùs nigro, rufo-bimaculato, prothorace testaceo medio plaga nigro-fusca, elytris fuscis lateribus testaceis; prothorace crebriùs reticulato, elytris profunde transversim strigosis. Long. 15, lat. $7\frac{3}{4}$ m.m.

The male has the front and middle tarsi well dilated and considerably compressed. The reticulate sculpture of its thorax is very well marked; the female has this reticulate sculpture just a little deeper, while the striae on the basal portion of the elytra are much deeper and coarser than in the male, so that they appear more approximate.

Northern Europe, Siberia, (Sweden, Lapland, Finland to 69° Sahlberg). 918.

972. *Dytiscus striatus*, Lin., *Cymatopterus striatus*, M.C.—Ovalis, elongatus, haud angustus, sat convexus, subtus niger, supra capite anteriorius rufo, posteriorius nigro, rufo-bimaculato, thorace testaceo, medio plaga nigro-fusca, elytris fuscis, lateribus testaceis, antennis pedibusque rufis; prothorace crebrius reticulato; elytris profunde transversim strigosis, strigis approximatis. Long. 17½, lat. 9 m.m.

In the male the reticulation of the thorax is quite distinct and regular and covers nearly all the surface, and in the female it is a little deeper; the transverse striae on the elytra of the male are moderately deep and but little distant from one another; in the female they are much deeper and coarser, but at the extremity become fine and are on that part the same as in the male. The male has the front and middle tarsi broadly dilated and but little compressed.

Northern Europe. (Sweden, Finland, North Germany; Siberia, sec. Sahlberg). 919.

973. *Dytiscus fuscus*, Lin., *Cymatopterus fuscus*, M.C.—Ovalis, sat elongatus et convexus, subtus niger, supra capite anteriorius rufo, posteriorius nigro rufo-bimaculato, prothorace medio late fusco, lateribus testaceis, elytris fuscis lateribus testaceis, antennis pedibusque anterioribus rufis, his femoribus infuscatis, pedibus posterioribus nigricantibus, tarsis dilutioribus; prothorace crebre subtiliter vermiculato, elytris minus profunde transversim strigosis, strigis approximatis; abdomine sutura secunda ventrali utrinque prope medium rude serratulo. Long. 16, lat. 8¼ m.m.

The male has the basal joints of the front and middle tarsi moderately dilated and much compressed, and furnished beneath with four series of rather large, quite round, closely packed palettes; the marginal hairs are comparatively little developed. There is no sexual difference of sculpture.

The species varies somewhat in colour and a good deal in length; the more elongate and darker specimens resemble a good deal, *C. paykulli*, and the resemblance is increased when, as is occasionally seen, such individuals have the epipleuræ infuscate; but the coarse short plicate elevations of the second ventral suture in *D. fuscus* allow it to be readily recognized even in its extreme varieties.

Europe, Algeria, Syria, (Sweden; Finland 63°, Sahlberg; Britain, Orkney Islands; France, Germany Spain, Italy, Corsica, Crete, Smyrna). 920.

974. *Colymbetes substrigatus*, n. sp.—Ovalis, elongatus, sat convexus, nitidus, nigro-piceus, antennis palpis, capite anterieus et in medio verticis thoraceque ad latera rufescentibus, elytris parum conspicue transversim testaceo-undulatis; corpore sublævigato, elytris obsolete transversim strigosis, versus suturam lævigatis, punctis seriatis conspicuis, abdomine sutura secunda ventrali utrinque prope medium conspicue serratulo. Long. 16, lat. 8½ m.m.

The male has the basal joints of the front and middle tarsi slightly incrassate but greatly compressed, and furnished beneath with four series of rather small round palettes; there is but little sexual difference of sculpture, the transverse striæ are rather less distinct in the male than in the female. The species resembles *Dytiscus fuscus*, but is rather smaller and darker in colour than the average representatives of that species, and is very readily distinguished by its obsolete sculpture.

Arabia. 921.

975. *Colymbetes piceus*, Klug, M.C.—Ovalis, sat elongatus et convexus, nitidus, nigro-piceus, antennis palpis capite anterieus et in medio verticis thoraceque ad latera rufescentibus, elytris parum conspicue transversim rufo-undulatis; corpore sublævigato, elytrorum punctis seriatis conspicuis; abdomine sutura secunda ventrali utrinque prope medium conspicue serratulo. Long. 15½, lat 8 m.m.

This species is excessively closely allied to *C. substrigatus*, but is a little smaller and less elongate, and shows scarcely any rudiments of the transverse sculpture of the wing-cases; it is also a little smaller and less elongate. The male characters seem to be quite the same, the female I have not seen.

Sinai. 922.

976. *Colymbetes vagans*, n. sp.—Ovalis, latior, convexus, nitidus, piceus, antennis pedibusque rufis, capite anterieus et in medio verticis ferrugineo, prothorace elytris que lateribus basi rufo-testaceis, his versus latera rufescentibus et transversim nigro-irroratis; corpore sublævigato, supra subtilissime punctulato, elytris punctis seriatis conspicuis, abdomine sutura secunda ventrali utrinque prope medium evidenter serratulo. Long. 15, lat. 8 m.m.

This species is very closely allied to the preceding, but is distinguished by its broader, shorter form, and its more dilute colour. On the elytra near the sides towards the extremity, there may be detected traces of undulated transverse sculpture, which seems to arise rather from a peculiar arrangement of the very fine punctures, than from the existence of any distinct transverse striae. The hind legs are shorter and stouter than in the allied species. The male characters seem to be nearly the

same as in the two preceding species, the front tarsi are perhaps still narrower. The female I have not seen.

Found by Dr. Millingen, in the East; I believe in the western part of Northern Persia. 923.

977. *Colymbetes procerus*, n. sp.—Ovalis, elongatus, angustulus, sat convexus, nitidus, nigricans, antennis palpisque rufis, pedibus anterioribus rufo-obscuris, posterioribus nigricantibus, capite anterieus et in medio verticis rufescente, prothorace lateribus elytrisque testaceis, his creberrime transversim nigro-irroratis; corpore sublævigato; elytris punctis seriatis subtilibus sed conspicuis; abdomine sutura secunda ventrali utrinque prope medium evidentè serratulo. Long. 15, lat. 7½ m.m.

This species is narrower than its allies, and the mixture of transverse yellow and black marks on the wing-cases is not so indistinct; their sculpture is even more indistinct than it is in *C. vagans*, and there is a scarcely perceptible difference in the sculpture of the sexes. The male characters are similar to those of the allies.

Arabia. 924.

I. 64.—Genus *MELADEMA*.

Side pieces of fourth and following ventral segments very narrow; metasternal groove moderately well developed; hind tarsi elongate, their terminal joint distinctly longer than the preceding one.

Only two species,* from Southern Europe, the Canary Islands and Madeira are known to me.

978. *Meladema coriacea*, Cast., *Scutopterus coriaceus*, M.C.—Oblongo-ovalis, latiusculus, parum convexus, subopacus, niger, antennis palpisque rufis, pedibus nigro-piceis, vertice parum distincte rufo-binotato; thorace coriaceo, basi utrinque profundius emarginato; elytris punctis impressis quasi scutatis densis sculpturatis, punctis seriatis conspicuis. Long. 21, lat. 12 m.m.

The male has the three basal joints of the front tarsi considerably dilated, and but little compressed, and furnished beneath with four series of rather large palettes, the marginal hairs are rather well developed, and there is a narrow basal band of pubescence, close to the first series of palettes, the fourth joint is short, and is distinctly incrassate; the claws are moderately long, and nearly simple and equal: the tarsi of the intermediate pair of legs have the basal joints more compressed,

* *Scutopterus imbricatus*, Woll. (No. 1505 huj. op.), Madeira, is a third species of the genus.

and the fourth joint more elongate than on the front feet. There is no difference in the sculpture of the sexes.

The species varies but little, and is readily distinguished by the peculiar sculpture of the wing-cases which are covered with curved transverse impressions, having very much the appearance of scales.

Southern Europe, Northern Africa, Canary Islands, (C. Verde Islands?). (Southern France, Spain, Portugal, Sardinia, Sicily). 925.

979. *Dytiscus lanio*, Fab., *Scutopterus lanio*, M.C.—Oblongo-ovalis, parum convexus, nitidus, piceo-niger, prosterno piceo, antennis, palpis, pedibus anterioribus, capite anterieus, vertice maculis transversis prothoracisque lateribus rufis, elytris brunneo-testaceis, creberrime nigro-irroratis, prothorace opaco, profundius irregulariter reticulato; elytris nitidis, obsolete tuberculatis, punctis seriatis conspiciis. Long. 22, lat. 10½ m.m.

The male characters are quite the same as in the preceding species, and there is no sexual difference of sculpture: it is probable however that the sculpture of the wing cases in the female is variable, for in Aubé's type of that sex the elytra bear on their anterior portion curved impressions, approximating to what exists in *Meladema coriacea*. *Scutopterus imbricatus*, Woll. Tr. Ent. Soc. 1871, p. 220, (No 1,505 huj. op.) is apparently a closely allied species from the same locality.

Madeira. (? North Africa). 926.

II. 12.—Group DYTISCINI.

Abdominal stigma of last two segments enlarged, that on the penultimate segment being at least, 1 m.m. in diameter, or more than one-third of the half-width of the dorsal aspect of the segment. Stigmatic rugæ on side piece of first ventral segment highly developed. Swimming legs rather slender, terminated by two nearly equal claws. Outline of eye not emarginate at inner edge. Male anterior tarsi with the three basal joints dilated and coadapted to form a nearly circular plate.

Only two genera are comprised in this group; they may be very readily distinguished as follows:—

Elytra with a lateral yellow stripe. *DYTISCUS*. (*Vide* p. 634.)

Elytra without a lateral yellow stripe. *HYDERODES*. (*Vide* p. 633.)

I. 65.—Genus *HYDERODES*.

Yellow colour of clypeus not sharply limited from the dark colour of the front of the head ; and this dark colour in the middle extends distinctly on to the clypeus.

Clypeal suture obliterated in the middle. Elytra unicolorous, destitute of yellow border.

This genus comprises only three species, peculiar to Australia and Tasmania.

980. *Hyderodes shuckardi*, Hope, M.C.—Ovalis, robustus, convexus, nigricans, superne (præsertim in thorace), nitidus, subviridescens, clypeo et prothoracis lateribus testaceis, antennis rufis, pedibus piceis ; prothorace lateribus crasse marginatis, intra marginem parum impresso ; elytris punctis seriatis conspicuis, punctisque sparsis minutis versus latera et apicem minus subtilibus. Long. 19, lat. 11 m.m.

Var. feminae, thorace elytrisque opacis, rugosis, quasi profunde erosis.

The male has the three basal joints of the front tarsi very broadly dilated, and coadapted to form a circular plate, which is furnished beneath with large and distinctly stalked palettes rather variable in size, the marginal ones being smaller, but the four near the base larger than the rest ; the fourth joint is quite simple and rather short, the fifth rather long, about equal to the length of the three dilated basal joints, the claws are moderately long and a little unequal, the anterior one being more curved than the other. The intermediate tarsi have the three basal joints much dilated, so as to form an oblong oval plate, which is furnished beneath with palettes similar to those of the front feet, but differing less *inter se* as to size, and leaving a bare glabrous space at the base of the tarsus ; on the hind feet four joints of the tarsus are furnished beneath rather scantily with fine hairs. The female is a little smaller than the male and shows a slight difference in the form of the thorax : the second form of this sex with deeply corroded upper surface is very remarkable.

According to the specimens before me the species varies a good deal in breadth, and somewhat in colour, the greenish-black tinge of the uppersur face giving place sometimes to a piceous tint ; the length and breadth of the prosternal process also exhibit a good deal of variation.

Tasmania, South Australia, New South Wales. 932.

981. *Hyderodes crassus*, n. sp.—Ovalis, latus, robustus, convexus, nigricans, nitidus, superne subviridescens, clypeo et prothoracis lateribus testaceis, antennis rufis, pedibus piceis ; prothorace lateribus haud crasse marginatis, sed intra marginem conspicue depresso ; elytris punctis seriatis conspicuis, punctisque sparsis versus latera et apicem minus subtilibus. Long. 19, lat. 11½ m.m.

The characters of the male are similar to those of *H. shuckardi*, except that the circular plate formed by the three dilated joints of the front tarsi is not quite so large and broad, and the four palettes near the base are not so much larger than the others.

The species is closely allied to *H. shuckardi*, but is easily distinguished; it is a little broader, and (besides the difference in the sides of the thorax of the two species) in the one now under consideration the wing-cases have a slight explanation of their lateral margins near the apex, and their outline is not so continuous with that of the thorax, and the scattered punctures are more conspicuous. The corresponding sexes of the two should be compared, in order that the sexual differences in the outline of the thorax should be allowed for. I have not yet seen a rugose form of the female.

Australia, (King George's Sound, West Australia). 933.

982. *Hyderodes collaris*, n. sp.—Ovalis, robustus, convexus, piceo-niger, clypeo, prothoracis lateribus antennisque rufis, pedibus piceo-rufis; prothorace lateribus haud discrete et parum crasse marginatis, sed intra marginem conspicue depresso; elytrorum humeris prominulis; prosterni processu angusto. Long. 19, lat. 11 m.m.

I have seen only a single individual of this species, it is a rugose female; the prominent shoulders and the very narrow and contracted prosternal process and metasternal groove, will easily lead to the recognition of the other forms of the species when they are discovered.

North-west Australia. 934.

1. 66.—Genus *DYTISCUS*.

Clypeus entirely yellow, the yellow colour sharply limited in a straight line from the dark colour of the front of the head. Clypeal suture entire, though sometimes so indistinct in the middle as not to be perceived at first glance. Elytra with a yellow lateral stripe.

The species* are characteristic of the northern parts of the Old and New Worlds,

* The following species' descriptions also refer to this genus: *Dytiscus anxius*, Mann. (No. 1,285 *huj. op.*); North America.—*Dytiscus confusus*, Motsch. (No. 1,287) ?=No. 995; Siberia.—*Dytiscus frontalis*, Motsch. (No. 1,291), Kamtschatka.—*Dytiscus fusco-striatus*, Motsch. (No. 1,292); North America.—*Dytiscus ibericus*, Ros. (No. 1,293); Spain.

and do not reach the tropics. They are of large stature, and may be arranged in four groups as follows :—

GROUP 1.—Labrum distinctly emarginate in middle ; apices of coxal processes not spinose. Nos. 983 to 994.

GROUP 2.—Labrum distinctly emarginate in middle ; apices of coxal processes acutely spinose. Nos. 995 to 1,002.

GROUP 3.—Labrum truncate in middle ; apices of coxal processes acutely spinose ; margins of elytra dilated. No. 1,003.

GROUP 4.—Labrum nearly truncate in middle ; apices of coxal processes obtuse ; margins of elytra nearly simple. No. 1,004.

GROUP 1.

983. *Dytiscus punctulatus*, Fab., M.C.—Nigro-piceus, prothoracis elytrorumque lateribus flavo-marginatis, antennis rufis ; angustulus, elytris posterius crebrius punctatis ; pedibus gracilibus, femoribus posterioribus dense subtilissime punctulatis ; prosterni processu acuminato, sat elongato ; coxarum processibus rotundatis ; elytris versus latera ultra medium longitudinaliter impressis. Long. 29, lat. 14 m.m.

Mas, nitidus.

Fem., subopaca, crebrius punctulata, elytris ad basin ultra medium sulcatis.

In the male the small palettes of the front and middle tarsi are excessively small, so as to have a spongy appearance.

This species is readily distinguished by the dark undersurface, the slender hind legs, and rounded coxal processes, and the greater than usual punctuation of the elytra. The differences between the two sexes are great and constant. In the female the eighth interstice is always greatly abbreviated and is broken up into granules at its termination. The species seems subject to little variation except in size.

Northern and Central Europe, (Sweden, Britain, Northern France, Geneva, Germany). 935.

984. *Dytiscus sharpi*, Wehncke, Stet. Ent. Zeit. 1875, p. 500.—Latusculus, supra parum convexus, nigro-piceus, parum nitidus, prothoracis elytrorumque lateribus flavo-marginatis, pedibus piceis ; elytris versus apicem minus subtiliter et confertim subrugoloso-punctatis ; femoribus posterioribus maris crebre subtiliterque sed conspicuiter punctatis ; coxarum processibus rotundatis. Long. 30, lat. 16 m.m.

I have seen but a single male individual of this species, which appears to be a very distinct one. It agrees with *Dytiscus punctulatus* in colour, and the shape of the coxal processes, but differs from it in form, punctuation, and in the greater size of the small palettes of the front and middle tarsi of the male ; in this later respect it resembles *D. dimidiatus*. The lateral yellow band of the elytra becomes oblite-

rated before the extremity. The punctuation of the elytra instead of being dense towards the apical portion, as in *D. punctulatus*, is much more scanty, and is of a peculiar character, being somewhat coarse and yet indistinct, and also somewhat transversely rugulose.

Japan. 981.

985. *Dytiscus fasciventris*, Say, M.C.—Subtus ferrugineus, nigro-variegatus, supra nigricans, prothoracis elytrorumque lateribus flavo-marginatis, antennis pedibusque rufescentibus, tibiis tarsisque picescentibus; elytris posterius crebrius punctatis, pedibus posterioribus minus gracilibus, femoribus maris obsolete feminae fortiter punctatis; prosterni processu acuminato, sat elongato; coxarum processubus rotundatis. Long. 26, lat. 13 m.m.

Mas, nitidus.

Fem., parum nitida crebrius punctata, elytris ad basin ultra medium sulcatis.

The male has the small palettes of the front feet small but distinct, and larger than those on the middle feet which are quite small. The female has the sides of the thorax a good deal punctured, but the punctuation on the middle is very slight; the hind coxæ in it are also distinctly punctured, and the punctuation of the hind femora and tibiæ is much greater than in the male; the differences between the sexes are very marked and constant.

The species is subject to considerable variation in size, and to some in coloration; occasionally the hind and front margins of the thorax are vaguely yellowish; the colour of the undersurface is generally reddish, with the middle of the metasternum and sutures of the breast blackish, and the ventral sutures are generally narrowly black, the dark colour being dilated into a blotch on each side, but not extending to the epipleuræ; the dark colour seems to be sometimes extended and diffused. Though undoubtedly allied to *D. punctulatus*, the species is readily distinguished by the different colour, by the stouter hind legs, with different punctuation on the femora, by the greater development of the small palettes on the front feet of the male, and the unabbreviated eighth interstice of the female.

Eastern North America. United States and Canada. 936.

986. *Dytiscus habilis*, Say, M.C.—Subtus ferrugineus, nigro-variegatus, supra nigricans, prothorace limbo omni late flavo, elytris margine flavo ad apicem dilatato et fere diviso, antennis pedibusque rufescentibus, tibiis tarsisque posterioribus nigricantibus; angustulus, transversim æqualiter convexus; pedibus posterioribus robustis, femoribus glabris; prosterni processu angusto, elongato, apice minute recurvo; coxarum processubus rotundatis; elytris versus latera paulo ultra medium longitudinaliter impressis. Long. 26½, lat. 13½ m.m.

Mas, nitidus, elytris apicem versus externe parce subtiliter punctatis.

Fem., minus nitida, prothorace versus latera rugoso-punctato, elytris versus basin externe crebrius minute punctulatis, ad apicem fortiter parciusque punctatis.

In the male the small palettes of the front tarsi are well developed while those on the middle feet are minute and of a spongy appearance. The sexual differences of sculpture are not striking, and there is apparently only one form of female.

This species and *Dytiscus hybridus* have the outline of the thorax and elytra more completely continuous than in any of the other allies, and the elytra are less sinuate at the apex. In *D. habilis* the broad yellow margins of the short thorax reduce the middle patch of dark colour to a transverse band; beneath the thorax is yellow with the prosternal process blackish, the metasternum in the middle and the coxal processes are blackish, the large coxæ being ferruginous; the ventral segments are pitchy ferruginous, with indistinct black fasciæ.

I have observed very little variation in this species.

Mexico. 937.

987. *Dytiscus hybridus*, Aubé, M.C.—Subtus piceus, supra nigricans, prothorace ad latera late, ad marginem anteriorem obsolete, flavo-marginato, elytris margine flavo ad apicem parum dilatato et disintegrato, antennis pedibusque quatuor anterioribus rufis; angustulus, æqualiter transversim convexus; pedibus posterioribus brevibus, robustis; prosterni processu angusto, sat elongato, apice minute recurvo; coxarum processibus parum divergentibus, rotundatis. Long. 27, lat. 14 m.m.

Mas, nitidus, elytris ad apicem perparum punctatis.

Fem., sat nitida, prothorace versus latera plus minusve punctato, elytris versus basin externe minute punctulatis, versus apicem externe sparsim punctatis.

The male has the small palettes on the front tarsi largely developed and of equal size; those on the middle feet are also well developed and are placed so as to leave a narrow, bare, longitudinal space along the middle. The female departs but little from the male, but its sculpture is variable, when most developed the punctures of the thorax are connected (or rugose) and the minute punctures on the base of the elytra are numerous and distinct; when most diminished, the thoracic punctures are but little connected *inter se*, and the basal elytral punctures are scarcely to be detected.

This species has the superficial appearance of a species of *Cybister* on account of its short thick hind legs, its continuous outline, and rather broad and distinct yellow lateral band. Except in the sculpture of the females I have observed extremely little variation. I consider it the most highly developed species of the genus.

Eastern North America. (Massachusetts; Pennsylvania, Kansas, Illinois, sec. Crotch). 938.

988. *Dytiscus verticalis*, Say, M.C.—Latus et robustus, parum nitidus, subtus piceus, supra nigricans, prothorace elytrisque flavo-marginatis, antennis piceo-rufis, basi rufo, pedibus piceis femoribus quatuor anterioribus rufis; elytrorum margine flavo ad finem angusto et ab apice remoto; pedibus posterioribus robustis; prosterni processu angustulo sat elongato; coxarum processibus latis, rotundatis; labro in medio anguste sed profunde emarginato. Long. 32, lat. 17 m.m.

Mas., prothorace fere æqualiter transversim convexo, elytris etiam ad apicem fere impunctatis.

Fem., prothorace intra marginem lateralem impresso, capite in medio prothoracisque lateribus crebre punctatis, elytris sparsim subtiliter punctatis.

The male has the small palettes on the front tarsi highly developed; those on the middle tarsi are also well developed, though not quite so large as on the front feet.

Except in size the species exhibits very little variation.

The large size, and broad form, and the nature of the apical yellow fascia of the elytra give this species some resemblance to *D. harrisi* (No. 1,004), *D. verticalis* is however considerably smaller, has the thorax in front and behind without distinct yellow margin, the notch in the middle of the labrum longer, besides numerous other less conspicuous differences.

Eastern North America, (Canada, Lake Superior, New York, Pennsylvania). 939.

989. *Dytiscus marginicollis*, Lec., M.C.—Elongato-ovalis, elytris posterius rotundatis, parum truncatis, subtus testaceus, parum nigro-variegatus, supra brunneo-olivaceus (?), prothorace limbo omni late flavo-marginato, elytris margine flavo ad apicem lato et minus obsolete, antennis pedibusque rufis, tibiis tarsisque posterioribus obscurioribus; pedibus posterioribus gracilibus; prosterni processu elongato; coxarum processibus obtusis. Long. 29, lat. 14 m.m.

Mas., nitidus, elytris ad apicem perparum punctatis.

This species is only very imperfectly known to me, the two males before me being in very bad condition. The broad yellow margins on its thorax, and the general form cause it to resemble the Mexican *Dytiscus habilis*, from which however it is distinguished by its parallel prosternal process, and by its more divergent coxal processes, with less rounded apices, and its more slender swimming legs. The front and middle tarsi seem to be extremely similar to those of *D. habilis*.

So far as I can judge, it would seem that the species is about intermediate between *D. habilis*, and *D. sublimbatus*.

North America, (California and Kansas, Crotch.). 1140.

990. *Dytiscus sublimbatus*, Lec., M.C.—Subtus testaceus, metasterno in medio coxarumque processibus picescentibus, supra niger, prothorace limbo omni flavo-

marginato, sed margine basali angusto; elytris margine flavo ad apicem lato sed per-obsoleto, antennis pedibusque rufis, tibiis tarsisque posterioribus obscurioribus; pedibus posterioribus haud brevibus; prosterni processu sat lato; coxarum processibus obtusis. Long. 30, lat. 15 m.m.

Mas., elytris ad apicem parum punctatis.

Fem. (a), elytris ad basin paulo ultra medium sulcatis, apice sat crebre punctatis; prothorace crebrius punctato.

(b), Sat nitida, elytris haud sulcatis, ad apicem parcius punctatis, prothorace ad latera subtiliter punctato.

In the male the small palettes on the front feet are moderately developed, while those on the middle feet are quite small.

The species is rather more elongate than *D. fasciventris*, and may be readily distinguished therefrom by the less punctuation of the apical half of the elytra, by the front and hind margins of the thorax being more distinctly bordered with yellow, and by the absence of black markings on the ventral segments, as well as by several other minor characters. It is about intermediate between *D. fasciventris* and *D. marginalis*. The yellow basal margin of the thorax is moderately broad in front of the scutellum, but towards the sides is excessively narrow. I have seen only two pairs that I can refer to this species, and I feel not quite sure that they may not represent two distinct species.

North America. 940.

991. *Dytiscus dimidiatus*, Berg., M.C.—Major; anterieus angustatus; nitidus, subtus ferrugineus metasterno in medio picescente, supra niger, prothoracis elytrorumque lateribus flavis, antennis pedibusque rufis, tarsi posterioribus nigris; prosterni processu sat elongato, acuminato; coxarum processibus obtusis. Long. 35, lat. 18 m.m. (Long. 31–37 m.m.)

Mas., elytris ad apicem sat crebre punctatis.

Fem., sat nitida elytris ad basin vix ultra medium sulcatis, apice crebre punctatis, prothorace intra marginem sat impresso, lateribus subtiliter punctatis.

In the male the small palettes of the front tarsi are rather highly developed, while those on the middle feet are quite small.

This species is not closely allied to any other, but is about intermediate between *D. punctulatus* and *D. marginalis*. There is a very narrow reddish band on the front of the thorax, and sometimes a yellowish appearance in the front of the scutellum, at the extremity of the wing-cases the yellow band is divided by a very large patch of dark colour, and the anterior portion of the band is placed at a considerable distance in front of the apex. The female is always sulcate, and the interstices of the grooves are but little punctured. The species exhibits little variation; there is however a tendency in the females to a breaking up of the

interstices between the grooves by impressions or divisions, and I have one individual in which this is carried to such an extent that the tenth interstice is represented only by some detached granules, and the ninth is also greatly divided.

Europe ; Asia Minor, sec. Bedel. (Sweden ; Finland, 60° 50' Sahlberg ; England ; France ; Germany. 941.

992. *Dytiscus pisanus*, Lap., M.C.—Subtus testaceus, metasterno in medio suturisque plus minusve nigricantibus, supra nigro-olivaceus, prothorace limbo omni elytrorumque lateribus flavo-marginatis, antennis pedibusque testaceis, tarsis posterioribus piccis ; prosterni processu sat elongato et acuminato ; coxarum processibus rotundato-obtusis. Long. 30, lat 15 m.m.

Mas. nitidus, elytris versus apicem sat crebre punctatis.

Fem., subopaca, elytris ad basin paulo ultra medium sulcatis, ad apicem crebre punctatis ; prothorace undique crebre punctato.

The male has the small palettes on the front feet highly developed, while those on the middle tarsi are much smaller.

The species is closely allied to *D. marginalis*, and has exactly the same appearance, but it is undoubtedly distinct ; the prosternal process is longer and narrower, the coxal processes are more obtuse, and the furrows on the elytra of the female are rather shorter. The individuals of this species are nearly always somewhat smaller than *D. marginalis*.

The extent of the black marks on the undersurface is subject to a good deal of variation : only sulcate females occur, smooth ones being quite unknown.

Southern Europe, Corsica, Sardinia, Algeria ; (Southern France, Spain, Italy). 942.

993. *Dytiscus persicus*, Wehncke, Stet. Ent. Zeit. 1876, p. 52.—Angustulus, subtus testaceus, nigro-variegatus ; supra capite thoraceque nigricantibus, hoc limbo omni late flavo-marginato, elytris castaneis, late flavo-marginatis ; prosterni processu sat lato ; coxarum processibus brevibus, obtusis. Long. 29, lat. 14 m.m.

Mas. latet.

Fem., nitida, prothorace subtiliter punctulata, intra marginem impresso ; elytris ad apicem crebre punctatis.

This species seems to be most allied to *D. pisanus*, but is narrower and more parallel, and is peculiar in the colour of the wing-cases, which seem also to be of softer texture than usual : as yet the species is known only by smooth females, so that in this respect it differs totally from *D. pisanus* ; compared with the female of *D. pisanus*, the punctuation of the thorax is much less, and that on the apical portion of the elytra is less regular and scarcely extends so far forwards : the coxal processes are quite as short as in *D. pisanus*, and their apices, just a little less

rounded; the prosternal process is slightly shorter and broader. It would thus appear that this female in structure a good deal resembles *D. pisanus*, with an approximation towards *D. marginalis*, and with the punctuation almost similar to (the smooth female of) that species.

Persia; found (I believe at Ispahan) by the Marquis Jacques Doria in 1862 or '63. 943.

994. *Dytiscus marginalis*, Linn., M.C.—Subtus testaceus, metasterno in medio nigricante, supra nigro-olivaceus, prothorace limbo omni elytrisque lateribus flavo-marginatis, antennis pedibusque rufis, tarsis posterioribus plus minusve picescentibus; prosterni processu lato, haud elongato, coxarum processibus brevibus, sat acuminatis. Long. 33, lat. 18 m.m. (Long. 26–34 m.m.)

Mas, nitidus, elytris ad apicem sat punctatis.

Fem. (a), subopaca, elytris ad basin ultra medium sulcatis, ad apicem crebrius et fortius punctatis, prothorace undique crebrius parum subtiliter punctato.

(b), nitida, prothorace subopaco, undique subtiliter punctulato, elytris apicem versus crebrius quam in mare punctatis.

The male has the small palettes on the front feet large and highly developed, those near the two large cups being especially large and distinct, those on the middle feet are very small, but still are to be distinctly distinguished. The species varies a good deal in size, the females being particularly liable to reduction in this respect, and it also varies in the colour of the undersurface, the ventral segments being occasionally much marked with black. Except for these points and the sexual discrepancies, the species shows but little variation; the individual from Japan is, however, a very broad one, and appears to me to have the small cups of the front male tarsi rather less developed than in the European specimens.

This species is comparatively widely distributed in Europe, it occurs within the Arctic circle, (68°, Sahlberg), and as far south as Geneva, Lombardy, and Trente, and Hautes Pyrenees. It has not been recognized as occurring in America, but I have a female individual labelled, "Am. bor.int., montagnes rocheuses," by Castlenau; and found an individual said to be from North America, in Murray's collection.

Europe, Siberia, Japan, North America. 944.

GROUP 2.

995. *Dytiscus circumcinctus*, Ahr., M.C.—Subtus testaceus vel ferrugineus, metasterno in medio obscuro, supra nigricans, prothorace limbo omni elytrisque flavo-marginatis, antennis pedibusque rufis, tarsis posterioribus picescentibus; prosterni processu lato, haud elongato; coxarum processibus apicibus breviter prolongatis, angustatis et acuminatis. Long. 32, lat. 16 m.m.

Mas, nitidus, elytris ad apicem parum punctatis.

Fem. (a), subopaca, elytris ad basin ultra medium sulcatis, ad apicem crebrius punctatis, prothorace undique crebre sed subtiliter punctato.

(b), nitida, prothorace vix punctulato, elytris haud sulcatis, ad apicem sat punctatis.

The male has the small palettes moderately developed, those on the hinder and inner portion however, a good deal longer than the rest; the palettes on the middle tarsi are quite small.

The species is excessively similar to *D. marginalis*, but seems perfectly distinct, the apices of the coxal processes are more prolonged, slender, and acute; the small palettes on the male front feet are less highly developed, and the punctuation on the thorax of the females is finer. The species seems to vary very little; the North American individuals show no distinction from the European. The yellow mark on the middle of the head is usually smaller than in *D. marginalis*, while the eyes in all the individuals I have seen have a yellow margin round them.

Central Europe, principally the North Eastern parts, (Siberia \dagger); North America. (Sweden; Finland, 61° 50' Sahlberg; England; France; Germany; Red River). 945.

996. *Dytiscus parvulus*, Man., M.C.—Minor, angustulus, subtus testaceus, suturis anguste nigro-cinctis, supra olivaceo-niger, nitidus, prothorace limbo omni elytris-que flavo-marginatis, antennis pedibusque testaceis; prosterni processu lato, brevi; coxarum processibus spinoso-acuminatis, sed parum elongatis; sutura frontali in medio obsoleta. Long. 26½, lat. 13 m.m.

Mas, nitidus, elytris ad apicem sat punctatis.

Fem., nitida, prothorace versus latera verticeque capitis subopacis, elytris haud sulcatis, ut in mare punctatis et nitidis; prothorace verticeque sparsim subtilissime punctatis, illo intra latera distincte subimpresso.

The male tarsi are similar to those of *D. dauricus* (No. 998)

The frontal suture in the male is fine, but still may be distinguished even in the middle, in the female it is more obsolete than in the male.

Although the species has some points of resemblance with *D. dauricus*, it seems to be a very distinct one; it is smaller and narrower, the female sculpture is greatly reduced, and the coxal processes, though quite slender, are less elongate, and comparatively more distant; the obsolete frontal suture of the female is a very remarkable distinctive character for that sex.

I have seen only one pair of this species; I believe the two specimens to be really one species, though the sexual difference in the frontal suture appears to be the reverse of what exists in other species. It is doubtful whether Motschulsky's *Dytiscus parvulus* is this species or *D. dauricus*, or *D. vexatus*, but his name may be altogether neglected, his note being an insufficient description.

997. *Dytiscus vexatus*, n. sp.—Subtus testaceus, metasterno late nigricante, segmentis ventralibus parum nigro-marginatis, supra piceus, prothorace limbo omni elytrisque flavo-marginatis, antennis pedibusque rufis, prosterni processu lato, brevi: coxarum processibus apicibus breviter prolongatis, angustatis et acuminatis; sutura frontali profunda. Long. 29, lat. 15 m.m.

The clothing of the male tarsi is similar to that of *D. circumcinctus*. I have seen only a single male; it is allied to *D. circumcinctus*, but is smaller than the smallest male I have seen of that species, it is of a more pitchy colour above, the punctuation at the very apex of the wing-cases is greater, the eyes are not bordered with yellow, and the coxal processes though exceedingly similar in form are just a trifle less elongate, and the frontal suture is deeper; the undersurface is also rather more marked with black. From *D. dauricus*, the species differs by the shorter coxal processes, smaller size, and some less important details.

North-Western North America. 946.

998. *Dytiscus dauricus*, Gebl., M.C.—Subtus testaceus, conspicue nigro-variegatus, supra niger, prothorace limbo omni elytrisque flavo-marginatis, antennis pedibusque rufis; prosterni processu lato, haud elongato; coxarum processibus evidententer prolongatis, angustatis et acuminatis: sutura frontali (praesertim in femina) profunda. Long 32, lat. 16 m.m.

Mas, nitidus, elytris ad apicem sat punctatis.

Fem. (a), subopaca, elytris ad basin ultra medium sulcatis, ad apicem crebrius fortiterque punctatis; prothorace undique crebrius fere dense punctato.

(b), nitida, prothorace subopaco, subtiliter crebre punctato, elytris ad apicem sat crebre et fortiter punctatis.

The palettes of the male tarsi are formed as in *D. circumcinctus*.

The species is intermediate in most respects between *D. circumcinctus*, and *circumflexus*; it differs from the former by the greater prolongation of the apices of the coxal processes, by the underside being greatly marked with black, and by the greater thoracic punctuation of the females, while from *D. circumflexus* it differs by its rather broader form, less elongate apices of the coxal processes, and shorter prosternal process. The yellow angular mark on the middle of the head generally extends quite forward to join the yellow clypeus. The species seems to vary but little, the Siberian individuals being almost if not quite undistinguishable from the American ones. The species is usually known in collections as *D. confluentus*, Say.

D. diffinis, Lec., is referred to it as a synonym on the authority of Crotch.

Western North America, and Eastern Siberia. (Kansas, Lake Superior, California, Sitka; Lake Baikal; Transbaikal; Angara River). 947.

999. *Dytiscus latro*, n. sp.—Elongatus; subtus testaceus, nigro-variegatus, supra niger, prothorace limbo omni elytris que flavo-marginatis, antennis pedibusque rufis; prosterni processu sat elongato; coxarum processibus prolongatis, angustatis et acuminatis. Long. 31, lat. 16 m.m.

This species is imperfectly known to me by a single individual, which is an unsulcate female; it is however undoubtedly distinct; it has the comparatively elongate and slender form of *D. circumflexus*, and its coxal processes are intermediate between those of *D. dauricus* and *D. circumflexus*, being shorter than in the latter, longer than in *D. dauricus*; the female is however readily distinguished from the unsulcate females of both of the species alluded to by the great development of the punctuation on the wing-cases; this punctuation is rather regular as in *D. circumflexus*, but is much coarser and has a much greater extension towards the base of the elytra.

Mantchuria. 948.

1000. *Dytiscus piceatus*, n. sp.—Elongatus; subtus testaceus, metasterno in medio nigricante, supra capite thoraceque nigris. hoc flavo-marginato, elytris rufescentibus, flavo-marginatis; prosterni processu sat elongato; coxarum processibus prolongatis, abrupte angustatis, acuminatis. Long. 33, lat. 16 m.m.

This species is known to me only by a single male individual; it is extremely similar in form to *D. circumflexus*, and has the small palettes of the dilated tarsi just as in that species; the colour of the elytra is however reddish, the undersurface is but little marked with black, and the coxal processes are different in form, being rather less elongate than in *D. circumflexus*, but they are more abruptly narrowed, so that their slender portion is more clearly marked off, somewhat as in *D. lapponicus*. The punctuation of the apex of the elytra is but slight, even less in fact than in *D. circumflexus*.

Eastern Siberia; (Irkutsk). 949.

1001. *Dytiscus circumflexus*, Fab., M.C.—Elongatus; subtus testaceus, nigro-fasciatus, supra olivaceus, vel viridi-olivaceus, scutello flavescente, prothorace limbo omni elytris que flavo-marginatis; antennis pedibusque rufis, tarsis posterioribus plus minusve picescentibus; prosterni processu sat elongato; coxarum processibus valde elongatis, attenuatis, et acuminatis. Long. 33, lat. $16\frac{1}{2}$ m.m. Long. $27\frac{1}{2}$ 35 m.m.

Mas. nitidus, elytris ad apicem parum punctatis.

Fem. (a), subopaca, elytris ad basin ultra medium sulcatis, ad apicem crebrius æqualiter punctatis, prothorace undique crebre subtiliter punctato.

Fem. (b), nitida, elytris ad apicem sat punctatis, prothorace in medio subtilissime punctato, ad latera subopaco et paulo fortius punctato.

The palettes of the male tarsi are moderately developed, and show no difference from what exists in *D. circumcinctus*. The species is nearly always of more slender form and of a greener colour than the other allies of *Dytiscus marginalis*, and is readily identified by the great elongation of the coxal processes. It varies a good deal in colour, size and width; the specimens from the northern part of its area of distribution being generally broader and of a less green colour than most of the individuals which are found in southern Spain and Algeria; in the sulcate female of the larger variety the grooves are generally continued rather nearer to the extremity of the wing-cases. In the north it would seem that sulcate females are more abundant than smooth ones, while in the south the reverse is the case.

Central and Southern Europe; apparently most common in the neighbourhood of the Mediterranean Sea—Corsica, Algeria; (England, France, Germany, Spain, Corfu, Hungary). 950.

1002. *Dytiscus lapponicus*, Gyll., M.C.—Subtus testaceus, abdominis lateribus nigro-maculatis, supra piceus, prothorace limbo omni late flavo-marginato, scutello flavescente, elytris lateribus lineisque tenuibus flavis; antennis pedibusque testaceis; prosterni processu brevi; coxarum processibus apicibus distantibus, subito angustatis, elongatis et acuminatis. Long. 27, lat. 13½ m.m.

Mas, nitidus, elytris ad apicem fortiter punctatis.

Fem. (a), opaca, elytris ad basin ultra medium sulcatis, ad apicem fortiter crebrius punctatis; prothorace undique creberrime punctato.

(b), nitida, prothorace subopaca, præsertim in medio crebrius subtiliusque punctato, elytris ad apicem fortiter punctatis.

The male has the small palettes of the tarsi moderately developed.

The species has the outline of the thorax and elytra more discontinuous than in any other species, the thorax being narrower than usual especially at the base; the eyes are always largely bordered with yellow: the contraction of the coxal processes takes place on their inner edge just below the coxal notch: the anterior border of the hind coxa approaches nearer to the middle coxa than in any other species, and the terminal portion of the epipleuræ is a little broader than in the other species of the *D. marginalis* group. These characters allow the species to be easily recognized, although it is a very variable one in size and colour. The yellow irregular lines on the elytra can sometimes scarcely be detected; at other times the yellow colour is more than usually predominant, and the black mark on the middle of the thorax may even be broken up: very rarely the elytra are of a greenish olivaceous or rather of a piceous colour. The specimens from Northern Germany are larger and darker than any others I have seen.

I am not quite certain that the individual, the only one I have seen, from Siberia

really belongs to this species ; it is very narrow, and has the coxal processes shorter and the epipleuræ narrower than any other specimen I have seen.

Northern Europe and Siberia: extending southwards in the mountains to the Basses Alpes, and Northern Italy, but otherwise not found more to the South than Northern Germany and Central Russia. (Lapland, Scotland, Ireland, Stettin, Berlin. Kasan ; Barcelonette ; Lago della Maddalena.) 951.

GROUP 3.

1003. *Dytiscus latissimus*, Linn., M.C.—Subtus ferrugineus, supra niger, prothorace limbo omni elytris que flavo-marginatis, antennis pedibusque rufis, tarsis posterioribus plus minusve picescentibus ; epipleuris dilatatis ; prosterni processu lato et brevi ; coxarum processibus apicibus distantibus, acuminatis, parum prolongatis : labro medio vix emarginato. Long. 40, lat. 25 m.m.

Mas, sat nitidus, elytris apicem versus tantum subtilius punctulatis.

Fem., subopaca, prothorace medio utrinque subtilissime punctulato, elytris longe ultra medium sulcatis, interstitiis dense subtilissime punctatis, apice crebre subtiliter punctatis, punctisque majoribus parum numerosis.

In the male of this species the small palettes of the front tarsi remain undeveloped, being no larger than those of the intermediate feet. The species is remarkable by the dilated epipleuræ with a sharp external edge, and by the fine punctuation of the sulcate female ; the yellow band at the apex is divided into two narrow widely separated portions, the anterior of which is unusually distinct. The species varies but little, but sometimes there is a more or less extensive appearance of yellow colour on the middle of the wing-cases in the female : notwithstanding the large size of the species, the hind femora are remarkably slender. The species is extremely liable to abnormal developments of different parts of the skeleton. An individual possibly a hybrid between this and *D. marginalis*, or *D. dimidiatus* has been described by Kraatz, Berl. Ent. Zeit. XVIII, p. 293, pl. I, f. 2, but as the description and figure quite agree with *D. harrisi*, I am inclined to believe that the supposed hybrid may prove to be an individual of that species.

Northern Europe ; (and N. America ?). (Sweden ; Finland to 63°, see. Sahlberg ; Germany ; Vosges). 952.

GROUP 4.

1004. *Dytiscus harrisi*, Kirb, M.C.—Latus, robustus ; subtus testaceo nigroque variegatus, supra niger, prothorace limbo omni elytris que flavo-marginatis, antennis piceo rufis, femoribus testaceis, tibiis et tarsis pedum quatuor posteriorum nigricantibus ; prosterni processu brevi et lato ; coxarum processibus brevibus, rotundatis ; labro haud emarginato. Long. 40, lat. 22 m.m.

Mas, nitidus, elytris versus apicem crebrius subtiliusque punctatis.

Fem., subopaca, prothorace utrinque versus latera subtilissime punctato, elytris ad apicem crebrius subtiliter punctatis, punctis sublateralibus majoribus conspicuis.

In the male of this species the small palettes of the front tarsi remain quite rudimentary and undeveloped, being no larger than those of the intermediate feet.

The colour of the under surface in this species is peculiar; the prosternum is testaceous with its process black, the breast is black with a large dash of yellow on the front part of the hind coxæ, while the ventral segments are yellowish, marked with black especially at the sides and apex: the yellow lateral band of the elytra is broad, and is divided at the apex by a large space into two parts, the anterior of which is quite distinct. I have not seen enough specimens to know whether there is much variation in the species.

The species has undoubtedly much in common with *D. latissimus*, particularly the labrum, the nature of the punctuation, the form of the yellow band at the apex of the elytra, and the condition of the clothing of the male tarsi; it departs, however, widely therefrom by the undilated margins of the wing-cases, the form of the coxal processes, and the unsulcate elytra in the female. In certain respects it resembles *D. verticalis*, and although the two at present are widely separated I should not be surprised if intermediate species are found to exist in North America.

North America, (Pennsylvania, Kansas, Lake Superior, Vancouver's Land, sec. Crotch). 953.

III. 4.—Tribe HYDATICIDES.

Posterior tarsi with the hind margins of their joints densely fringed with adpressed and flattened ciliae or squamæ overlapping the basal portion of the following joint.

Prothorax, with a fine lateral margin,	<i>ERETES.</i> (<i>Vide</i> p. 699.)
Prothorax without lateral margin, episternal suture curvilinear, spurs of } hind tarsi emarginate at apex. }	THERMONECTINI. (<i>Vide</i> p. 672.)
Prothorax without lateral margin, episternal suture rectilinear, spurs of } hind tarsi acuminate at apex. }	HYDATICINI. (<i>Vide</i> below.)

II. 13.—Group HYDATICINI.

Metathoracic episternum large, the suture between it and the wing of the metasternum rectilinear, spurs of posterior tibiæ quite acuminate.

Claws of posterior feet nearly equal, }	<i>PRODATICUS.</i> (<i>Vide</i> p. 648.)
Claws of posterior feet very unequal. }	<i>HYDATICUS.</i> (<i>Vide</i> p. 648.)

I. 67.—Genus *PRODATICUS*.

Coxal lobes broad, their supra articular border rather narrow ; claws of hind feet nearly equal in length.

The only species is found in western Asia. (Persia and North India).

1005. *Prodaticus pictus*, n. sp.—Sat latus, parum convexus, nitidus, niger, capite anterius prothoraceque lateribus testaceis, vertice testaceo-bimaculato, elytris maculis decem conspicuis flavis, antennis (parum elongatis) pedibusque anterioribus rufis, pedibus posterioribus piceis: prothorace lateribus subrotundatis, angulis posterioribus obtusis ; tarsorum posticorum unguiculis fere æqualibus ; elytrorum punctis seriatis conspicuis. Long. 15, lat. $8\frac{1}{2}$ m.m.

The male has the undersurface of the front tarsi irregularly covered with palettes about thirty-six in number, there is no definite division of them into larger and smaller, but those in the middle of the heel are much larger than the marginal ones: the three basal joints of the intermediate tarsi are broad, and bear beneath very numerous small palettes quite irregularly placed, but with a rather broad uncovered line along the middle. The terminal two joints both on the front and middle feet are less elongate and slender than in the allied forms.

The yellow marks on the elytra are very conspicuous ; they consist on each of an elongate mark on the shoulder, a very large basal spot near the scutellum, two large spots beyond the middle placed transversely, the inner one rather remote from the suture, and the outer quite separate from the hind margin, and a subapical spot, touching neither the suture nor the outer margin.

I have seen only two individuals of this remarkable species, which cannot easily be confounded with any other ; the form of its thorax suggests a likeness to *Agabus*.

Northern India. 1000.

I. 68.—Genus *HYDATICUS*.

Coxal lobes but little developed in the transverse direction, but with broad and definite supra-articular border ; inner claw of hind tarsus twice as long as the outer.

The species are very difficult to distinguish, I arrange them provisionally in three groups viz:—

GROUP 1.—Serial punctures on the upper face of the hind tibia distant from one another, and quite parallel with the outer border of the tibia ; series of punctures on the upper face of the hind femur consisting of isolated non-pubescent punctures ; front of head not quite so short as, and eyes rather smaller than, in the other groups ; Nos. 1006 to 1014.

GROUP 2.—Serial punctures on the upper face of the hind tibia more or less approximate to one another, and not perfectly parallel with the outer margin, the anterior being placed rather further from the outer border than the terminal ones are ; series of punctures on the upper face of the hind femur, dense and crowded together, forming a finely pubescent band ; pattern of upper surface variable, but never consisting of one or two quite definite longitudinal pale vittæ ; middle tarsi of male a good deal dilated ; Nos. 1015 to 1043.

GROUP 3.—Pattern of upper surface of wing cases consisting of one or two quite regular longitudinal vittæ ; middle tarsi of male but little incrassate ; Nos. 1044 to 1051.

The groups cannot be considered either natural or distinct ; thus No. 1015 is quite intermediate between the first and second groups, and No. 1044 will probably prove an equally perfect connection between the second and third.

Besides the species enumerated in the text, the following descriptions probably refer to species of this genus:—*Hydaticus apicalis*, Boh. (No. 1,305 *huj. op.*) near No. 1,041 ; Caffraria.—*Hydaticus aruspex*, Clk. (No. 1,306) ; China.—*Hydaticus caffer*, Boh. (No. 1,308) near No. 1,042 ; Caffraria.—*Hydaticus discoidalis*, Hope (No. 1,310) ? No. 1,029 var. ; Africa.—*Hydaticus fulvo-notatus*, Clk. (No. 1,311) ; Africa.—*Hydaticus hystrio*, Clk. (No. 1,312) ; India.—*Hydaticus lateralis*, Cast. (No. 1,313) ; South America.—*Hydaticus madagascariensis*, Aubé (No. 1,314) ; Madagascar.—*Hydaticus nauzieli*, Fairm. (No. 1,315) ?=No. 1,032 ; France.—*Hydaticus nigro-marmoratus*, Clk. (No. 1,316) ; Angola.—*Hydaticus nigro-vittatus*, Clk. (No. 1,317) ?=No. 1,028 ; Japan.—*Hydaticus paganus*, Clk. (No. 1,318) ; Africa.—*Hydaticus philippensis*, Wehneke, (No. 1,319) ; Philippine Islands.—*Hydaticus usheri*, Clk. (No. 1,321) ; Africa.—*Hydaticus verecundus*, Clk. (No. 1,322) ? South America.—*Hydaticus xanthomelas*, Brullé (No. 1,323) ; South America. The systematic position of the following is more doubtful, but may be in *Hydaticus*: *Colymbetes trivittatus*, Mont. (No. 1,255) ; Woodlark Islands.—*Dytiscus flavo-cinctus*, Guer. (No. 1,290) ; Papua.—*Dytiscus unifasciatus*, Fab. (No. 1,296) ; Africa.

GROUP I.

1006. *Dytiscus seminiger*, de Geer, *Hydaticus seminiger*, M.C.—Ovalis, sat latus, parum nitidus, niger, subtus prosterno anterieus capiteque in medio testaceis, supra capite thoraceque rufis, illo in vertice nigro rufo-bimaculato, hoc basi in medio extensius nigricante, elytris margine laterali flavo; antennis pedibusque anterioribus rufis, tibiis intermediis picceis, pedibus posterioribus nigro-picceis, unguiculo interno quam externo vix duplo longiore. Long. 13, lat. $7\frac{1}{2}$ m.m.

In the male of the species, the fringing hairs of the front tarsi are rather short, and the palettes differ little *inter se* in size, those at the base not being very large, the claws are rather stout, are abruptly curved at the base and are sinuate beneath; the middle tarsi are broadly dilated and the basal patch of dense rough setæ is rather large. The female has some coarse impressions on the thorax near the sides, and a few similar marks at the side of each wing-case near the front.

The species seems to vary but little, the female often has the black colour on the thorax more extensive than in the male, so that it occasionally nearly attains the front margin, the yellow lateral stripe of the elytra is, too, generally more distinct in its terminal portion than it is in the male.

Europe. (Sweden: Finland. 61°, Sahlberg; England; France; Germany: Alpes Maritimes, sec. Bedel). 1038.

1007. *Hydaticus modestus*, n. sp.—Oblongo-ovalis, parum latus, subtus nigropiceus, capite prosternoque rufis, supra capite thoraceque rufis, illo in vertice nigro rufo-bimaculato, hoc basi in medio nigro, elytris nigris margine laterali punctisque transversis subbasalibus flavis, antennis pedibusque quatuor anterioribus rufis, pedibus posterioribus picceis, unguiculo interno quam externo haud duplo longiore. Long. 14, lat. $7\frac{1}{4}$ m.m.

The male has the front tarsi rather large, their claws are rather long, are suddenly bent at the base and are sinuate beneath; the middle tarsi are broadly dilated, and the basal patch of dense rough setæ is very large and conspicuous.

I have seen only a single individual of the species (a male in very bad condition); it seems to be very closely allied to *Dytiscus seminiger*, and is extremely similar to it, but is of narrower form, the black colour at the base of the thorax is definitely limited and does not reach quite so far forward as the middle, and there are faint indications of a transverse line of pale colour on the elytra near the base. The apices of the elytra are slightly sinuate, and in the female sex this is no doubt more conspicuous. In size and form it appears to be very similar to *Hydaticus americanus* (No. 1009), but seems to be readily distinguished by the absence of yellow longitudinal lines on the wing-cases.

North America. 1037.

1008. *Hydaticus cinctipennis*, Aubé, M.C.—Ovalis, elongatus, subtus nigropiceus, capite prosternoque rufescentibus, supra capite thoraceque rufis, hoc basi in medio indistincte infuscato, elytris piceis, vitta humerali longitudinali elongata, paulo obliqua antice marginem attingente lateribusque parum discrete rufescentibus, antennis pedibusque anterioribus rufis; pedibus posterioribus picescentibus, unguiculo interno quam externo duplo longiore. Long. $13\frac{1}{2}$, lat. $7\frac{1}{4}$ m.m.

I have seen only a single individual of this species, it is a male in very mutilated condition, the middle tarsi are broadly dilated, but their basal patch of dense rough pubescence is rather small though quite distinct.

Though rather similar to *H. modestus*, the species is readily distinguished from it by the less variegate colour of the upper surface.

North America. 1036.

1009. *Hydaticus americanus*, n. sp.—Oblongo-ovalis, parum latus, subtus nigropiceus, prosterno capiteque in medio testaceis, supra capite thoraceque rufo-testaceis, illo in vertice nigro rufo-bimaculato, hoc basi in medio nigro, elytris vittis longitudinalibus nigris, a vittis flavis fere integris divisis, margine laterali fasciaque lata transversa basali flavis, antennis pedibusque quatuor anterioribus rufis, tibiis intermediis rufo-piceis; pedibus posterioribus piceis, unguiculo interno quam externo duplo longiore. Long. $13\frac{1}{2}$, lat. $7\frac{1}{4}$ m.m.

The female of this species has the elytral apices distinctly produced, and sinuate, but it is without any sexual sculpture on the thorax or elytra. The male is unknown to me.

This species is very closely allied to *Dytiscus stagnalis* (No. 1011), and is about as long, but is narrower and of more parallel form, and the yellow lines and fascia of the elytra are a little more distinct and definite, the female has the apices of the elytra produced and no sexual sculpture.

North America, (Red River). 1035.

1010. *Hydaticus lævipennis*, Thoms., Op. Ent. III, p. 324.—Ovalis, parum latus, subtus nigropiceus, prosterno capiteque in medio testaceis, supra capite thoraceque rufo-testaceis, illo in vertice nigro rufo-bimaculato, hoc basi in medio nigro, elytris nigris fascia sub-basali transversa parum discreta, margine laterali lineisque tenuibus longitudinalibus obsoletis, testaceis; antennis pedibusque quatuor anterioribus rufis, tibiis intermediis rufo-piceis; pedibus posterioribus piceis, unguiculo interno quam externo haud duplo longiore. Long. $12\frac{1}{2}$, lat 7 m.m.

The female of this species has the apices of the elytra at the suture a little produced so as to give rise to a conspicuous sub-apical situation; it has impressions on the thorax and elytra as in the corresponding sex of *Dytiscus stagnalis*. The male is unknown to me.

The species is smaller in size than *D. stagnalis*, and has the yellow marks of the elytra much less developed, and the elytral apices sinuate in the female: this seems to be all there is to distinguish the two forms, which are perhaps not distinct species.

The specimen from the Red River differs from the Finland individual in that it has apparently the claws of the hind tarsi less elongate.

Northern Europe; North America; (Sweden: Finland 60° 30', Sahlberg; Red River). 1034.

1011. *Dytiscus stagnalis*, Fab., *Hydaticus stagnalis*, M.C.—Ovalis, latus, robustus, subtus nigro-piceus, prosterno capiteque in medio testaceis, supra capite thoraceque rufo-testaceis, illo in vertice nigro rufo-bimaculato, hoc basi in medio nigro, elytris vittis longitudinalibus nigris a vittis angustulis flavis divisis, margine laterali fasciaque transversa basali sat discreta, flavis, antennis pedibusque quatuor anterioribus rufis, tibiis intermediis rufo-piceis; pedibus posterioribus piceis, unguiculo interno quam externo vix duplo longiore. Long. 14, lat. 7½ m.m.

The male has the front tarsi rather large (but their fringing hairs are scarcely so long as in *D. transversalis*), and their rather elongate claws are abruptly bent near the base, and are sinuate beneath: the middle legs are thick, their tarsi broadly dilated, and the patch of dense rough setæ at the base is large and conspicuous. The female has some impressions on the lateral parts of the thorax, these seem to be never very extensive, but on the lateral and basal parts of the wing-case there is a large development of this sculpture, which however in certain individuals is greatly reduced. The apex of the wing-cases is rounded in both sexes, but in the female the sutural angle is just visibly produced so as to cause an extremely slight apical sinuation.

North Europe, Siberia. 1033.

1012. *Dytiscus transversalis*, Bergst., *Hydaticus transversalis*, M.C.—Ovalis, sat latus, parum elongatus, subtus piceus, prosterno capiteque in medio testaceis, supra niger, capite anterieus rufo-testaceo et ante verticem rufo-bimaculato, prothorace anterieus et ad latera late rufo-testaceo, elytris margine laterali late fasciaque sub-basali transversa testaceis, antennis pedibusque quatuor anterioribus testaceis; pedibus posterioribus piceis, unguiculo interiore quam exteriori duplo longiore. Long. 13, lat. 7 m m.

In the male the front tarsi are only moderately large, but their fringing hairs are rather long, their claws are rather small and are simple and gently arcuate; the middle tarsi are rather broadly dilated, and beneath their patch of dense rough setæ at the base (somewhat on the inner side) is distinct but not conspicuous: the female has coarse impressions on the sides of the thorax, which are variable in their extent. In each sex the elytra are simply rounded at the apex.

This species seems to vary but little; the whole of the sutural area of the elytra is broadly and uninterruptedly black, the lateral margin is broadly yellow, but is marked especially towards the extremity with streaks of black dots.

Northern and Central Europe, rather common; (Sweden, Germany, Northern France, Belgium, England). 1032.

1013. *Hydaticus piceus*, Lec., M.C.—Robustus, convexus, sat latus, sericeo-opacus, subtus piceus, supra fere unicolor, brunneus, limbo dilutiore. Long. 13, lat. 7 m.m.

On the front tarsi of the male the fringing hairs are well developed, and the palettes are large, those at the base being distinctly larger than the others, the claws are abruptly bent at the base; the middle tarsi are broadly dilated, and bear a distinct basal patch of glandular pubescence, besides the large palettes. The female has on the front of the thorax at some distance from each side, two or three coarse irregular impressions.

This species is peculiar on account of its colour. Although it appears at first sight almost unicolorous above, yet on examination it is seen that the vertex is darker, and that in front of it there is an obscure arcuate dark mark, the disc of the thorax is also vaguely dark, and by careful examination there may be seen obsolete black dots or irrorations on the wing-cases, especially on the base and near the sides. The silky opacity of the upper surface is peculiar and characteristic of the species. I have seen only a single pair.

North America, (Pennsylvania, Illinois, see. Crotch). 1018.

1014. *Hydaticus parallelus*, Clk., M.C.—Elongatus, subparallelus, haud latus, nitidissimus, subtus piceus, vel piceo-niger, supra rufus, capite posterius nigro-signato, prothorace in medio transversim nigricante, elytris creberrime nigro-irroratis, versus suturam fere omnino nigris, punctis seriatis conspicuis; antennis pedibusque anterioribus rufis, pedibus posterioribus piceis; prothorace in medio canalicula brevi et tenui. Long. 14, lat. 7 m.m.

This species is closely allied to *Hydaticus capicola* (No. 1043), but is more elongate and parallel in form, the distance between the anterior border of the hind coxa and the middle coxal cavity is rather greater, and the upper surface is apparently blacker and more shining, so that no traces of longitudinal lines of red colour can be perceived on the wing-cases. There are three series of black marks on the head, one in front of the other, these marks are connected at the sides, and occasionally in the middle also. The female has a few deep, coarse, short rugæ on the thorax, on each side between the outer margin and the middle.

Australia, (New South Wales). 1001.

GROUP 2.

1015. *Dytiscus bimarginatus*, Say, *Hydaticus bimarginatus*, M.C.—Oblongo-ovalis, sat nitidus, niger, prosterno rufescente, capite thoraceque rufis, illo vertice, hoc basi, nigris, elytris prope latera vitta elongata humerali testacea, ad apicem parum distincte testaceis, margine laterali rufescente; antennis pedibusque quatuor anterioribus rufis. Long. $11\frac{1}{4}$, lat. $6\frac{1}{2}$ m.m.

The male tarsi and their fringing hairs are moderately well developed, the middle tarsi are only moderately dilated, and have a very inconspicuous basal patch of glandular pubescence; the female has some coarse impressions on the thorax towards the sides.

This species is generally broader in front and less dilated behind the middle, than *H. rimosus*, so that it is of more parallel form; it is readily distinguished by the definite and regular sublateral yellow stripe on the wing-cases. It exhibits some sexual differences in form and colour, the females being generally rather narrower in front than the males, and they are liable to have the black colour of the thorax more extended and diffused, on the other hand they have the yellow sublateral band of the wing-cases more elongate.

North America. 1031.

1016. *Hydaticus rimosus*, Aubé, M.C.—Ovalis, nitidus, niger, prosterno antierius rufescente, capite thoraceque rufis, illo vertice et signatura inter oculos, hoc in medio, nigro-umbrosis; elytris ad latera irregulariter testaceo-signatis, signaturis illis nigro-irroratis; antennis rufis, pedibus pieco-rufis. Long. $11\frac{1}{4}$, lat. 6 m.m.

The male tarsi are moderately developed; the female has some coarse impressions on the lateral parts of the thorax.

In this species the limits between the black and red colours of the thorax are very indefinite, on careful examination it is seen that this black shading arises from a large basal black cloud, and from another discoidal cloud confused with it. The yellow marks on the elytra are irregular, indefinite, and variable, there is a small humeral mark having a greater or less extension backwards, the outer margin is yellow, and this yellow margin becomes reddish in front, but does not reach to the base, at the apex it is much dilated, and behind the middle it has one or two yellow small marks connected with it, when these yellow marks are large they are very irregular and much broken up by black dots or divisions, sometimes the humeral mark gives off in the direction of the scutellum the beginning of a transverse band.

Cuba, Guadeloupe, Mexico. 1030.

1017. *Hydaticus rectus*, n. sp.—Minor, ovalis, nitidus, subtus piceus, prosterno testaceo, supra capite thoraceque rufo-testaceis, illo vertice, hoc basi et margine anteriore elytrisq̄ue nigris, his fascia transversa pone basin margineque laterali late et regulariter, testaceis; antennis pedibusque quatuor anterioribus testaceis; pedibus posterioribus rufis. Long. $10\frac{1}{2}$, lat. $5\frac{3}{4}$ m.m.

The male tarsi are rather small, and their palettes are by no means large, and the fringing hairs are not very highly developed.

I have seen only a single male of this little species; the broad lateral yellow band of the wing-cases is very distinct and of nearly one width from the shoulder to the apex, it is however just a little dilated before the apex. It is smaller than the North American *Dytiscus bimarginatus*, and easily distinguished therefrom by the conspicuous yellow transverse fascia near the base of the wing cases, and the bright yellow red prothorax, with transverse black marks at the front and base.

South America, (Parana). 1029.

1018. *Hydaticus amazonicus*, n. sp.—Regulariter ovalis, fere elongatus, nitidissimus, niger, prosterno anterieus rufescente, capite thoraceque rufis, illo vertice et plaga inter oculos, hoc late in medio nigricantibus, elytris fascia transversa basali, linea humerali elongata, macula sublaterali pone medium alteraque subapicali testaceis, margine laterali intra epipleuram anguste vageque rufescente; antennis pedibusque anterioribus testaceis, tibiis intermediis picescentibus. Long. 13, lat. $7\frac{1}{4}$ m.m.

This species is closely allied to *H. subfasciatus*, but is larger and more elongate, the black colour on the wing cases extends nearly to the apex, and the diminished extent of yellow colour appears but little dotted with black.

I have seen only one individual; it is a male and has the tarsi similar to those of *H. subfasciatus*, except that they are rather larger.

South America, (Upper Amazons). 1028.

1019. *Hydaticus subfasciatus*, Lap., M.C.—Ovalis, nitidissimus, niger, prosterno anterieus testaceo, capite thoraceque rufis, illo vertice margineque interno oculorum, hoc basi in medio maculaque ad marginem anteriorem nigris, elytris ex parte majore nigris, signatura humerali, fascia transversa pone basin, margine angusto antice abbreviato, macula irregulari ad latera paulo ultra medium apicque late et confuse testaceis; antennis pedibusque quatuor anterioribus testaceis. Long. 11, lat. $6\frac{1}{4}$ m.m.

The male front tarsi are not very large, but their fringing hairs and palettes are well developed: the female has a somewhat circular patch of fine dense sculpture on the thorax at some distance from each side.

The species is variable in colour, size, and form; the lateral and apical parts of the elytra are more or less dotted with black in the yellow colour, and this is more conspicuously the case when the yellow is extensive; the apical portion is generally very largely yellow; the black marks at the base and front margin of the thorax are generally united along the middle.

South America, (Guatemala, Panama, Cayenne, Amazonia). 1027.

1020. *Hydaticus goryi*, Aubé, Spec. p. 175.—Statura signaturisque variabilis; capite thoraceque rufis, illo vertice et inter oculos, hoc in disco et in medio ad basin nigris; elytris nigris, margine externo, fascia pone basin signaturisque pone medium versus latera sæpe longitudinaliter disintegratis, testaceis; subtus piceus, antennis pedibusque anterioribus rufis; tarsorum posticorum ciliarum margine anteriore leviter arcuato, nullo modo angulato. Long. $14\frac{1}{2}$, lat. $8\frac{1}{2}$ m.m.

This is very closely allied to *H. pacificus*, and like it shows a very interesting (but different) series of variations; perhaps it may be connected with *H. pacificus*, when specimens from other localities are examined, but at present it should be treated as distinct: on the thorax there is a development of the black colour on the disc rather than on the anterior margin, and when there is a dark spot on the front margin the discal cloud is largely developed in the transverse direction: on the lateral portions of the elytra the coloration is generally greatly broken up into dots or lines, and the ciliae on the hind margins of the joints of the posterior tarsi are so arranged that their front margin forms a regular curve, while in *H. pacificus* this curve in the middle stretches very much farther in the anterior direction so as even to assume a subangulated form.

A very peculiar and distinct variety is found in the Moluccas, it is small, and the elytra while largely black have the black colour much disintegrated into lines of black dots, and there is a complete absence of the transverse band of yellow colour near the base, and there is little or no tendency to the formation of a transverse band or spots of yellow colour behind the middle, (var. *moluccarum*).

Another peculiar variety occurs in Batchian, it is also small, the elytra are very largely black, and the yellow transverse bands on the wing cases are quite distinct, but are broken up by black dots and interruptions, (var. *batchianensis*).

Australia; Malasia; New Caledonia; (Moreton Bay, Hunters River, Rockhamptou). 1026.

1021. *Hydaticus bihamatus*, Aubé, M.C.—Statura signaturisque variabilis; capite thoraceque rufis, illo vertice et hoc in medio ad basin et ad apicem nigris; elytris nigris, margine externo, linea transversa pone basin, guttula laterali pone medium (versus suturam plus minusve extensa, et plus minusve disintegrata) signaturaque minore subapicali testaceis; subtus piceus, antennis pedibusque

anterioribus rufis ; tarsorum posticorum ciliarum margine anteriore semper valde arcuato, fere angulato. Long. 16, lat. $9\frac{1}{2}$ m.m.

The male has the front tarsi largely developed, both fringing hairs and palettes being large ; the female sometimes has the thorax smooth, and sometimes its lateral portions bear numerous irregular impressions.

The species is a very variable one, and shows numerous local but indefinite variations. The commonest form is one of large size, in which the transverse band near the base of the wing-cases is slender, the lateral mark behind the middle is small and broken up into two or three spots, and the subapical mark is indistinct, all these yellow marks being more or less dotted with black. This form is found with greater or less extension of the yellow marks, in Malacca, the Philippine Islands, Andaman Islands, Celebes, Amboyna and Timor : and is the *Hydaticus pacificus*, Aubé.

The second form is much smaller in size, and has the yellow marks on the wing cases large and definite, the lateral yellow mark beyond the middle takes a great extension towards the suture, so that it forms a once or twice interrupted transverse fascia, the subapical mark is a distinct yellow spot. This form is the *Hydaticus bihamatus* of Aubé, and is peculiar to the Philippine islands, but I have specimens from Malacca which quite connect it with the first form.

The specimens from the Andaman Islands are a peculiar variety of the first form, being rather small, slender and depressed, with unusually slender posterior tarsi, and with a diminished development of the ciliæ on the hind margins of their joints.

Malacca, Andaman Islands, Philippines, Celebes, Amboyna. 1025.

1022. *Hydaticus luzonicus*, Aubé, M.C.—Ovalis, sat convexus, capite thoraceque testaceis, illo vertice signaturaque inter oculos plus minusve discreta, hoc in medio ab apice ad basin nigricantibus ; elytris vix ex parte majore nigris, vitta transversa subbasali margineque laterali lato testaceis, margine hoc nigro-irrorato ; subtus nigro-piceus, pedibus quatuor anterioribus antennisque rufis. Long. $14\frac{1}{2}$, lat. $8\frac{1}{4}$ m.m.

This species is very closely allied to the preceding, but is distinguished by its colour, the wing-cases bearing two longitudinal zones of colour of about equal areas, the inner one black, the outer yellow dotted with black ; the outer yellow zone of colour sends off near the base a transverse line which is continued towards the suture till it nearly reaches the scutellum. The female has some coarse impressions on the lateral part of the thorax.

Philippine Islands ; India. 1024.

1023. *Hydaticus dineutoides*, n. sp.—Latus, subdepressus, niger, supra opacus, glaucus, vix ænescens, clypeo breviter flavo, antennis rufis. Long. 15, lat. $8\frac{1}{4}$ m.m.

This peculiar species has the colour of a *Dineutes* a genus of Gyrinidæ, and resembles a good deal some of the broader of those species in its form, except that it has the thorax shorter. I can find no structural character however to distinguish it from the species of *Hydaticus*, although it has the epipleuræ of the elytra broader.

The only individual I have seen is a female and has no sculpture likely to be peculiar to its sex. The whole of the upper surface is dull and appears without sculpture, it is however very minutely punctured, the three series of punctures on the wing-cases can be seen, the inner however is the only one that is distinct, and the outer can scarcely be detected even with a very careful examination.

Borneo. (Sarawak, found by the Marquis J. Doria in 1865-'66, Genoa Mus.) 1023.

1024. *Hydaticus flavolineatus*, Boh., M.C.—Major, robustus, ovalis, subtus ferrugineus vel piceus, supra capite thoraceque rufo-testaceis, illo vertice longe, hoc in marginibus anterioribus et posterioribus nigris; elytris ex parte majore nigris, sed fascia pone basin transversa testacea, et colore nigro a lineis testaceis in lineas longitudinales nigras divisio, lineis his nigris præsertim versus latera et ad apicem ab irrorationibus compositis. Long, 18, lat. 10 m.m.

The fringing hairs of the front tarsi of the male are moderately long, and the palettes are large those at the base being specially large. The female has a patch of rather fine net-like impressions on each side of the thorax at some distance from the outside.

This species is conspicuous from its large size, and by the large extent of the black colour on the back of the head: this black colour is transversely almost rectilinear in front and shows no trace of including any paler marks.

According to the individuals before me it is a variable species, sometimes being much broader than at others; the specimens from Natal are of rather narrow and elongate form, with the yellow lines of the elytra distinct although irregular; the individuals from Arabia and Lake Nyassa are broader, and the black colour on the elytra has more obliterated the yellow lines on the apical portions of the elytra, and the female has no peculiar sculpture on the thorax. The individual from Portuguese Guinea is on the other hand rather narrower and smaller than the Natal specimens, and the black colour on the wing-cases is rather differently arranged, the yellow lines on the basal portion being more obliterated, while across the middle the dark colour is more deficient, while it is again more predominant before the extremity, so that it has a tendency to be divided into two patches by an interruption behind the middle.

Africa and Arabia. (Natal, Lake Nyassa, Portuguese Guinea; Hedjaz.) 1022.

1025. *Hydaticus decorus*, Klug, M.C.—Ovalis, sat iatus, nitidus, rufo-testaceus, vertice prothorace basi in medio elytrisque nigris, his margine externo anguste, signa-

turisque disjunctis, testaceis; pedibus posterioribus robustis, tarsorum marginibus posterioribus sat longe ciliatis. Long. $14\frac{1}{2}$, lat. $8\frac{3}{4}$ m.m.

This species is very similar to *H. jucundus*, but the yellow marks on the elytra are isolated from one another and less extensive, and the thorax is a little different, it being rather shorter and more curved at the sides near the posterior angles which are more rounded, it is more punctured near the sides and less evenly convex transversely; so that in the form of the thorax the species makes a distinct approach to the peculiar *Prodaticus pictus* (No. 1005). The sexual characters both of the male and female seem to be quite the same as in *H. jucundus*, except that the female has no distinct impressions on the lateral part of the thorax, the surface there being, however, uneven and obscurely corrugated.

Sinai, Egypt, Nubia. 1021.

1026. *Hydaticus jucundus*, Reiche, M.C.—Ovalis, sat latus, nitidus, rufo-testaceus, vertice prothoraceque basi in medio elytrisque nigris, his margine externo signaturisque irregularibus plus minusve transversim dispositis testaceis; pedibus posterioribus robustis, tarsorum marginibus posterioribus sat longe ciliatis. Long. $14\frac{1}{2}$, lat. 9 m.m.

The male front tarsi are highly developed, the fringing hairs being very long, and the palettes large, the basal ones being particularly large; the middle tarsi are somewhat broadly dilated: the female has some coarse irregular impressions on the lateral parts of the thorax; in this sex there are some fine scattered punctures on the wing-cases, which are almost entirely absent in the male. The male has an impression at the apex of the last ventral segment, causing the hind margin to be depressed in the middle and to appear emarginate: the female has a longitudinal impression which reaches just as far as, but does not surpass, the hind margin.

This species seems to be somewhat variable in size and in the yellow marks of the elytra; these marks especially near the sides and extremity are dotted with black.

Abyssinia. 1020.

1027. *Hydaticus dregei*, Aubé, M.C.—Ovalis, parum latus et convexus, lævigatus, nitidissimus, rufo-testaceus, vertice, prothorace basi in medio elytrisque nigris, his signaturis irregularibus margineque externo testaceis; pedibus posterioribus sat gracilibus, tarsorum marginibus posterioribus haud longe ciliatis. Long. $13\frac{1}{2}$, lat. $7\frac{3}{4}$ m.m.

On the front tarsi of the male the fringing hairs are very highly developed and the palettes are of very unequal sizes, the basal ones, especially the posterior one, being of large size; the middle tarsi are only moderately dilated: the female has

some very short impressions on the lateral parts of the thorax. The apex of the last ventral segment is emarginate in the male, while in the female there is a small channel along the middle of the apical portion, terminating in an excessively minute emargination.

The species is remarkable by its highly polished surface, destitute of punctuation except for the serial punctures of the wing-cases; the yellow marks of the wing-cases are much broken up, and very irregular and variable, and when they attain their greatest extent are, especially at the sides and apex, spotted with black.

I have seen very few specimens. Aubé was wrong in stating the front margin of the thorax to be black; and also in describing the thorax of the female to be without impressions. His type from Dejean's collection is before me, and is in fact the only individual of that sex I have seen.

Cape of Good Hope. 1019.

1028. *Dytiscus grammicus*, Germ., *Hydaticus grammicus*, M.C.—Ovalis, parum elongatus, sat latus et convexus, supra conspicue punctulatus, rufo-testaceus, vertice nigro, elytris nigro-irroratis, irrorationibus versus suturam in lineas longitudinales nigras a lineis flavis separatis condensatis. Long. 11, lat. 6½ m.m.

In the male the fringing hairs of the front tarsi are highly developed, and the palettes are rather large, the basal ones being a good deal larger than the rest. The female has the sides of the thorax roughened by short impressions.

This is a species of rather short, broad and rounded form; near the sides of the wing-cases the black colour is formed by nearly isolated dots, having however a more or less distinct linear arrangement, also at the base and apex of the elytra these black dots can be seen, towards the suture however the dots are condensed into dense black lines, separated by more or less distinct yellow lines of variable width. The species is also remarkable by its more than usually distinct punctuation.

Europe and Japan; (Alsatia; Sardinia; Italy; Caucasus, sec. Cat. Munich). 1017.

1029. *Hydaticus dorsiger*, Aubé, M.C.—Robustus, ovalis, sat convexus, subtus ferrugineus, supra testaceus, vertice prothoraceque basi in medio nigris, elytris sat crebre nigro-irroratis, plaga communi suturali, elongata, nigra, antennis pedibusque anterioribus rufis. Long. 13½, lat. 8 m.m.

The front tarsi of the male are large and highly developed, the fringing hairs being elongate, and the palettes large, those at the base indeed are very large; the female has the lateral portion of the thorax covered with deep coarse connected impressions.

This species has the black irrorations on the elytra smaller and less numerous than most of the allied species, and the longitudinal patch of black along the suture is therefore very conspicuous, in front it just reaches the extremity of the scutellum, but disappears some distance before the apex of the wing cases.

There seems to be very little variation.

Madagascar, Arabia. 1016.

1030. *Hydaticus matruelis*, Clk., M.C.—Ovalis, sat elongatus, subtas ferrugineus, supra testaceus, vertice prothoraceque basi in medio nigris, elytris nigro-irroratis, fascia mediali irregulari transversa nigra, ante apicem fascia altera parum distincta, antennis pedibusque anterioribus testaceis. Long. 13, lat. 7 m.m.

On the front tarsus of the male the fringing hairs are highly developed, and the basal palettes are very much larger than the outer ones. The female has on the lateral parts of the thorax some isolated, short coarse impressions.

This species is a good deal like the Australian *H. consanguineus* (No. 1037), but is very much larger; it is a rather elongate and but little convex species, and appears to be somewhat variable in colour; it has sometimes a dark mark on the head between the eyes, which at other times is scarcely to be detected; the medial black fascia on the wing cases is not placed at all behind the middle; the posterior fascia is very indistinct: the thoracic sculpture of the females is also somewhat variable.

Western Africa, (Cape Coast Castle). 1015.

1031. *Hydaticus concolor*, n. sp.—Minor, angustulus, ovalis, nitidus, nigro-piceus, supra niger, capite antierius et in medio verticis rufescente, elytris versus latera pone medium macula rufa, antennis pedibusque anterioribus rufis; pedibus posterioribus gracilibus, tarsorum marginibus postice breviter ciliatis. Long. 9, lat. 4 $\frac{3}{4}$ m.m.

The male has no fringing hairs on the heel of the front tarsus, and the basal palettes are scarcely larger than the others. I have not seen the female.

This peculiar little species is most like the dark form of *H. fabricii* (No. 1035), but is smaller and narrower, it has the upper surface densely and more distinctly punctured than in the allies, and the hind legs are comparatively elongate and slender, with short ciliæ on the hind margins of the posterior tarsi; it has a good deal the appearance of a very minute *Cybister*, but I cannot find any structural characters to distinguish it from the allies near which I have placed it.

Cochin China. 1014.

1032. *Dytiscus leander*, Rossi. *Hydaticus leander*, M.C.—Ovalis, rufo-testaceus, vertice nigro, elytris creberrime nigro-irroratis, irrorationibus versus suturam coalescentibus, pectore, abdomine pedibusque posterioribus ferrugineo-obscuris; tarsis posterioribus robustis, marginibus postice parum longe ciliatis. Long. 11. lat. 6 m.m.

In the male of this species there are no fringing hairs round the heel of the front tarsus, and the basal palettes are hardly any larger than the others: the female has no peculiar sexual sculpture.

This species is often placed in collections among the species of *Rhantus*; although it bears a great resemblance to those insects in colour, size, and form, it may be readily distinguished by the ciliation of the posterior margins of the hind tarsi. It varies somewhat in size and colour; in the eastern part of its area, the thorax seems usually to be entirely red, and only a small part of the sutural area of the wing cases is rendered quite black by the coalescence of the dark irrorations; in the south of Spain the individuals are of smaller size, and the thorax is black at the base in the middle, and the predominance of the black colour over the red on the wing cases is greater; the differences are not important and individuals from Corsica are generally intermediate. *H. fusciventris*, Reiche, (Ann. Fr. 1855, p. 639) from Palestine, is I believe also a variety of *D. leander*.

Southern Europe, and Northern and Western Africa; and Madagascar. (Nice, Corsica, Italy, Egypt, Nubia, Abyssinia, Algeria, Senegal, Portuguese Guinea, Gaboon). 1013.

1033. *Hydaticus ponticus*, n. sp.—Ovalis, brevisculus, rufo-testaceus, vertice breviter nigro, elytris creberrime nigro-irroratis vel vermiculatis; tarsis posterioribus robustis, articulorum ciliis vix longis. Long. 9. lat. 5 m.m.

The male has the fringing hairs round the heel of the front tarsus rather well developed, the basal palettes though not large, are distinctly larger than the others: the female has short obsolete impressions on the lateral parts of the thorax.

The species differs from *Dytiscus leander* by its smaller size and shorter form, and by the developed fringing hairs of the male tarsi; it is also closely allied to *H. rhantoides* (No. 1036), but is considerably shorter in form, and the black irrorations on the elytra are denser and more confluent, and the ciliæ of the hind margins of the posterior tarsi, cover a very much smaller part of their area. It is still more closely allied to the variety found in India and Ceylon of *H. fabricii* (No. 1035) but it is considerably smaller, shorter in form, the surface is less shining, and the wing cases appear of a much blacker colour, owing to the greater confluence or condensation of the black irrorations.

Mesopotamia. 1012.

1034. *Hydaticus agaboides*, n. sp.—Ovalis, posterius subrotundatus, nigro-piceus, capite prothoracisque lateribus testaceis, illo vertice plagaque inter oculos nigris, elytris fere omnino nigris, versus latera testaceis ibidemque nigro-irroratis, vel lineatis; antennis pedibusque anterioribus testaceis, pedibus posterioribus piceis; coxis posterioribus abdomineque rugulosis; tarsorum posticorum marginibus posterioribus breviter ciliatis. Long. $8\frac{1}{2}$, lat. 5 m.m.

This species seems closely allied to the darker form of *H. fabricii*, it is however rather broader than it, and more rounded behind, the under surface, instead of being smooth, is corrugated in a peculiar manner, especially on the coxæ and the basal ventral segments, there is a dark mark between the eyes, and the ciliæ on the hind margins of the joints of the posterior tarsi are quite short. I have seen only one individual, which is a female, and has a few short rugose impressions near the sides of the thorax. This individual is much suffused with dark colour, and it is probable that in other individuals, the testaceous colour may be less concealed than in it.

Cochin China. 1011.

1035. *Hydaticus fabricii*, Macleay, Ann. Jav. p. 134.—Species variabilis; minor, ovalis, parum convexus, subtus rufescens, plus minusve nigricans, supra rufo-testaceus, vertice nigro, elytris creberrime nigro-irroratis, irrorationibus versus suturam plus minusve coalescentibus; tarsorum posticorum marginibus posterioribus sat longe ciliatis. Long. 10, lat. $5\frac{1}{2}$ m.m.

In the male the fringing hairs round the heel of the front tarsus are short, and the basal palettes are only a little larger than the others; the female has generally a few short impressions on each side of the thorax.

This species is very common in collections, and is widely distributed in the Indo-Malay region, and is very variable, the variations being to a large extent determined by the geographical habitat. The most distinct form occurs in the Malay peninsula; in it the outline is rather narrow and parallel, the colour very dark, owing to the predominance of the black spots causing the sutural region of the wing-cases to be largely quite black, the thorax is generally a little blackened at the base in the middle; the fringing hairs of the male front tarsi are quite short, the posterior tarsi are rather slender, and the ciliæ of the hind margins of the joints occupy a comparatively small portion of the surface.

In the continent of India and Ceylon a form differing much from the above is found, it is rather larger and broader, the black dots of the elytra are evenly distributed and not confluent, the hind tarsi are shorter and stouter and the ciliæ of their hind margins are longer and occupy a larger portion of their surface; the extreme individuals of this form are very similar to *H. rhantoides*, and are scarcely to be

considered distinct from it but their hind tarsi are not quite so stout, and have not the ciliæ so largely developed.

Besides these two extreme forms, a number of other less definite ones may be distinguished, the above mentioned characters varying in degree of development and the manner in which they are combined; the specimens from the Philippine Islands, Celebes, and the Andaman Islands, approach more or less closely to the Australian *H. consanguineus*.

India, (Deccan); Ceylon, China, Penang, Malacca, Bangkok, Borneo, Sumatra, Andaman Islands, Java, Celebes, Philippine Islands. 1010.

1036. *Hydaticus rhantoides*, n. sp.—Ovalis, subtus rufescens, supra testaceus, vertice nigro, elytris æqualiter nigro-irroratis; tarsorum posteriorum marginibus posterioribus longissime ciliatis. Long. $10\frac{1}{4}$, lat. $5\frac{3}{4}$ m.m.

In the male the fringing hairs of the front tarsi are rather well developed, and the basal palettes are distinctly larger than the others; the female is almost entirely destitute of any sexual sculpture.

This species is remarkably similar in size, form and colour to *Dytiscus exoletus* (*Rhantus*, No. 951), from which however a glance at the ciliæ on the hind margins of the joints of the posterior tarsi will distinguish it. It is very closely allied to *H. consanguineus*, but it is usually rather smaller, of rather more rounded form, the black dots on the elytra are evenly distributed and not all confluent, and the fringing hairs of the male front tarsi are not quite so highly developed.

Japan, Formosa, Mantchuria, China.

1037. *Hydaticus consanguineus*, Aubé, M.C.—Ovalis, subtus rufescens, supra testaceus, vertice nigro, elytris erebre nigro-irroratis, irrorationibus in maculam vel fasciam discoidalem plus minusve discrete coalescentibus; tarsorum posteriorum marginibus posterioribus longissime ciliatis. Long. 11, lat. 6 m.m.

In the male the fringing hairs of the front tarsi are highly developed and conspicuous, and the two basal palettes are quite distinctly larger than any of the others; the female is almost entirely destitute of any sexual sculpture.

This species is slightly different in form from the allies, its greatest width being distinctly behind the middle of the wing cases. The tendency for the black dots of the wing cases to coalesce into a discoidal black mark may always be perceived, though in some cases it is very much more evident than in others. The ciliation of the posterior borders of the joints of the hind tarsi attains a great development, and the anterior limit of the ciliate portion of each joint is extremely arched.

Australia and New Caledonia: apparently abundant. 1008.

1038. *Colymbetes pulcher*, Clk., M.C.—Ovalis, fere angustus, subtus rufo-obscurus, supra rufo-testaceus, capite vertice plagaque transversa inter oculos, prothorace basi margineque anteriore in medio plus minusve nigricantibus, elytris creberrime nigro-irroratis, irrorationibus versus suturam coalescentibus; tarsorum posteriorum marginibus posterioribus parum longe ciliatis. Long. 11, lat. 6 m.m.

In the male the fringing hairs round the heel of the front tarsus are moderately well developed, and the basal palettes are distinctly a little larger than the others.

This species is of rather more parallel and narrower form than most of its allies, and may be distinguished by the peculiarity that not only is the vertex black, but there is also a patch of dark colour between the eyes. The ciliation of the hind tarsi does not differ much from that of *Hydaticus servillianus*. I have seen but few specimens, and they vary somewhat in size, and in the extent of the black colour on the anterior margin of the thorax; this is never very conspicuous, and seems to be less so in the male than in the female. In some individuals of this latter sex, some obsolete rugæ or impressions may be observed on the lateral parts of the thorax, but in others they are quite absent.

Australia, (Brisbane; Clarence River; South Australia). 1007.

1039. *Hydaticus servillianus*, Aubé, M.C.—Ovalis, elongatus, rufo-testaceus, vertice nigro, elytris creberrime nigro-irroratis, irrorationibus versus suturam coalescentibus, pectore abdomineque piecescentibus; tarsorum posteriorum marginibus posterioribus haud longe ciliatis. Long. 12, lat. 6½ m.m.

In the male the fringing hairs round the heel of the front tarsus are largely developed and conspicuous, and there is a good deal of variety in the size of the palettes of the undersurface, one of the two at the base being conspicuously large; the female has some irregular very short impressions scattered on the lateral parts of the thorax.

The species much resembles some of the varieties of *Dytiscus leander* (No. 1032), but is larger in size and more elongate in form; the male can be readily distinguished from *D. leander* by the fringing hairs of the front feet, and the female by the presence of thoracic impressions; the ciliation of the hind margins of the posterior tarsi is the same as in *D. leander*.

I have seen but few specimens of this species, it seems to be rather variable in size, and in the amount of condensation of the black irrorations on the wing-cases, and sometimes the thorax appears black at the base in the middle. The thoracic sculpture of the females seems also to be somewhat variable.

South Africa, (Caffraria, Cape of Good Hope). 1006.

1040. *Hydaticus palliatus*, Aubé, M.C.—Oblongo-ovalis, robustus, sat convexus, subtus piceus, prosterno rufo, supra capite thoraceque rufo-testaceis, illo vertice

signaturisque frontalibus. hoc plaga parva basali, nigris; elytris ex parte majore nigris, lineis tribus testaceis ad basin plus minusve distinctis, margine late irregulariter testaceo, nigro-irrorato; antennis pedibusque anterioribus rufis, pedibus posterioribus piceis. Long. $14\frac{1}{2}$. lat. 8 m.m.

The male tarsi seem scarcely to differ from those of *Hydaticus capicola* (No. 1043), the female seems at first to possess no peculiar sculpture, but there exists on each side of the thorax an indistinct patch of very fine and dense sculpture.

The species seems to be a very variable one in size and colour, indeed in this latter respect it is not easy to find two individuals quite similar; sometimes the black marks on the middle of the head are well developed, at other times nearly entirely absent; there is always a blackening of the base of the thorax in front of the scutellum, sometimes there is a more or less distinct, small dark mark on the middle of the thorax, and sometimes even the front margin is a little blackened. The amount of black on the elytra varies greatly; generally the sutural portion is entirely black except at the apex, the outer margin and apex are always yellow, dotted with black, the boundary between the black sutural part and the pale outer part is generally very irregular and indefinite; the black sutural part evidently arises from coalescence of the black dots, and in some cases it is absent, the elytra being dotted more or less regularly with black; in this case the yellow longitudinal lines are distinct, but where the black colour is very largely developed these lines can only be distinguished at the extreme base. *H. incaustus* and *H. isabelli*, Aubé, are both varieties of this species.

South America; (Brazil, Columbia).

1044. *Hydaticus sobrinus*. Aubé, M.C.—Ovalis, sat latus et convexus, subtus piceus, prosterno testaceo, supra rufo-testaceus, capite, vertice signaturaque frontali et prothorace macula discoidali nigris, elytris creberrime nigro-irroratis, irrorationibus plus minusve condensatis, sæpius fascia transversa post medium sat distincta, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis. Long. $11\frac{3}{4}$, lat. $6\frac{1}{2}$ m.m.

This species is very closely allied to *Hydaticus capicola* (No. 1043), but is shorter in form, and has the legs shorter and stouter, the black mark on the thorax is usually less extended in the transverse direction, and the black dots of the elytra are confluent in a more or less irregular manner. The male characters are the same as in the two preceding species, and the female has deep rugæ on the sides of the thorax as is the case in *Hydaticus capicola*.

The amount of confluence of the black spots is variable; nearly always an irregular black fascia behind the middle can be traced, but when the surface becomes very much blackened by extensive condensation, this fascia is, of course, less distinct; the same remark applies to three yellow lines, or veins, on the

elytra ; these can sometimes be seen, as is the case in *Hydaticus capicola*, but when the surface is very black can scarcely be traced. The serial punctures of the elytra are usually less distinct than in *H. capicola*, but in one individual from Madagascar they are as conspicuous as in the South African species : one female individual from Dejean's collection has the thoracic rugæ much obliterated.

From South America I have seen only females, but cannot observe any good character to distinguish them from the Madagascar and Mauritian individuals.

Madagascar ; Mauritius ; South America. 1004.

1042. *Hydaticus galla*, Guer., M.C.—Ovalis, sat latus et convexus, subtus piceus, prosterno anterieus testaceo, supra rufo-testaceus, capite posterius nigro-signato, prothorace disco signaturis parvulis subconjunctis fuscis, elytris crebre nigro-irroratis, inter irrorationes lineis tribus vel quatuor vix conspicuis testaceis, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis ; elytrorum punctis seriatis parum conspicuis. Long. $12\frac{1}{2}$, lat. 7 m.m.

This species appears very closely allied to *Hydaticus capicola*, but is of less elongate form, the black irrorations on the elytra are less dense, the mark on the middle of the thorax is not a transverse line, but consists of some small closely placed marks, somewhat of a hieroglyphic appearance, the middle and hinder legs are shorter and stouter, and the female has no impressed rugæ on the thorax.

I have seen only four individuals of the species ; one of them (in the collection of the Genoa Museum) is a curious variety in which the black dots of the elytra behind the middle are condensed to form an irregular indistinct black fascia, behind which the black dots are more scanty so as to leave a pale fascia, behind that the dots are again condensed, and are again more scanty at the apex.

Abyssinia, (found by Raffray). 1003.

1043. *Hydaticus capicola*, Aubé, M.C.—Elongato-ovalis, sat convexus, subtus piceus, prosterno anterieus testaceo, supra rufo-testaceus, capite posterius nigro-signato, prothorace in medio plaga transversa nigra, elytris crebrius nigro-irroratis, inter irrorationes lineis tribus vel quatuor vix conspicuis testaceis, antennis pedibusque anterioribus rufis, pedibus posterioribus piceis ; elytrorum punctis seriatis conspicuis. Long. $13\frac{1}{2}$, lat. $7\frac{1}{4}$ m.m.

This insect has a great resemblance to the species of *Rhantus* (such as *Colymbetes pulverosus*, No. 924). The male has about twenty-two palettes on the undersurface of the front tarsi, and about sixteen on the middle feet. The female has some moderately coarse, short rugæ or impressions, about the sides of the thorax.

The species varies somewhat in size, and in the denseness of the black irrorations on the wing-cases, these, however, show very little tendency to the formation

of black bands, they are conspicuously less numerous just at the apices ; of the three yellow lines or veins, the one running along the suture is the most conspicuous, the other two are sometimes only to be seen at the base, where the three are always united by a transverse prolongation.

In two very small individuals (one from Cape Town the other from Natal) the thoracic dark mark is much reduced in size.

South East Africa, from Cape Town to Abyssinia. 1002.

GROUP 3.

1044. *Hydaticus daemeli*, (Wehncke), n. sp.—Ovalis, sat latus, parum convexus, nitidus, niger, capite antierius testaceo, et in vertice testaceo-bimaculato ; prothorace elytrisqne ad latera testaceo-marginatis ; antennis pedibusqne anterioribus rufis, tibiis intermediis piceis, pedibus posterioribus nigro-piceis ; elytris punctis seriatis conspicuis. Long. 14, lat. 8 m.m.

This species appears to be a very distinct one ; the yellow band along the side of the elytra is somewhat irregular in its posterior half, being dotted with black and with its inner edge irregular ; at the apex however it quite reaches the suture. The species resembles somewhat the larger and flatter varieties of *Dytiscus vittatus* (No. 1049), but can easily be distinguished by the yellow band at the extremity attaining the suture. The posterior legs are short and thick, and the ciliæ of the hind margins of the joints of the posterior tarsi elongate. I do not know the male ; the female has a very few coarse rugæ on the thorax near the sides.

Australia, (Cape York). 1039.

1045. *Hydaticus bivittatus*, Lap., M.C.—Ovalis, parum latus, nitidus, capite antierius testaceo, posterius nigro, thorace testaceo, basi in medio nigro, elytris nigris, margine laterali vittaque recta, integra, ad suturam sat approximata testaceis ; corpore subtus piceo, antennis pedibusqne quatuor anterioribus rufis ; elytris punctis seriatis minutis, numerosis. Long. 14, lat. 7½ m.m.

In the male of this species the fringing hairs on the front tarsi are moderately well developed. The female sometimes has a few deep irregular impressions towards the sides of the thorax, but sometimes is without any peculiar sculpture.

The position of the internal longitudinal band which is parallel with the suture and nearer to it than to the outer margin readily distinguishes this species from all varieties of *Dytiscus vittatus* (No. 1049) ; besides this the thorax is in greater part yellow, the ciliæ on the hind margins of the posterior tarsi are much shorter, and the fringing hairs on the male front tarsi are longer than in *D. vittatus*.

A variety occurs in which the yellow vitta is indicated only in its basal and apical portions.

Madagascar, Mauritius, Senegal, Caffraria. 1040.

1046. *Hydaticus rectangulus*, n. sp.—Ovalis, sat latus, nitidus, capite anterieus testaceo, posterius nigro, thorace in medio nigro, ad latera late testaceo, elytris nigris, vittis duabus latis integris, interiore a sutura parum distante, testaceis; corpore subtus piceo, antennis pedibusque anterioribus testaceis, tibiis intermediis pedibusque posterioribus piceis; elytris punctis seriatis minutis. Long. $12\frac{1}{2}$, lat. $7\frac{1}{2}$ m.m.

This species is of the form of *Dytiscus vittatus* (No. 1049), but is readily distinguished from it by possessing two broad longitudinal bands on the wing-cases; the inner of the two is separated from the suture only by one-fourth, or less, of the breadth of the wing-cases; moreover, at the base this yellow vitta has a small internal prolongation so that it nearly touches the scutellum. From *Hydaticus bivittatus*, the species is distinguished by its broader form, by the broader yellow stripes of the elytra, and by the shorter and thicker swimming legs, the hind margins of the tarsal joints of which are moreover furnished with elongate ciliæ: also the external yellow band of the elytra, instead of continuing along the outer margin from the base to the apex, diverges from the outer margin a short distance behind the shoulder. A variety occurs in which the yellow bands are so broad as almost to be united into one large patch, the black vitta separating them being correspondingly diminished in size. Of the male I have seen only a single badly preserved individual, it appears not to differ in its tarsi from *Dytiscus vittatus*; the female has no sexual sculpture.

Persia, (Dr. Millingen); Northern India, (C. Boyd); (Kulu Kangra, Punjab). 1041.

1047. *Hydaticus duplex*, n. sp.—Oblongo-ovalis, sat latus, capite anterieus testaceo, posterius nigro, thorace nigro, ad latera testaceo, elytris nigris, vittis duabus integris testaceis, vitta interna, a sutura sat distante, pone basin cum fascia transversa flava fere ad scutellum extensa, conjuncta; corpore subtus nigro-piceo, antennis pedibusque anterioribus testaceis, tibiis intermediis piceis, pedibus posterioribus fere nigris, elytris punctis seriatis sat conspicuis. Long. $14\frac{1}{2}$, lat. 8 m.m.

This species seems very closely allied to *D. vittatus*, but is rather larger than the longest individual of that species and is more oblong in form: the external yellow vitta of the elytra is continued to the extremity of the wing-case, while the internal one is towards the apex approximated a little nearer to the suture than it is in *D. vittatus*, and moreover sends off near its commencement an internal prolongation

which nearly reaches the scutellum. In other respects the species agrees closely with *D. vittatus*.

I have seen only a single male.

Borneo. 1042.

1048. *Hydaticus bowringi*, Clk., M.C.—Ovalis, latus, convexus, capite anteriorius testaceo, posteriorius nigro, prothorace testaceo basi transversim in medio, margineque anteriore in medio, nigris, elytris perspicue punctulatis, nigris, vittis duabus elongatis punctoque rotundato prope scutellum testaceis; corpore subtus ferrugineo, antennis pedibusque anterioribus testaceis, tibiis intermediis piceis, tibiis tarsisque posterioribus nigris. Long. 14, lat. 9 m.m.

This species seems closely allied to *Dytiscus vittatus*, but is rather larger and broader, it is paler beneath, and has the punctuation of the elytra coarser, the thorax is in greater part yellow, the external yellow stripe on the elytra is more elongate and the inner one is nearer to the suture, and there is always a conspicuous yellow spot near the scutellum. In most other respects it resembles the well known *D. vittatus*. The male tarsi are much the same in the two species, except that in *H. bowringi* the fringing hairs on the anterior feet are rather better developed: the female has an indefinite patch of dense fine sculpture on each side of the thorax.

Sometimes the external yellow stripe of the elytra is a little abbreviated and then does not connect with the inner stripe, it always however extends much beyond the middle.

Japan, China, (Che-fou), (Australia? teste Clark). 1043.

1049. *Dytiscus vittatus*, Fab., *Hydaticus vittatus* M.C.—Ovalis, sat latus et convexus, niger, capite anteriorius prothoraceque ad latera testaceis, elytris vitta elongata cum margine externo parallela testacea, aliaque humerali abbreviata sæpius cum vitta elongata ad dimidiam partem longitudinis conjuncta; antennis pedibusque anterioribus testaceis, tibiis intermediis piceis, femoribus fusco-testaceis. Long. 12, lat. 7 m.m.

In the male of this species there are about twenty-two palettes on the underside of the not very large front tarsi, and the fringing hairs round the base are short: the intermediate tarsi have the three basal joints moderately incrassate and bearing beneath two series of small palettes, these series are separated by a distinct glabrous space or line, and the inner of the two series is rendered irregular by the addition of a supernumerary palette near the base; these palettes are about fifteen in number altogether.

The females have generally a patch of sexual sculpture on each side of the thorax, this however is very variable in its character and is sometimes entirely wanting: in

certain individuals there are quite distinct short irregular impressions, while in other cases there is in the same situation only a more dense and, perhaps, rather coarser punctuation, while often there seems to be no departure from such punctuation as exists in the male.

The species is easily recognised by the yellow vitta running parallel with the outer margin of the wing case, and extending from the base to near the apex, but not there attaining the suture; and by the short additional humeral vitta: both these stripes are subject to some variations, the elongate one is sometimes interrupted, or broken up, and, very rarely, nearly entirely absent; the outer yellow stripe also varies somewhat; it is often so confluent with the more elongate stripe that the two have the appearance of one stripe enclosing a small humeral black mark: this black mark may become more elongate so that the junction of the two yellow stripes occurs only just behind the middle; in other cases the short humeral stripe does not join the inner stripe at all, but is terminated just before the middle.

The species also varies somewhat in size and form: it has always the ciliae of the hind margins of the joints of the posterior tarsi very largely developed, but even this is subject to a little variation. The variations are to some extent, but only slightly, dependent on geographical distribution; the most marked instance of which is that the specimens in which the short humeral yellow stripes on the wing-cases remains quite ununited with the longer stripe, occurs chiefly in Australia: similar individuals occur, however, in Siam and the Malay peninsula, and every grade of intermediate character may be found. A variety from the Philippine Islands has the inner yellow stripe represented only by a spot of that colour near the apex of the wing-cases, the humeral stripe being on the other hand a little longer than usual, this has been recently described as a distinct species (*H. bipunctatus*, Wehncke).

This species is very widely distributed in the South Eastern parts of the Old World. Japan, Manchuria, Formosa, China, East India, Ceylon, Malacca, Siam, Java, Borneo, Sumatra, Celebes, Philippine Islands, Labuan, Batchian, Menado, and Australia (North, South, and West). 1044.

1050. *Hydaticus exclamationis*, Aubé, M.C.—Ovalis, sat latus et convexus niger, capite antierius prothoraceque ad latera testaceis, elytris vitta elongata laterali testacea; antennis pedibusque anterioribus testaceis, pedibus posterioribus picceis. Long. 13½, lat. 8 m.m.

This species differs from *Dytiscus vittatus*, inasmuch as the short humeral stripe of the elytra of that species is in the present one extended to the extremity of the wing-cases, while the inner stripe is entirely wanting; besides this the ciliae on the hind margins of the joints of the posterior tarsi are much shorter, and the fringing hairs at the base of the anterior tarsi of the male are considerably longer than in

Dytiscus vittatus. I have seen but few specimens, and it is quite possible that ultimately the two supposed species may prove not to be distinct.

Madagascar, and Portuguese Guinea. 1045.

1051. *Hydaticus petiti*, Aubé, M.C.—Oblongo-ovalis, sat latus, niger, capite anterieus prothoraceque ad latera testaceis, elytris vitta elongata laterali testacea; antennis pedibusque anterioribus testaceis, tibiis intermediis piceis, pedibus posterioribus piceo-nigris. Long. 16, lat. 9 m.m.

I see nothing to distinguish this species from *H. exclamationis* except the larger size, and more oblong form. It appears, moreover, to be variable, the yellow band of the elytra being sometimes very broad and conspicuous, and in other cases much reduced; the colour of the undersurface and the legs also varies in depth. The largest individual I have seen is from Madagascar, while the smallest—the one in which at the same time the yellow band is most reduced—is from South Africa.

Madagascar, Abyssinia, South Africa. 1046.

II. 14.—Group THERMONECTINI.

Episternal suture distinctly curvilinear; spurs of hind tibiæ minutely emarginate at the apex.

The six genera constituting this group may be readily identified by the following abbreviated characters:—

Elytra closely punctate (in the other members of this group the elytra are im- punctate, except occasionally there is a sexual sculpture in the female. }	<i>ACILIUS</i> . (<i>Vide</i> below.)
Coxal lines distinct; supra-articular border broad; middle femora with elongate setæ. }	<i>THERMONECTES</i> . (<i>Vide</i> p. 677.)
Coxal lines distinct; supra-articular border broad; middle femora with short setæ; prosternum strongly elevate-compressed along the middle. }	<i>ÆTHIONECTES</i> . (<i>Vide</i> p. 684.)
Coxal lines obliterated so that no supra-articular border is present; middle femora with moderately long setæ. }	<i>SALYDRACOTTUS</i> . (<i>Vide</i> p. 685.)
Coxal lines obliterated so that no supra-articular border is present; middle femora with quite short spines. }	<i>RIANTATICUS</i> . (<i>Vide</i> p. 691.)
Coxal lines fine but yet distinct; supra-articular border moderately broad; middle femora with rather short stout setæ. }	<i>GRAPHODERES</i> . (<i>Vide</i> p. 692.)

I. 69.—Genus *ACILIUS*.

Elytra punctate; coxal border distinct, but not very broad.

The six species of this genus are peculiar to Europe and North America.

1052. *Dytiscus sulcatus*, Lin., *Acilius sulcatus*, *M.C.*—Latus, supra parum convexus, capite prothoraceque testaceis, signaturis transversis nigris, elytris fusco-testaceis, nigro-irroratis, subtus prosterne testaceo, pectore abdomineque nigris, hoc lateribus marginibusque flavo-signatis, pedibus anterioribus testaceis, posterioribus basi, tibiis tarsisque nigricantibus; corpore creberrime punctato: antennis elongatis tenuissimis. Long. 16, lat. 10 m.m.

Mas, parum nitidus, corpore superne creberrime punctato.

Fem., prothorace medio utrinque versus latera subimpresso ibidemque villosa, elytris sulcis latis villosis integris.

In the male the three basal joints of the front tarsi are greatly dilated, the basal joint is large, and bears beneath a single very large cupule, the other two joints are very short; the undersurface of the tarsus bears besides the large cupule two much smaller cupules, and externally two patches of dense hairs bearing very minute palettes; the fringing hairs are elongate and beautifully developed. The middle tarsi are not incrassate, but still are a little thicker and have the two apical joints more elongate than in the female; the three basal joints have their inner and lower edge armed with a tuft of long hairs, of which the basal one is most highly developed; their undersurface has close to the marginal setæ a few hairs bearing minute palettes. In the female the grooves on the elytra are elongate and very broad, they commence very near indeed to the base, and are continued nearly to the apex, the inner one is, however, shorter than the one next it, the termination of this furrow also is more gradual than that of the others, so that its length at the apex is slightly variable.

The black marks on the head of this species may be said to be three in number, one in front of the other—viz., the vertex is black, and there is an angular black mark in front of it, and at the sides connected with it, while the third and most anterior mark is a triangular black patch, whose outer and front angles reach the clypeal suture. The thoracic black mark consists of two lines across the middle, more or less connected at their extremities.

The species varies in the extent to which the black colour of the upper surface is developed, and in Scotland a variety is found in which the upper surface is nearly entirely black.

Europe; from Sweden and Finland to Spain, Russia. 956.

1053. *Dytiscus fasciatus*, de Geer, *Acilius fasciatus*, *M.C.*—Sat latus, supra parum convexus, testaceus, capite prothoraceque signaturis transversis nigris, elytris fusco-testaceis, nigro-irroratis, subtus pectore nigricante, abdomine plus minusve nigro-fasciato; pedibus posterioribus rufescentibus; corpore creberrime punctato; antennis elongatis tenuissimis. Long. 15½, lat. 9¼ m.m.

Mas, parum nitidus, corpore superne creberrime punctato.

Fem., elytris sulcis latis, villosis, integris.

The male characters in this species are the same as in *Dysticus sulcatus*.

The species indeed is very closely allied to the *D. sulcatus*, but remains always perfectly distinct; it is smaller, and appears narrower, the anterior of the three black marks on the head is wanting, the black colour is less developed on the ventral segments, and the hind legs have the femora entirely yellow, and the tibiæ and tarsi more or less rufescent, never black. In the female there is very slight development of the pubescence on the thorax, and the third furrow is narrower, owing to the elevation which limits it externally being more deflected from a straight course than it is in *D. sulcatus*; and the furrows, especially the inner one, are continued a little nearer to the apex. The species varies in the colour of the lower surface, which is sometimes entirely yellow.

Europe and Siberia; from Sweden and Finland, 68° 30' (Sahlberg), to Spain.

1054. *Aeilus semisulcatus*, Aubé, Spec. p. 132.—Vix latus; supra parum convexus, testaceus, capite prothoraceque signaturis transversis nigris, elytris creberrime nigro-irroratis pone medium fascia pallida plus minusve distincta; subtus pectore nigro, abdomine nigricante, maculis lateralibus fascisque transversis testaceis, pedibus testaceis, femoribus posterioribus basi plaga nigricante; corpore creberrime punctato; antennis elongatis, tenuissimis. Long. 13, lat. 7¼ m.m.

Mas, parum nitidus, elytris creberrime punctatis.

Fem., elytris sulcis latis setulosis, ad basin plus minusve abbreviatis, suturali semper brevior.

The male has the front tarsi much as in the preceding species; on the middle tarsi the tufts of hairs at the inner edge of the three basal joints are elongate and distinct, but there is never any development of small palettes on the lower surface.

The larger specimens of this species present a great resemblance to the smaller ones of *D. canaliculatus*. *A. semisulcatus* is, however, narrower, and has the epipleuræ considerably less developed, and the ciliæ at the posterior margins of the joints of the hind tarsi more elongate.

The species shows a great deal of variation. The form ordinarily found in the Eastern United States may be considered as the typical one; the specimens from these parts differ only moderately in size, colour, and sculpture, except that a variety occurs in which the whole of the lower surface is clear yellow. In North-west America there is found a form appearing at first very distinct, and making the greatest approximation to the European *D. canaliculatus*. These specimens are larger, more particularly the females, and the individuals of this latter sex have the three outer grooves continued almost to the very base of the elytra, while the costæ between the grooves are narrower and more abruptly defined, particularly in front, and the punctuation near the sides of the thorax is rougher; in the males

the punctuation of the wing-cases is not so dense as in the typical individuals. These characters become more or less modified in Californian specimens, and in the broader and shorter individuals from this part of the Pacific district the resemblance in form to *Dytiscus fraternus* is very great, and is accompanied by a great extension of the black mark of the hind femora. A variety of this Californian race has, however, the undersurface and hind femora entirely yellow.

Crotch states that a form of the female without grooved elytra occurs, but I have not seen such, the variation tending, when departure from the type is made, in the direction of greater extension of the grooves, and I suspect that the individuals alluded to by Crotch should have been rather referred to *Dytiscus fraternus*.

The variations of the species, as given by Crotch, are:—

Var. simplex, Lec. Posterior femora piceous, knees yellow; female with the elytra smooth. San Diego.

Var. oregonensis. Elytra paler, more thinly irrorated with black, fascia paler and more distinct, posterior femora pale. Oregon.

Var. latiusculus, Lec. Testaceous beneath, sulci of ♀ as in type.

Var. abbreviatus, Man., Aubé. Larger, femora testaceous, sulci in the female almost reaching the base.

North America. Very widely distributed from Sitka to Haiti. 958.

1055. *Dytiscus fraternus*, Harr., *Acilius fraternus*, M.C.—Supra parum convexus, testaceus, vertice prothoraceque signaturis transversis nigris, elytris creberrime nigro-irroratis fascia transversa pallida parum distincta, subtus pectore abdomineque nigris, hoc minus testaceo-variegato; femoribus posterioribus nigricantibus: corpore creberrime punctato; antennis elongatis, tenuissimis. Long. 14, lat. 8 m.m.

Mas, subopacus, elytris creberrime punctatis.

Fem., elytris sulcis latis, setulosis, ad basin valde abbreviatis, suturali paulo brevior.

This species has the male characters the same as in *Acilius semisulcatus*, except that the three tufts of hairs on the intermediate tarsi are much less developed, and appear indeed on a hasty inspection to be entirely wanting.

The species is very closely allied to *A. semisulcatus*, but the anterior border of the hind coxa is always separated by a longer space from the middle coxal cavity. Besides this the species is usually rather broader, darker in colour, and more densely punctured, and the furrows on the elytra of the female are more abbreviated in front. A variety of this latter sex occurs in which the elytra are, like those of the male, without grooves.

The species varies somewhat in the colour of the upper surface, especially in the

greater or less distinctness of the pale band of the elytra: underneath the amount of the yellow colour on the ventral segments shows a good deal of variation.

North America, (Massachusetts, New York, Pennsylvania, Illinois). 959.

1056. *Acilius duvergeri*, Gobert, Ann. Soc. Ent. Fr. (5) IV, p. 441.—Haud latus, subdepressus, testaceus, capite thoraceque signaturis transversis nigris, elytris creberrime nigro-irroratis, pectore nigro; thorace impunctato, parum nitido, elytris subrugoso-punctatis, ad suturam versus basin fere lævigatis; corpore subtus minus punctato, parum nitido. Long. 13, lat. $7\frac{1}{4}$ m.m.

The male has on the undersurface of the very broad front feet three large palettes differing little from one another in size, and outwardly a patch both in front and behind of minute palettes borne on hairs, the fringing hairs are highly developed; on the middle feet the tarsi are not dilated, but the basal joint bears beneath several small palettes; of the two females before me one has the sculpture of the elytra the same as in the male, while in the other it is a good deal denser and more rugose.

Europe. This species has only been found yet at Dax in the south-west of France. This excessively limited distribution of a species is very remarkable. 960.

1057. *Dytiscus mediatas*, Say, *Acilius mediatas*, M.C.—Haud latus, parum convexus, nitidus, subtus niger, prosterno in medio testaceo, supra testaceus, capite thoraceque nigro-signatis, elytris creberrime nigro-irroratis, fascia pone medium maculisque apicalibus sat distinctis pallidis, pedibus anterioribus testaceis, posterioribus nigris; elytris crebre, versus basin parce subtiliter punctatis, punctisque seriatis sat distinctis; coxis posterioribus parce, distincte punctatis. Long. $11\frac{3}{4}$, lat. $6\frac{1}{2}$ m.m.

The male has the front tarsi smaller than in *Acilius semisulcatus*; beneath with three palettes of moderate size and not differing much from one another, and outwardly with two patches of palette-bearing hairs, the fringing hairs but little developed; the intermediate tarsi are quite simple, without any peculiar clothing.

I have seen very few specimens of this interesting species. According to the individuals before me, there is probably a slight difference in the sculpture of the thorax in the two sexes: in the male on this part there are very few punctures, and they are so small as easily to escape attention, in the females they become a little more distinct at some distance from each side.

North America (Nebraska, Pennsylvania, Georgia, sec. Crotch). 961.

I. 70.—Genus *THERMONECTES*.

Coxal lines distinct in their hinder portion ; supra-articular border broad ; elytra not punctate (except for a sexual sculpture in certain females). Middle femora with elongate setæ.

The species* may be arranged in three artificial groups :

1. Elytra (at any rate on the basal portion) yellow with numerous black specks, after the manner of *Rhantus*. Nos. 1058 to 1064.
2. Elytra black, with definite yellow markings forming conspicuous spots or fasciæ, but no minute speckles. Nos. 1065 to 1070.
3. Elytra black, with irregular marginal yellow marks which are of a longitudinal character and more or less divided by black lines and specks. No. 1071.

 GROUP 1.

1058. *Acilius nigrofasciatus*, Aubé, M.C.—*Robustus*, *nitidus*, *lævigatus*, *elytris punctis seriatis sat conspicuis*, *subtus rufo-testaceus*, *supra testaceus*, *vertice thoraceque transversim nigro-signatis*, *elytris nigro-irroratis*, *pone medium fascia lata transversa, integra, perconspicua nigra*. Long. $11\frac{1}{2}$, lat. 7 m.m.

Mas, *lævigatus*, *nitidus*.

Fem., *elytris ad basin prothoraceque utrinque punctis elongatis, rudis impressis*.

In the male the three larger palettes on the underside of the front feet, are of about one size.

This species is extremely closely allied to the following, but is perhaps really distinct, it is rather larger and comparatively broader in front, and has the black fascia on the wing-cases excessively broad and conspicuous, and with no trace of any interruption ; these are all the points I can find to distinguish the male, but the female is very easily distinguished by its more conspicuous sexual sculpture ; the elytra bear on their basal half coarse and deep short impressions or elongate punctures, they extend all across the base of the wing-case from the scutellum to the shoulder, and are also quite conspicuous on each side of the thorax.

I have seen but few specimens of this species ; the thoracic black marking is no doubt variable, generally it consists of two transverse black lines, more or less united at their outward termination, and separated from one another by about the

*The descriptions mentioned in the following list also refer to this genus. *Acilius cinetatus*, Aubé (No. 1172 *huj. op.*), near No. 1070 ; Mexico.—*Acilius laporti*, Aubé (No. 1174) near No. 1059 ; Brazil.—*Acilius laticinetus*, Lec. (No. 1175) near No. 1071 ; California.—*Acilius maculatus*, Aubé (No. 1176) near No. 1059 ; Mexico.—*Thermonectes intermedius*, Crotch. (No. 1508) ? No. 1071 var. ; California.

same distance as the front one is from the front margin, and the hind one from the base ; in one of Aubé's type specimens, these black marks however are somewhat diminished.

Mexico. 962.

1059. *Acilius ornatcollis*, Aubé, M.C.—Parum latus, nitidus, lævigatus, elytris punctis seriatis sat conspicuis, subtus rufo-testaceus, supra testaceus, vertice thoraceque transversim nigro-signatis, clytris nigro-irroratis, pone medium fascia transversa plus minusve conspicua nigra. Long. $11\frac{1}{2}$, lat. $6\frac{1}{2}$ m.m.

Mas, lævigatus, nitidus.

Fem., nitida, elytris ad basin in medio punctis elongatis sat subtilibus impressis.

This species varies considerably in size, in the black marks of the upper surface, and somewhat in the sculpture of the females. The black marks on the thorax consist of a transverse line very near the front margin, and of a second one just behind the middle, this latter often more or less connected with a black basal line ; the front line is generally slightly interrupted in the middle, and is liable to be very much diminished, even broken up into three or four dashes ; the post-medial mark is more or less distinctly biarcuate ; and the basal black mark is sometimes quite absent. When these marks are very largely developed, the front one scarcely leaves any yellow colour at the front margin, and is connected at the sides with the post medial mark, and this latter may be nearly entirely confluent with the black basal mark. The elytra are sometimes much more covered with the black colour than at others, and the post-medial black band, never very conspicuous, can occasionally be scarcely detected. The impressed short lines on the wing-cases of the female are sometimes a little coarser, and their extension in the posterior direction is a little variable, but there is never any indication of their presence on the prothorax.

North America, (United States and Mexico.) 963.

1060. *Acilius succinctus*, Aubé, M.C.—Sat convexus, nitidus, lævigatus, elytris punctis seriatis sat conspicuis, prosterno ex parte majore testaceo, abdominis lateribus flavo-maculatis, supra testaceus, vertice prothoraceque transversim nigro-signatis, clytris nigro-irroratis, pone medium fascia transversa nigra, pedibus anterioribus testaceis, posterioribus rufescentibus, femoribus basi tibiisque extus nigricantibus. Long. $11\frac{1}{2}$, lat. $6\frac{1}{2}$ m.m.

Mas, nitidus, lævigatus.

Fem., nitida, elytris ad basin punctis elongatis rudis impressis, prothorace utrinque punctis parum conspicuis.

In the male, the most basal of the three larger palettes on the underside of the front feet is considerably larger than the other two.

The black marks on the thorax are less extensive than in the allied species, the anterior one is placed a little behind the front margin, and is not interrupted in the middle even when most diminished, and is never connected with the posterior marks, which consist of two very closely placed lines joined at their extremities so as to enclose a yellow transverse line which is most frequently divided in the middle; when the black marks take a greater extension than usual, this enclosed yellow line may be entirely absent. The species varies much in size, and somewhat in the relative amounts of the black and yellow colours; and in the smallest females the sexual sculpture is nearly entirely absent; the punctures on the thorax appear however to be not quite so variable as the more conspicuous sculpture on the elytra.

South America, Mexico, (Bahia, Petropolis, Para, Peru.) 964.

1061. *Dytiscus circumscriptus*, Latr., *Acilius circumscriptus*, M.C.—Convexiusculus, parum latus, levigatus, nitidus, subtus niger, prosterno ex parte majore testaceo, supra testaceus, vertice nigro-signato, thorace anterior et posterior in medio nigro, elytris nigro-irroratis, irrorationibus post medium in fasciam transversam nigram condensatis, et post fasciam irregularibus, antennis pedibusque anterioribus testaceis, pedibus posterioribus extus nigris, femoribus externe late rufescentibus; elytrorum epipleuris angustis. Long. $11\frac{1}{2}$, lat. $6\frac{1}{2}$ m.m.

Fem., elytris in medio longitudinis punctis elongatis subtilibus impressis, prothorace versus latera punctis impressis minus subtilibus.

In the male the three larger palettes of the undersurface of the front tarsi are of about one size, and not very large. The fine impressed linear punctures on the wing-cases of the female form a broad patch extending from the base about two-thirds of the length of the elytra.

In this species the transverse black mark on the thorax always attains respectively the front and hind margins, and so leaves yellow across the middle only a short stripe between them.

The species varies a good deal in size, and in the greater or less condensation of the black spots of the upper surface, occasionally the sides of the hind body are obscurely spotted with yellow. The sculpture of the female is evidently variable, for there exists in Dejean's collection an individual of that sex, which shows no trace of the impressions on the elytra, and very little of the thoracic punctuation.

Widely distributed in the New World, from Mexico and the Antilles to Monte Video. 965.

1062. *Thermonectes depictus*, (Reiche), n. sp.—Convexiusculus, latiusculus, lævigatus, nitidus, subtus piceus, prosterno anterior rufescente, supra testaceus,

vertice nigro-signato, thorace anterior et posterior in medio nigro, elytris nigro-vermiculatis post medium nigro-fasciatis, post fasciam pallidioribus, pedibus anterioribus testaceis, posterioribus rufescentibus, tibiis nigricantibus; elytrorum epipleuris vix latis. Long. 12, lat. 7 m.m.

Fem., elytris in medio partis basalis punctis subtilibus impressis.

In the male of this species the three larger of the palettes on the front feet differ but little in size from the others.

The species is very similar to *Acilius circumscriptus*, but is broader in front, and the black marks on the thorax do not extend so near to the sides; and the yellow colour on the wing-cases bears a larger proportion to the black colour, the epipleuræ are decidedly broader, and in the female the very fine punctures on the wing-cases do not extend so far backwards, and there are none on the thorax.

I have seen but very few individuals; they show some variation in the colour of the under surface which is sometimes blacker, sometimes redder.

South America, (Columbia). 966.

1063. *Hydaticus variegatus*, Lap., M.C.—*Convexiusculus, latiusculus, lævigatus, nitidissimus, subtus niger, prosterno anterior flavescente, supra nigro testaceoque variegatus, capite anterior et ante verticem testaceo, prothorace in medio et ad latera testaceo, anterior et posterior nigro, elytris ad basin nigro-variegatis, pone medium fasciis irregularibus a fascia lata nigra separatis testaceis, humeris plaga intus a plaga nigra limitata testacea; pedibus anterioribus testaceis, posterioribus plus minusve nigricantibus, epipleuris latis.* Long. $13\frac{1}{2}$, lat. 8 m.m.

Fem., nitida, elytris ad basin lineolis brevibus numerosis impressis, prothorace utrinque sparsim lineolato-punctato.

In this species the anterior black mark on the thorax is broad, but does not reach the sides, at its termination it emits a prolongation backwards; the hinder black mark reaches to the hind angles, but is there very short. The elytra have a humeral patch quite yellow, and this patch is limited inwardly by a black mark; the rest of the basal portion of the wing case is black, marked with numerous small yellow marks, which become more indistinct on the middle part which is, therefore, nearly entirely black, behind this black point is a variable, irregular, transverse fascia of yellow, interrupted at the suture, behind this the colour is again quite black, while just before the apex there is another very irregular, interrupted yellow fascia.

I have seen very few specimens of this species.

South America, (Brazil; Amazons, Rio Sappo.. 21. 11. 1874, from water standing in a canoe, Dr. Trail). 967.

1064. *Thermonectes simulator*, n. sp.—Ovalis, haud latus, transversim convexus, lævigatus, nitidissimus, subtus niger, supra nigro testaceoque variegatus, thorace anterior et posterior conspicue nigro-lineato, elytris æqualiter nigro-vermiculatis, antennis pedibusque anterioribus rufis, pedibus posterioribus nigricantibus, femoribus ad apicem rufescentibus; elytrorum epipleuris per-angustis. Long. $14\frac{1}{2}$ lat. $8\frac{1}{2}$ m.m.

Fem., pernitida, elytris versus basin in medio sparsim vix perspicue punctatis.

This species is remarkable inasmuch as the coloration of the upper surface repeats almost with perfect exactness, that of the European *Dytiscus cinereus* (No. 1088). In the male the smaller palettes on the undersurface of the front tarsi are largely developed, while the three larger ones are of rather small size, and differ but little in size *inter se*, so that they present but a slight contrast with the smaller palettes. The sexual sculpture of the female is so slight that it will be overlooked without a careful examination.

I have seen only one pair of this remarkable *Thermonectes*.

South America, (Parana). 977.

GROUP 2.

1065. *Acilius duponti*, Aubé, M.C.—Convexus, sat latus, lævigatus, nitidus, niger, capite anterior et in medio verticis, prothorace ad latera fasciaque parum extensa in medio, elytris plaga humerali, maculis basalibus, fascia submediali aliaque subapicali interrupta, antennis pedibusque anterioribus testaceis; epipleuris latis. Long. $13\frac{1}{4}$, lat. $7\frac{3}{4}$ m.m.

Fem., nitida, elytris in medio ad basin lineolis brevibus impressis.

I have seen only a single individual of this species, which seems allied both to *Hydaticus variegatus* (No. 1063), and *Dytiscus interruptus*: it is more narrowed in front than the former, but not so broad behind the middle as the latter. The yellow colour on the thorax is much diminished in its extent, the anterior black mark having its termination jointed to the posterior one, so that the slender line of yellow enclosed by these two marks is isolated from the lateral patch of yellow.

South America, (Brazil). 968.

1066. *Dytiscus interruptus*, Sturm., *Acilius interruptus*, M.C.—Latus, anterior conspicue angustatus, subtus convexiusculus, lævigatus, nitidus, niger, prosterno anterior piceo, capite anterior et ante verticem, prothorace in medio et ad latera elytrisque humeris, fascia submediali maculisque apicalibus testaceis, pedibus posterioribus piceis, femoribus nigricantibus, pedibus anterioribus testaceis; epipleuris latis. Long. $12\frac{1}{2}$, lat. $7\frac{3}{4}$ m.m.

Fem., nitida elytris in medio ad basin punctis subtilibus impressis.

The species is conspicuous by its form, which is very broad behind the middle, as well as by the comparatively abruptly defined post-medial yellow fascia of the elytra; the middle of the prosternum is very broad and thick, and very prominent in front. I have seen very few individuals, mostly in bad condition.

South America. (Cayenne). 969.

1067. *Thermonectes cuneatus*, n. sp.—Convexiusculus, vix latus, anterieus angustatus, levigatus, nitidus, niger, capite anterieus et in medio verticis, prothorace in medio et ad latera elytrorumque signaturis paucis, pedibusque anterioribus testaceis; elytris plaga elongata humerali, fascia postmediali valde interrupta maculaque subapicali testaceis, epipleuris sat latis. Long. $11\frac{1}{2}$, lat. $6\frac{1}{2}$ m.m.

Fem., nitida, elytris fere levigatis, in medio ad basin punctis paucis subtilissimis.

I have seen only a single individual of this species, which appears closely allied to *D. interruptus*, but is considerably smaller, with the medial yellow fascia and subapical mark a good deal diminished, while the humeral mark is more elongate: the posterior portion of the epipleuræ is less dilated, and the punctuation on the elytra of the female is exceedingly indistinct. The markings of the upper surface give this species a resemblance to a very large individual of *Acilius marginiguttatus* (No. 1070).

Panama. 970.

1068. *Thermonectes batesi*, n. sp.—Convexiusculus, laud latus, levigatus, nitidissimus, niger, capite anterieus et ante verticem, prothorace ad latera et transversim in medio, elytris signaturis numerosis irregularibus, antennis pedibusque anterioribus testaceis; epipleuris latis; prosterni in medio minus lato. Long. 11, lat. $6\frac{1}{2}$ m.m.

Fem., pernitida, elytris ad basin punctis numerosis impressis, prothorace utrinque parum conspicue punctato.

The yellow marks on the elytra consist of a small humeral mark, and a very irregular curved series extending from the scutellum to the outer margin below the humeral spot; beyond the middle a very irregular band, dilated in front about the suture, so as to form there an irregular discoidal pair of marks, and an irregular subapical interrupted fascia. I have seen only a single individual; it is a female, and has the sexual sculpture on the base of the wing-cases rather distinct, but the punctures less elongate than in the allies. The species will be easily identified amongst the allies, by its much variegated elytra, and the narrower prosternal process and middle part of the prosternum.

South America. (Upper Amazons, Bates). 971.

1069. *Colymbetes marmoratus*, Hope, *Hydaticus marmoratus*, M.C.—Convexiusculus, lævigatus, nitidus, subtus rufus, supra niger, læte testaceo-variegatus, elytris maculis magnis testaceis; elytris epipleuris haud latis. Long. 13, lat. $7\frac{1}{2}$ m.m.

Fem., elytris ad basin punctis elongatis numerosis impressis.

In the male of this species the three larger palettes on the undersurface of the front feet differ little *inter se* in size, and are distinctly, but not greatly, larger than the others. The species is a very prettily coloured one and easily distinguished amongst its allies by its colour and markings; the sides of the thorax are broadly yellow, and across the middle is a yellow band which however does not communicate with the yellow of the side: the side margin of the wing case is yellow till near the apex, at the base on each side of the scutellum is a roundish yellow spot, and between this and the humeral angle an irregularly shaped yellow mark, between these two basal marks are three small spots arranged in a longitudinal direction, the anterior of them being so small as to be a mere speck; half way towards the extremity the largest spot exists, it is placed near the suture, and external to it and a little more backward there is another large yellow spot connected with the yellow lateral margin, there are two other spots near the suture behind the large yellow spot, and there are also three other spots, besides the one already mentioned, communicating with the yellow lateral margin; there are in all eleven spots on each wing case, without counting the very minute basal speck above described which is very frequently absent.

Mexico. 972.

1070. *Acilius margineguttatus*, Aubé, M.C.—Minor, subtus convexiusculus, nitidus, niger, capite anteriori et in medio verticis, prothorace ad latera et transversim in medio, elytris signatura humerali maculisque duabus ad latera (interdum etiam cum vitta transversa sub-basali, aliaque subapicali), antennis pedibusque anterioribus testaceis; pedibus posterioribus nigricantibus femoribus ad apicem pallidis; epipleuris angustulis. Long. 9, lat. 5 m.m.

Fem., elytris ad basin lineolis brevibus, plus minusve numerosis, impressis.

In the male the three larger palettes of the front tarsi, are well developed, and subequal *inter se*, in size. The species is a variable one in size, in colour, and the sexual sculpture of the female. The yellow mark across the middle of the thorax is sometimes nearly absent. The yellow mark on the shoulder of the wing case is always present and there is generally a transverse mark proceeding from its hinder part towards the scutellum, according to the extent of its development it has the appearance either of a spot or spots, or a nearly entire vitta: there is a yellow spot at the side about the middle, and this although variable in size is never largely developed; there is another spot at the side near the extremity, and this is sometimes developed into a subapical fascia; near to the suture at the apex

there is generally a minute fleck : the ventral segments are sometimes marked with yellow.

The sculpture on the elytra of the female consists sometimes of some very fine short impressions extending along the middle of the elytra in the longitudinal direction ; at other times the impressions are coarse and deep, occupying the basal portion of the wing-case from the suture to near the outer margin.

Very widely distributed in America, from Mexico and the West India Islands to Parana.

GROUP 3.

1071. *Dytiscus basilaris*, Harr., *Acilus basilaris*, M.C.—Minor, parum convexus, nitidus, subtus vel rufus vel piceus, supra niger, capite antierius et in medio verticis, prothorace lateribus fasciaque mediali transversa, elytris lateribus fasciaque sub-basali plus minusve integra, antennis pedibusque anterioribus testaceis ; colore testaceo ad latera et ad apicem elytrorum a lineis et ab irrorationibus nigris disintegrato ; pedibus posterioribus piceis (vel rufis.) tibiis sæpius nigricantibus ; epipleuris angustis. Long. 10, lat. 5½ m.m.

Fem., prothorace elytrisque utrinque punctis elongatis, rudis profundis (plus minusve numerosis) impressis.

In the male of this species the large basal palette of the front tarsus is much larger than the two next largest, these indeed are but little larger than the adjacent ones, while the more outward ones are still smaller ; the fringing hairs are better developed than in the allies, and are not interrupted at the point of articulation with the tibia as they are in all the other species.

The species is very variable in size and colour, and in the sexual sculpture of the female : but I do not find the characters constant in the series before me so that I am unable to see more than one species in the variations : individuals reddish beneath seem to occur only in California, and the magnitudes of the palettes in the male seems to depart slightly from what exists in individuals from the eastern United States ; I am not able from the series before me however to distinguish more than one species, few of the individuals being in sufficiently good preservation to allow me to form a positive opinion on such points.

North America, United States and Mexico, Guatemala. 974.

I. 71.—Genus *ETHIONECTES*.

Coxal lines distinct in their hinder portion, supra-articular border broad ; middle femora with only short setæ.

A single species from tropical Africa.

1072. *Æthionectes optatus*, n. sp.—Latus, anterieus angustatus, subtus convexus, nitidus, niger, capite antice, vertice maculis duabus, prothorace ad latera, elytris signaturis transversim positis, antennis pedibusque anterioribus testaceis, tibiis tarsisque posterioribus pieescentibus; elytris epipleuris latis. Long. 12, lat. 7 m.m.

Fem., elytris versis basin in medio subtilissime punctulatis.

This species by its broad form, narrowed in front, by its markings and general facies, presents a great resemblance to the South American *Dytiscus interruptus* (No. 1066) and its allies. The markings of the wing-cases consist of some spots close to the base, forming a transverse band, and some other spots just behind the middle forming another irregular band most distinct near the sides, and an apical yellow mark which is much interrupted with black; the lateral margins also are vaguely yellow. The sexual sculpture of the female elytra is so very slight, that it may very readily pass unnoticed. I have seen only two females, which differ a good deal in the distinctness of the yellow marks on the elytra.

The specimen in my own collection was labelled in Mr. Saunders' collection, "W. Afr.," the individual in M. de Bonvouloir's, "Guinée portugaise."

Western tropical Africa, (Guinea). 975.

I. 72.—Genus *SANDRACOTTUS*.

Coxal lines obliterated, so that no supra-articular border is visible; middle femora with setæ of moderate length. Elytra variegate with large yellow and black marks.

Ten species* are known, extending from India through Malasia to Australia.

1073. *Sandracottus hunteri*, (Crotch,) *Hydaticus fasciatus*, M.C.—Ovalis, sat latus et convexus, nitidus, subtus niger, supra testaceus, vertice summo, prothorace anterieus et posteriorius in medio, clytris sutura, fasciis duabus transversis irregularibus punctisque longitudinaliter dispositis nigris, antennis pedibusque anterioribus testaceis, pedibus posterioribus nigricantibus, femoribus sæpe rufescentibus. Long. 12½, lat. 8 m.m.

In the male the smaller palettes of the front feet are well developed, so that the three larger palettes, which are only of moderate size and differ but little *inter se*,

* *Hydaticus baeri*, Regt. (No. 1307 huj. op.), near No. 1073; Manilla, should also be referred to this genus; whether *Colymbetes clairvillei*, Mont. (No. 1217), New Caledonia, be a *Sandracottus* is doubtful.

contrast comparatively slightly with them ; the middle tarsi bear two rows of small sessile palettes. The female has no peculiar sculpture.

The species is a variable one in size, and most inconstant in the markings of the upper surface ; the transverse bands are liable to increase or diminution of size, and become very irregular so as to send off more or less developed longitudinal prolongations ; sometimes the posterior band is so much diminished as to be represented only by some incompletely connected longitudinal marks. The thoracic marks also vary much ; the transverse bands on it are larger or smaller, and are connected together by a central point, and when these marks take their largest extension, the prothorax is black with the sides broadly yellow ; the head is more constant in colour, it being yellow with the extreme vertex black, this black colour being prolonged in front along the margin of the eye ; it is very rare for there to be any dark mark on the middle of the head, but in a remarkable variety found in the island of Timor, there are on the middle of the head two black marks placed at an angle to one another ; this variety (*Hydaticus chevrolati*, Aubé) has the black bands of the elytra formed of largely developed longitudinal portions, more or less incompletely united.

Eastern tropical Asia, (India, Laos, Bangkok, Cochin China, China, Java, Timor). 978.

1074. *Dytiscus festivus*, Ill., *Hydaticus festivus*, M.C.—Ovalis, parum latus, nitidus, subtus piceus, supra testaceus, vertice, maculis duabus in fronte, prothorace anterioribus et posterioribus in medio, elytris sutura fasciis duabus transversis a prolongationibus longitudinalibus plus minusve connexis, nigris ; antennis pedibusque anterioribus testaceis, pedibus posterioribus piceis. Long. 14, lat. 8 m.m.

This species is distinguished from *Sandracottus hunteri* by its rather narrower and more parallel and less convex form, and the greater development of, and communication between, the black marks on the elytra, so that it is, perhaps, not a distinct species ; the two black marks on the middle of the head are always present, and the transverse band on the middle of the elytra sends off in front a longitudinal prolongation, perfectly parallel to the suture, so that a longitudinal, parallel-sided yellow mark extends from the base to the first band ; the black colour of the suture always takes, near the apex, a development in the transverse direction, so as to form a subapical blotch.

India, China, Ceylon. 979.

1075. *Hydaticus dejeani*, Aubé, M.C.—Ovalis, parum latus et convexus, lævigatus, pernitidus, subtus piceus, supra capite, thorace elytrisque conspiciunt nigro flavoque pictis, antennis pedibusque anterioribus testaceis, pedibus posterioribus nigricantibus, femoribus rufescentibus. Long. 12½, lat. 7½, m.m.

This species is possibly not distinct from *Dytiscus festivus*, and, if so, may be probably only a variety of *Sandracottus hunteri* ; it is always, however, smaller than

D. festivus, and the yellow marks on the elytra are more distinctly formed into spots; the two marks on the middle of the head are joined always to the black colour along the margin of the eye; the black bands on the thorax are large and definite, and connected by a spot on the middle; the suture of the elytra is black, and this black colour takes on three somewhat quadrate dilatations, while connecting the external angles of these quadrate marks are some other black marks, so that thus the yellow colour of the surface is broken up into isolated marks; one of the most definite of these is a spot on the base at each side close to the scutellum.

India. 980.

1076. *Hydaticus insignis*, Wehncke, Stet. Ent. Zeit. XXXVII, p. 194.—Ovalis, sat latus et convexus, nitidus, subtus nigro-piceus, supra capite thorace elytrisque conspicue nigro flavoque pictis, antennis pedibusque anterioribus testaceis, pedibus posterioribus piceis. Long. $13\frac{1}{2}$, lat. $8\frac{1}{2}$, m.m.

This differs from *Sandracottus hunteri* only in the markings of the upper surface; the black colour has taken a greater extension, so that the yellow colour is divided into isolated spots. On the head the vertex is black, and there are two black spots on the middle placed at an angle to one another; the black colour of the front and hind margins of the thorax is scarcely connected by a central spot. On the wing-cases there are two rather small basal spots yellow, and a large humeral yellow mark in which is a black dash; the black colour behind these basal marks forms a very irregular broad band, which is in front but little distant from the scutellum, while at the sides it is only just in front of the middle; behind this black band is a broad, irregular yellow band, interrupted at the suture, and divided into two large marks by a slender longitudinal prolongation from the black band behind it, this latter is broad and placed some distance before the extremity; the black colour extending along the suture is a little dilated just before the extremity, and is nearly connected with a small black mark placed very near the apex.

I have seen but a single female individual, and am very doubtful whether it will prove to be a distinct species from the variable *Sandracottus hunteri*.

Philippine Islands. 982.

1077. *Hydaticus bakewelli*, Clk., M.C.—Ovalis, parum latus et convexus, lævigatus, pernitidus, subtus niger, supra capite, thorace elytrisque nigro flavoque pictis, antennis pedibusque anterioribus testaceis, pedibus posterioribus nigricantibus, femoribus dilutioribus. Long. $14\frac{1}{4}$, lat. $8\frac{1}{2}$ m.m.

In this species the vertex is black, and the black mark on the middle of the head is connected at the sides to the black along the margin of the eye; the black band

on the front of the thorax is connected to the large basal band by a small central spot; the marks on the wing-cases are large and very definite, they consist of a large basal spot near the scutellum and a humeral mark yellow, then a very broad black band just in front of the middle, and behind it a smaller yellow band not reaching the suture, then another very broad black band, followed by a yet smaller, subapical, broadly interrupted, yellow band, and close to the apex and suture a minute yellow spot.

The species is a doubtful one, but it is more elongate in form than *S. hunteri*, and has a greater extension of the black marks on the upper surface, so that the yellow colour is formed into a very definite pattern. From *Hydaticus dejeani*, to which the resemblance in form is considerable, it is distinguished by its larger size, and by the yellow spots on the elytra being larger and less numerous.

Australia. 983.

1078. *Sandracottus guttatus*, n. sp.—*Lævigatus*, *pernitidus*, *niger*, *capite anteriori*, *prothorace lateribus elytrisque maculis distantibus*, *antennis pedibusque anterioribus testaceis*. Long. 14, lat. 8 m.m.

This species is closely allied to *H. bakewelli*, but is of rather shorter and broader form, and the black colour of the upper surface more reduces the size of the yellow marks, and the hind legs are rather shorter and thicker. The head is black, but is yellowish in front, and has a nearly obliterated yellow mark in the middle in front of the vertex. On the elytra there is a spot near the scutellum and a humeral mark yellow, also two spots of the same colour just behind the middle, and a subapical transverse mark, and a very minute apical spot. In this species the yellow marks, none of them, quite touch the epipleuræ, while in *Hydaticus bakewelli* only the posterior black bands reach the outside, the basal portion of the wing-case being yellow at the side as far back as the post-medial black band.

Australia. 984.

1079. *Sandracottus rotundus*, n. sp.—*Breviusculus*, *sat convexus*, *nitidus*, *niger*, *capite anteriori et in medio verticis*, *prothorace ad latera*, *elytris margine externo maculisque magnis*, *antennis pedibusque anterioribus testaceis*. Long. 13, lat. 8½ m.m.

Similar in size and form to the shortest individuals of *S. hunteri*, but very different in the colour of the upper surface, for black predominates over yellow. The head is in large part yellow, the vertex is black, and on the middle between the eyes are two black marks confluent with the black colour near the back part of the eye, and almost confluent with one another. The sides of the thorax are

broadly yellow. The elytra have some large isolated yellow spots—five or six on each wing-case—viz., a large spot near the scutellum, a large humeral mark, two rather large spots placed transversely just behind the middle, a transverse oblique subapical mark, and a small one at the extremity; the yellow colour on the outer margin extends from the base to very near the apex, so that all the outer yellow marks, except the small apical one, are connected together by this band of yellow colour. The posterior legs are very short and stout.

This form is similar to *S. guttatus*, but is much shorter and broader, and has the black colour of the upper surface less predominant. I have seen only one individual—a female.

Celebes. 985.

1080. *Sandracottus ornatus*, n. sp.—*Latiusculus*, sat convexus, nitidus, niger, supra testaceo-variegatus, antennis pedibusque anterioribus testaceis, femoribus posterioribus picescentibus; capite thoraceque testaceis, illo vertice signaturisque duabus in medio nigris, hoc anterior et posterior nigro, elytris nigris, maculis conspicuis margineque externo testaceis. Long. 13, lat. 8 m.m.

In this species the head is yellow, with the vertex and two isolated marks on the middle placed at an angle to one another, black; the thorax is yellow but has a black band in front, and a still larger basal one black, these two bands are scarcely connected together on the middle. On each wing-case there is a large humeral mark and two small basal spots yellow, the humeral mark surrounds a longitudinal black mark nearly or quite dividing the humeral mark into two isolated parts, just behind the middle are two rather large yellow marks, placed transversely so that with those on the other wing case an interrupted band is formed; there is also an oblique subapical yellow mark, and a minute apical spot: all the external of these yellow marks, except the minute apical spot, are connected together by an extension of the humeral mark along the lateral margin; the minute apical spot indeed is but little separated from this yellow band.

The species seems to be closely allied both to *Hydaticus insignis*, Wehncke (No. 1076), and *S. rotundus*, it differs from the former by its rather broader form, and by the black colour covering a much larger portion of the wing-cases so that the yellow marks are much reduced in size: it is scarcely so short and broad as *S. rotundus* and has the black colour less predominant on the head and thorax, but more predominant on the wing-cases; there being two small yellow marks on each near the scutellum instead of one large one as in *S. rotundus*, while the humeral mark is divided by a black longitudinal mark. I have seen two females of the species.

Borneo. 986.

1081. *Sandracottus nauticus*, n. sp.—Ovalis, sat latus et convexus, nitidus, niger, capite elytrisque nigro testaceoque variegatis, thorace ad latera testaceo; elytrorum signaturis testaceis haud magnis. Long. $14\frac{1}{4}$, lat. $8\frac{1}{2}$ m.m.

In this species there are three series of black marks on the head, the vertex being black, and in front of it two large black marks, not quite connected to one another, but confluent with the black at the inner margin of the eye, while in front of these two marks there is another angular dark mark. The thorax is black with the sides yellow. The elytra are black with yellow marks transversely disposed on them, viz., three basal small spots, an elongate but narrow humeral mark emitting behind a prolongation towards the middle, two marks just behind the middle placed so as to form an interrupted transverse band, a subapical oblique mark, and a minute apical spot; the yellow colour of the humeral mark is prolonged backwards along the outer margin to just beyond the post-medial mark, but becomes towards its termination a little separated from the margin.

I have seen only one individual of this form, and a variety in which the yellow spots on the elytra are greatly reduced in size: it is considerably smaller than *Hydaticus maculatus*, Wehneke, and rather different in form, being not so narrow in front, and the yellow colour along the margin of the elytra is much less prolonged in the posterior direction.

Borneo. 987.

1082. *Hydaticus maculatus*, Wehneke, Stet. Ent. Zeit. XXXVII, p. 196.—Major, ovalis, latiusculus, antierius angustatus, parum convexus, subtus piceus, supra niger, capite elytrisque nigro testaceoque variegatis, thorace ad latera testaceo; elytrorum signaturis testaceis haud magnis. Long $15\frac{1}{2}$, lat. $8\frac{3}{4}$ m.m.

The front of the head is yellow, the vertex is largely black, on the middle are two large black marks, which are connected, and so extended as to reduce the yellow colour between them and the vertex to a transverse line, or even in extreme cases to two small spots; there is a vaguely defined dark angular mark in front of these marks, on each wing-case there are three small basal spots and an elongate humeral mark yellow, this latter giving off near its extremity a prolongation inwards; just beyond the middle there are variable yellow spots, sometimes forming an irregular transverse band, there is also a small, subapical, oblique mark, and a quite minute spot at the tip yellow: the yellow colour of the humeral mark extends backwards along the outer margin as far as the oblique subapical mark. The spots of yellow colour are very variable, never extensive, they are sometimes reduced to a few small specks; the yellow marginal colour is however apparently subject to little or no variation in its extent. The female seems to be rather larger than the male.

The Malay peninsula. 988.

I. 73.—Genus *RHANTATICUS*.

Coxal lines obliterated, so that no supra-articular border is visible, middle femora with quite short spinules. Elytra yellow speckled with black, the black specks being more or less coalesced to form two or three irregular transverse black fasciæ.

A single species* is known; it has a wide distribution in the warmer parts of the eastern hemisphere.

1083. *Hydaticus signatipennis*, Lap., M.C.—Ovalis, fere angustus, parum convexus, lævigatus, nitidus, testaceus, capite prothoraceque antèrius et posterius in medio nigro-signatis, elytris nigro-irroratis, irrorationibus in fasciâs duas, una ante altera post medium, condensatis. Long. $9\frac{1}{2}$, lat. 5 m.m.

In the male the anterior tarsi are large, and clothed beneath with well developed palettes; the more basal one of the three larger of these is distinctly larger than the other two, which in fact are about intermediate between it and the smaller ones; the middle tarsi are not incrassate, but the three basal joints bear beneath two rows of small sessile palettes.

The species is the smallest of the *Hydaticides*, and has much resemblance to a *Rhantus*; it varies in the extent of the black marks on the head and thorax, these are usually more largely developed in the individuals from Australia and New Caledonia than in those from other localities. In what may be called the type form (from tropical Asia) the vertex is black and the black colour extends forward along the inner side of the eye, while on the middle of the head there are two black marks placed at an angle to one another, and often joined so as to form a single angular mark; on the thorax the black marks in front and behind have but a small extension even in the lateral direction, and in some individuals the anterior one entirely disappears: in the Australian individuals there is an additional black transverse mark on the head in front of the other two, and in front of the basal mark of the thorax there is another black mark, which however is joined to the basal mark in the middle and at the sides so as to form a single transverse mark enclosing two yellow spots, which however are sometimes absent owing to the still greater extension of the black colour. I can find no other characters to distinguish this form and can scarcely think it constitutes a distinct species. In the Australian form the hind tibiæ and tarsi are more or less black. The individuals from Madagascar show a reproduction of the markings of the Australian race but in a far less constant manner, and they have not the hind tibiæ and tarsi dark, their form is shorter and the black fasciæ of the elytra less distinct than in the Australian individuals; the

* It is probable that *H. congestus*, Klug, (No. 1309 huj. op.) from Madagascar, is either a variety of this species or a closely allied one.

specimens from tropical Africa, show the characters of the Madagascar form except that they are still less different from what I have called the typical form.

Widely distributed. Australia and New Caledonia, Formosa, China, Siam, Arabia, Madagascar, Lake N'Gami, Senegal. 976.

I. 74.—Genus *GRAPHODERES*.

Coxal lines fine but distinct; supra-articular border moderately broad; middle femora with rather short, stout setæ. Elytra uniformly speckled with black and yellow.

The eleven species form two groups, the first represented only by a single species:—

1. Form rather depressed; thorax and head without any distinct black marks.

No. 1084.

2. Form rather convex; thorax and head with very distinct black marks.

Nos. 1085 to 1094.

GROUP 1.

1084. *Dytiscus liberus*, Say, *Hydaticus liber*, M.C.—Ovalis, parum elongatus, fere depressus, nitidus, ferrugineus, prothorace ad latera elytrisque testaceis, his creberrime nigro-vermiculatis. Long. 12, lat. 7 m.m.

In the male the front tarsi are provided beneath with three larger palettes of unequal size, and sixteen smaller but still highly developed ones. The middle tarsi have the basal joint just perceptibly thickened, and furnished beneath with four palettes—two outer and two inner—while the second joint bears only two palettes, which are placed at its outer margin.

The species has much resemblance to a species of *Rhantus*, from which a glance at the ciliate hind margins of the posterior tarsi will, of course, distinguish it: it varies somewhat in size, but not much in other respects.

United States of North America, from Vancouver's Land to New York and Florida. 989.

GROUP 2.

1085. *Hydaticus austriacus*, Sturm, M.C.—Nitidus, testaceus, vertice, signaturis frontalibus prothoracisque fasciis duabus magnis, nigris, elytris creberrime nigro-vermiculatis; elytrorum epipleuris pone medium per-angustis; tarsis posterioribus gracilibus. Long. 13, lat. vix, 8 m.m.

In the male the front tarsi bear large palettes beneath, the smaller ones are large, and of the usual three larger ones only one is conspicuously larger than the small palettes; the number of these palettes is altogether only fifteen, so that there are but twelve in addition to the three basal ones: the claws are considerably elongate, and a little unequal: on the middle legs the tarsi are not incrassate, and have no palettes beneath, but the claws are larger than in the female.

This species is readily distinguished from the others allied, by the fact that the front border of the hind coxæ is not quite so approximate to the middle coxal cavities. The smaller number of palettes on the front tarsi of the male, and their complete absence on the middle tarsi is peculiar to this species. It varies a little in size, and there is sometimes only one angular mark on the middle of the head, the more anterior mark present in some specimens being then absent.

Europe and Eastern Siberia, (Alsatia, Germany, Hungary, Amurland). 990.

1086. *Dytiscus fasciatocollis*, Harr., *Hydaticus fasciatocollis*, M.C.—Robustus, nitidus, rufus, supra testaceus, capitis vertice et signaturis prothoraceque fasciis duabus magnis nigris, elytris creberrime nigro-vermiculatis; elytrorum epipleuris angustis; tarsis posterioribus crassis. Long. $14\frac{1}{2}$, lat. vix 9 m.m.

In the male of this species the palettes on the front tarsi are of large size, the three larger ones are conspicuously larger than the rest, these being twenty-three in number, differing but little *inter se* in size, and all of them rather large. The intermediate tarsi have the three basal joints somewhat incrassate, and furnished beneath with twelve rather large palettes, four on each joint, these twelve palettes form two perfectly regular longitudinal series. In the female there is a peculiar sexual sculpture, the elytra near the sides showing numerous fine, but rather deep punctures, these are dense at the base, but are wanting on the apical portion of the wing-case.

The black bands on the thorax are large, so that the thorax is divided into three zones of colour, of about equal lengths,—black in front, yellow in the middle, black at the base; the anterior black zone generally reaches the front margin, but occasionally the black colour is absent from the anterior margin in front of the transverse series of punctures: the black colour on the elytra is largely developed.

The species greatly resembles the European *Dytiscus cinereus* (No. 1088) it is, however, a little narrower in front, and the anterior border of the hind coxæ is not quite so approximate to the middle coxal cavity; the male has less numerous palettes on the front and middle tarsi, and the peculiar sexual punctuation of the female is quite wanting in *D. cinereus*.

United States of North America. 991.

1087. *Hydaticus adamsii*, Clk., M.C.—Breviter ovalis, convexus, nitidus, subtus piceus, prosterno capiteque in medio testaceis, supra testaceus, vertice, signatura capitis mediali prothoracisque fasciis transversis marginalibus, nigris; elytris crebrius nigro-vermiculatis; pedibus anterioribus testaceis, posterioribus nigris, femuribus testaceis basi infuscato; elytrorum epipleuris sat latis; pedibus posterioribus brevibus, crassis. Long. 13, lat. 8 m.m.

The male has three larger and about twenty-four smaller palettes on the front tarsi, and twelve on the intermediate feet, the latter being placed four on each of the three basal joints so as to form two perfectly regular longitudinal series; the claws on each of these pairs are distinctly longer than in the female. There is also a difference in the extension of the thoracic coloration, the anterior band of black colour having in the female twice as great an extension in the antero-posterior direction as it has in the male; the thorax of the female is a little shorter than it is in the male, and so it results that the yellow fascia intervening between the two black ones, is only about half as long in the female as it is in the male. In the female there is a very obscure development of sexual sculpture, towards the outside of the wing-case, consisting of scanty and not very distinct larger punctures.

The species cannot readily be confounded with any other of the allies; although in the colour of the upper surface it somewhat resembles *Dytiscus cinereus*, it is at a glance distinguished therefrom by the more rotund form and by the dark colour of the undersurface; moreover, the front border of the hind coxæ does not extend quite so near to the middle coxal cavities. It apparently varies little; the tendency to corrugation of the surface of the thorax in the female is, however, more marked in some individuals of that sex than in others.

Japan. 992.

1088. *Dytiscus cinereus*, Linn., *Hydaticus cinereus*, M.C.—Ovalis, sat latus et convexus, nitidus, rufo-testaceus, capitis vertice signaturisque, et prothorace fasciis duabus magnis nigris, elytris creberrime nigro-vermiculatis; elytrorum epipleuris angustis; tarsis posterioribus sat gracilibus. Long. 14½, lat. 8½ m.m.

In the male of this species, the smaller palettes on the front tarsi are about twenty-eight in number, while on the middle feet the number is fourteen, six on the basal, four on each of the two following joints, placed in two perfectly regular longitudinal series. The female has no greater punctuation of the wing-cases than the male has. In this latter sex the thorax is rather longer than in the female so that the yellow space intervening between the anterior and posterior black bands is rather greater in the male than in the female.

The anterior black band in this species always attains the front margin of the thorax, it is thus divided into two equal parts by the transverse series of punctures, and it is of about the same extension (in the antero-posterior direction) as the basal

band is; this latter always completely reaches the hind margin. The wing-cases have a dark appearance owing to the great predominance of the black over the yellow colour. There seems to be little variation in any respect.

Europe (Sweden, Germany, France, Switzerland, Hungary). 993.

1089. *Graphoderes perplexus*, n.sp.—Ovalis, anterius angustatus, sat convexus, nitidus, testaceus, capite vertice signaturisque frontalibus, et prothorace fasciis duabus nigris, elytris creberrime nigro-vermiculatis; prothoracis fascia nigra anteriore marginem anteriorem haud attingente, fascia posteriore lateraliter ante angulum posteriorem desinente, elytrorum epipleuris angustis. Long. 14, lat. $8\frac{1}{2}$ m.m.

In the male of this species there are about twenty-eight smaller palettes on the front feet besides the three larger one, while on the middle feet the palettes are the same as in *Dytiscus cinereus*, viz., six on the basal and four on each of the two following joints, making in all fourteen arranged in two longitudinal series. The female resembles the male in sculpture, but is rather shorter in form, having the thorax distinctly shorter and hence there is some difference in the prothoracic vittæ; the anterior one is short (in the antero-posterior direction) and leaves a yellow band in front of it, the posterior band is rather larger in the male than in the female, but in neither sex does it quite attain the hind margin; the yellow space separating the two black bands is much greater in the male than in the female.

The species is closely allied to *Dytiscus zonatus* (No. 1091), but is rather different in form being narrower in front, the epipleuræ are not quite so narrow, and the male seems to have no palettes on the middle feet in addition to those of the two longitudinal series.

I have seen only two individuals; the male from Dejean's collection, which was erroneously called *H. zonatus* by Aubé, and a female in my own collection found by E. Doubleday in the United States.

North America. 994.

1090. *Graphoderes elatus*, n. sp.—Sat convexus, nitidus, testaceus, capite vertice signaturisque frontalibus, prothorace fasciis duabus nigris, elytris creberrime nigro-vermiculatis; prothoracis fascia nigra anteriore marginem anteriorem haud attingente, fascia posteriore lateraliter ante angulum posteriorem desinente; elytrorum epipleuris medioeribus. Long. 14, lat. $8\frac{1}{2}$ m.m.

In the male, there are about thirty-two palettes, in addition to the three larger ones, on the front feet; on the middle feet there are fifteen palettes arranged in two series as in *D. cinereus*, with the exception that there is on the second joint a supernumerary palette outside the external series. The female I have not seen.

The species resembles *Dytiscus zonatus* excessively, but is rather broader, more

narrowed in front, and has the epipleuræ broader. The two individuals I have seen differ slightly from one another, the outline of the North American individual is a little different from the East Siberian specimen.

Eastern Siberia, (Amurland) ; North America, (Red River). 995.

1091. *Dytiscus zonatus*, Hoppe, *Hydaticus zonatus*, *M.C.*—Sat convexus, nitidus, testaceus, capite vertice signaturisque frontibus, prothoraceque fasciis duabus nigris, elytris creberrime nigro-vermiculatis; prothoracis fascia nigra anteriore marginem anteriorem haud attingente, fascia posteriore lateraliter ante angulum posteriorem desinente; elytrorum epipleuris angustis. Long. 14, lat. 7 $\frac{3}{4}$ m.m.

In the male of this species there are, besides the three larger palettes, 32-35 smaller ones on the front feet; and on the middle feet 16 to 22; when the undersurface of the middle feet is under examination, the variation in number of these palettes causes a different appearance in different specimens; when there are only sixteen palettes, they are arranged in two longitudinal series of seven each, the inner series being quite regular, while the outer series is rendered a little irregular by the appearance of two more external palettes, for which there is obtained space by a disarrangement of the outer series; as the total number of palettes increases, this outer series becomes more irregular, and in those specimens where the total number is greatest (19 to 22), even the inner series becomes irregular, so that the liserial arrangement is scarcely to be detected.

The species is a variable one in other respects. Although the anterior black thoracic band always leaves a space in front of it yellow, yet in some individuals this is not so perceptible as in others; the posterior band too is sometimes thicker (in the antero-posterior direction) than it is in other cases, and although generally it leaves a very slight band behind it yellowish, yet sometimes it extends quite to the hind margin; in the lateral direction, however, it never extends so far as the angles, indeed it does not reach quite so far laterally as the anterior band does; the specimens in which the black thoracic bands are most extensive, are generally broader and flatter than the more ordinary individuals, and it is also generally in such individuals that the number of palettes on the middle feet attains its maximum. The shorter and broader individuals with largely developed thoracic black bands greatly resemble *Dytiscus einereus*, but may be distinguished by the front black band never quite touching the front margin, while the posterior band always leaves off quite decidedly at some distance inside of the hind angles; the epipleuræ too are a little narrower; the males are readily distinguished by the supernumerary palettes of the middle feet, as well as by the characters mentioned above.

The females have a very slight development of additional punctuation near the outer sides of the wing-cases, and they also possess some corrugations near the

sides of the thorax ; in certain individuals these corrugations become coarse and deep, and in the most extreme cases are accompanied by a radial corrugation on the disc of the thorax ; these extreme females were considered by Aubé to be the males of *Dytiscus verrucifer*, Sahl.

Europe and Siberia ; (Sweden ; Finland to 67°, Sahlberg ; Germany, Belgium, Northern France, Piedmont). 996.

1092. *Dytiscus verrucifer*, Sahl., *Ins. fenn.*, p. 159.—Sat convexus, nitidus, testaceus, capite vertice signaturisque frontalibus prothoraceque fasciis duabus nigris, elytris creberrime nigro-vermiculatis, prothoracis fascia nigra anteriore marginem anteriorem haud attingente, fascia posteriore lateraliter ante angulum posteriorem desinente ; elytrorum epipleuris angustis. Long. 15, lat. 8 $\frac{3}{4}$ m.m.

In the male of this species the front tarsi bear about fifty-six smaller palettes, besides the three larger ones ; the intermediate feet have thirty-six palettes arranged in an irregular manner.

The female has the whole of the upper surface of the prothorax traversed by deep rugæ or corrugations, which have a somewhat radiate arrangement on the disc : the elytra, too, are covered with very deep furrows, which cause the surface to appear densely packed with flattened tubercles ; these tubercles are more or less elongate or confluent in the longitudinal direction.

This insect differs from *Dytiscus zonatus* by the greater number of palettes on the front and middle feet, and by the peculiar sculpture of the female : the under surface and the posterior tarsi are sometimes a little infuscate or piceous : and the colour of the wing-cases appears more obscure, owing to the black vermiculations being thicker so that the yellow specks are more reduced than in *D. zonatus*.

Finland, Sweden, Lapland, and Siberia. 997.

1093. *Graphoderes piciventris*, Thoms. (ex parte), *Sk. Col. X*, p. 351.—Sat convexus, nitidus, testaceus corpore subtus ex parte infuscato, capite vertice signaturisque frontalibus nigris ; prothorace ex parte majore nigro, medio lateribusque testaceis ; elytris testaceis creberrime nigro-vermiculatis, punctis testaceis obscuris ; epipleuris angustis. Long. 15 $\frac{1}{2}$, lat. 9 $\frac{1}{8}$ m.m.

In the male of this insect there are about 74–80 small palettes, besides the three larger ones, on the undersurface of the front tarsi, the intermediate feet present a broad sole bearing about 42–52 palettes. The female has the whole of the upper-surface of the prothorax traversed by very deep rugæ or corrugations, assuming a radiate arrangement on the disc : the elytra bear coarse flattened tubercles which are quite isolated from one another, and have no tendency to be confluent in the longitudinal direction.

This insect differs from *D. verrucifer*, Sahl., by the greater extension of the dark colour both on the upper and undersurfaces, by the greater number of palettes on the feet of the male, and by the tubercles on the wing-cases of the female being more isolated from one another in the longitudinal direction. The basal black band on the prothorax is very extensive, and reaches the base; the anterior band, too, nearly if not altogether attains the front margin, and at its extremities is more or less distinctly connected with the posterior black band; the black colour on the elytra is extremely predominant over the yellow, and the undersurface and hind legs are much blackened.

Thomson's description of *G. piciventris* (Sk. Col. X, p. 351) is made up quite as much from specimens of *Dytiscus verrucifer* as from the present species, and as, moreover, I am quite unable to confirm his statement as to the peculiarities of the posterior claws, on which he largely relied to distinguish his *G. piciventris* from *Dytiscus zonatus*, I can scarcely cite him as the first describer of the species, although I have used the name he proposed.

Lapland. 998.

1094. *Dytiscus bilineatus*, de Geer, M.C.—Latus, parum convexus, anteriùs angustatus, nitidus, testaceus, capitis vertice signaturisque, et prothoracis fascia basali apicalique nigris, elytris creberrime nigro-vermiculatis; elytrorum epipleuris latis. Long. $14\frac{1}{2}$, lat. 9 m.m.

In the male of this species, the smaller palettes of the front feet are about thirty in number, while those of the middle feet are fourteen in number, six on the basal, and four on each of the two following joints, arranged in two longitudinal series.

The species is very distinct by the broad epipleuræ, as also by the broad form greatly narrowed in front; the two black bands on the thorax are placed respectively on the anterior and posterior margins, and have but little extension in the antero-posterior direction, the posterior black band gradually thins out, and scarcely reaches the hind angles: the thorax of the female is hardly so long as that of the male, so that the yellow space between the two black bands is scarcely so great in the former sex as it is in the latter.

The species seems subject to very little variation.

Europe, (Sweden; Finland $62^{\circ} 40'$ Sahlberg; Belgium; Germany; Northern France; Portugal & Van Volxem, this latter locality requires confirmation). 999.

I. 75.—Genus *ERETES*.

Thorax with a fine lateral margin. External margin of elytra armed with short spines, at some distance before the apex.

Two species are known, one Australian, the other almost cosmopolitan.

1095. *Dytiscus sticticus*, Linn., *Eunectes sticticus*, M.C.—Pallide testaceus, nitidus, vertice nigro-signato, elytris punctis magnis nigris impressis; elytrorum humeris rotundatis, apice ad suturam acuminato, epipleuris angustissimis; prosterni processu acuto. Long. 14, lat. $7\frac{1}{2}$ m.m.

Fem., elytris in latera ad medium depressione plus minusve elongata.

Variat, statura plus minusve elongata, thorace in medio elytris que pone medium plus minusve distincte nigro-fasciatis, his sæpius ad latera in medio macula angustula nigra.

The male differs from the female not only by the dilated anterior tarsi and absence of the lateral impressions on the wing-cases, but also a little in the form of the thorax, which appears less narrowed in front than in the female, and has its sides a little more, and its hind angles a little less rounded.

The species besides varying much in size, shows a considerable variation in the black marks of the upper surface; although these variations are not important, they have, in conjunction with the wide distribution of the species, led to the establishment of a considerable number of false species, for which after a very careful examination I find not the least justification. The species is in all its structural characters singularly constant, and with the following one, may be readily distinguished from all others, by the peculiar serration of the edges of the wing-cases, behind the middle; this can only be seen with a good lens, and arises from the existence there of a considerable number of extremely short, thick and pointed setæ or spines. The hind tarsi are also very peculiar in this insect, inasmuch as they are punctate externally instead of being polished. Varieties have been described frequently as distinct species. If I am correct in supposing that *E. punctipennis*, Macleay, is this species, then Australia must be added to the localities mentioned below.

Widely distributed in the warm portions of the Old World, apparently rare in America. It is worthy of note that this species is found in a greater number of islands than any other of the Dytiscidæ.

France, Corsica, Sardinia, Spain, Africa; Siberia, Japan, Formosa, China, Philippines, Timor, Sumatra, Java, Pulo Penang, Siam, India, Arabia, Mesopotamia; Canary Islands, Madeira, Cape Verde Islands; United States of North America, Mexico, Peru; Guadeloupe, Galapagos. 954.

1096. *Eretes (Eunectes) australis*, Er., M.C.—Testaceus, vertice nigro-signato, elytris punctis magnis nigris impressis; elytrorum humeris rotundatis, apice ad suturam acuminato, epipleuris angustissimis; prosterno processu acuto. Long. 14, lat. 7 m.m.

This species is closely allied to *Dytiscus sticticus*, but is really distinct: it is generally narrower in proportion, and has a more unicolorous appearance; the posterior femora and tibiæ are more slender; the punctures of the elytra are even a little coarser than in *D. sticticus*, but they do not appear so conspicuously black, for the black colour is entirely confined to each puncture, whereas in *Dytiscus sticticus*, it generally also invades a small area round each puncture; the thorax is never marked with black; the female has no trace of the depression at the edge of the wing-cases, and its thorax scarcely differs in form from that of the male. There is generally to be seen a small black dot at the edge of the wing-cases, but it is much smaller than is usual in *D. sticticus*, and the black subapical fascia is generally entirely absent, but is sometimes faintly indicated.

Australia, (Melbourne, Sydney, Paroo river, Port Denison, Cape York, West Australia). 955.

II. 15.—Group CYBISTRINI.

Swimming legs highly developed and very powerful, their tibiæ especially short and broad, and with the lower of their two apical spurs dilated, so that it is much broader than (and frequently longer than) the superior one. The coxal notch of the coxal processes very short, scarcely to be detected from the exterior.

Any water-beetle belonging to this group is very readily recognized, the swimming legs being different from those of any other of the Dytiscidæ, but the species are difficult to distinguish *inter se*; the specific characters are found in the size and form, and in the presence or absence of a yellow band along the outside of the wing-case; this band may be nearly or entirely absent, or it may be present but leave the epipleura and its raised margin of the same dark colour as the rest of the surface, (in this case I speak of it as “*vitta intramarginalis*,” or “*vitta lateralis*”), or the yellow band may be larger, so that it extends to and includes the epipleura (and in this case I describe it as “*margo externus testaceus*”). The sexual characters are also of great importance in distinguishing the species, and the front tarsi of the males should be carefully examined. In order to do this with satisfactory results they must be damped and cleansed, and then flattened out so as to place them in their natural position; when the tarsi have been rendered quite pliable, the specimens should be placed on a piece of cork covered with clean paper, and the tarsi flattened out and pressed down by means of needles pinned across them in as horizontal a direction as possible, so as to exercise pressure on the foot

and keep it flat; when this has been done the specimen should be left to dry, and the tarsus will afterwards remain extended and flat, so that its dimensions and structure can be readily ascertained.

In the measurements I have given of the tarsi, the marginal ciliæ are not included, the breadth given being that of the joints themselves; if the marginal ciliæ are included (when the tarsi have been flattened out) it will be found that the dimensions are considerably greater than those I have recorded. The structure of the œdeagus offers very important differences in this genus, and some species are more readily distinguished by examining it than by any other means. Aubé and others have attached much importance to the presence or absence of a reddish spot near the extremity of the wing-case; but this seems to be an eminently variable character, so that much attention need not be given to it.

The group comprises four genera, which may be tabulated as follows:—

Anterior border of hind coxa approaching rather closely to the middle coxa. Three Australian species.	}	<i>SPENCERHYDRUS.</i> (<i>Vide</i> below.)
{	{	<i>HOMŒODYTES.</i> (<i>Vide</i> p. 703.)
{	{	<i>MEGADYTES.</i> (<i>Vide</i> p. 704.)
{	{	<i>CYBISTER.</i> (<i>Vide</i> p. 714.)

I. 76.—Genus *SPENCERHYDRUS.*

Anterior border of hind coxa approaching closely to the middle coxa, terminal portion of wing of metasternum moderately abruptly deflexed. Prosternum deeply canaliculate along the middle. Side of wing-case broadly yellow. Australian species.

This genus comprises two very distinct forms:—

Prothorax depressed close to the side, so that the margin appears to be raised; side of wing-case moderately broadly yellow.	}	No. 1097.
Prothorax evenly convex; side of wing-case very broadly yellow.	{	Nos. 1098 and 1099.

1097. *Spencerhydrus pulchellus*, n. sp.—Parvus, oblongo-ovalis, sat convexus, supra olivaceus, capite antierius prothoraceque ad latera testaceis, elytris vitta marginali lata, sed ad apicem evanescente, testacea; subtus piceus, pedibus quatuor

anterioribus rufis: prothorace margine laterali elevato; prosterno a margine anteriore ad apicem profunde sulcato. Long. 16, lat. $8\frac{3}{4}$ m.m.

In the male the front tarsi are not large; their claws are peculiar, very unequal in length, each has a swelling at the extreme base, and is abruptly bent just beyond this, the front one is elongate and slender, while the hind one is much shorter and is sinuate; the undersurface is occupied with rather large, nearly circular, palettes, the basal fringing hairs are elongate and well developed, and there is no pubescent area between them and the palettes. The intermediate tarsi are slender, and without sexual pubescence, but their claws are very unequal in length, the outer one being elongate. The female has no sexual sculpture.

This interesting little species can be readily distinguished from all its allies by the fact that the thorax is flattened or depressed close to the side so as to give the lateral margin the appearance of being elevated. It varies somewhat in the colour of the upper surface, which is in some cases more tintured with green and with a metallic lustre than it is in others.

Australia, (Swan River). 1118.

1098. *Spencerhydrus latecinctus*, n. sp.—Parvus, oblongo-ovalis, sat convexus, supra piceo-niger, capite antierius prothoraceque ad latera testaceis, elytris latissime testaceo-cinctis; subtus piceo-rufus, pedibus quatuor anterioribus rufis; prosterno a margine anteriore ad apicem sulcato. Long. $18\frac{1}{2}$, lat. 10 m.m.

In the male the front tarsi are moderately large, their claws are greatly and abruptly curved, and the anterior one is nearly twice as long as the other; the undersurface is furnished with rather large elliptico-circular palettes, and the basal fringing hairs are well developed, there being no pubescent area between these and the palettes. The intermediate tarsi are simple, their claws rather elongate and slightly unequal. The female is unknown to me.

This and the following species are readily distinguished from the allies by the very broad lateral yellow band of the wing-cases, even at the apex it is very broad.

Australia. 1119.

1099. *Spencerhydrus semiflavus*, n. sp.—Parvus, oblongo-ovalis, sat convexus, supra viridi-olivaceus, omnium latissime testaceo-cinctus; subtus testaceus; prosterno a margine anteriore ad apicem sulcato. Long. 19, lat. 10 m.m.

I have seen only the female of this species; it has on the thorax near the sides numerous short, rather fine scratches,

Although probably closely allied to *S. latecinctus*, I think this will prove a dis-

tinct species, the undersurface being of a pure yellow colour, and the yellow encircure of the upper surface being even broader than in that species.

Australia, (Darling River). 1120.

I. 77.—Genus *HOMŒODYTES*.

Coxal lines absent ; unguicular cleft broad and rounded at base.

This genus comprises three species* found in Australia and New Zealand. They form two well-marked groups :—

Prosternum distinctly channelled along the middle, postero-external angle of hind femur rectangular ; size small (15 m.m.) long. } No. 1100.

Prosternum indistinctly grooved ; postero-external angle of hind femur acute or spinose ; size rather large (about 25 m.m. long). } Nos. 1101 and 1102.

1100. *Dytiscus atratus*, Fab., *Trogus atratus*, *M.C.*—Minor, ovalis, anterieus conspicue angustatus, convexus, supra niger, capite anterieus prothoraceque ad latera testaceis ; elytris vitta marginali, posterius attenuata et angustissima, testacea ; subtus nigro-piceus, pedibus quatuor anterieus testaceis, tarsi intermediis piceis, pedibus posterioribus piceis, crassiusculis ; prosterno sulca angusta anterieus dilatata et profunda. Long. 15, lat. 9 m.m.

In the male the front tarsi are small, their claws are moderately elongate, and but little unequal, the palettes of the undersurface are small and oblong, the pubescent area moderately large ; on the intermediate tarsi the three basal joints are densely clothed beneath with rather long sexual pubescence, their claws are simple and equal.

This little species has a good deal of resemblance to *Cybister senegalensis* (No. 1145), but is readily distinguished from it by the sulcate prosternum. The few specimens I have seen of the species show little variation, in some of them the uppersurface has a faint metallic lustre.

Australia, (Brisbane, Rockhampton, Clarence River, South Australia). 1115.

1101. *Cybister scutellaris*, Germ., *Trogus scutellaris*, *M.C.*—Ovalis, parum convexus, supra olivaceus, capite anterieus prothoraceque ad latera testaceis, elytris vitta marginali posterius parum arguta testacea ; subtus testaceus ; pedibus posterioribus piceo-testaceis, femoribus angulo posteriori-externo acute subspinoso ; prosterno late obsolete sulcato. Long. 26, lat. 14 m.m.

* The two following species should very probably be added to this number:—*Cybister goryi*, Aubé (No. 1277 *huj. op.*) near No. 1100 ; Australia.—*Cybister insularis*, Hope (No. 1278), near 1100 ; Tasmania.

In the male the front tarsi are small, their claws nearly equal and rather short, the palettes of the undersurface are small and oblong, and the pubescent area moderately large: on the intermediate tarsi the basal joints are quite bare, but the third one bears a broad patch of rather long very dense hairs, the claws are simple and equal. The female has a dense but rudimentary and obsolete sexual sculpture on the wing-case, consisting of excessively fine, short and dense, irregular or curved scratches, these are most distinct at the base, become obsolete before the apex, and also towards the suture and lateral margin.

The species varies somewhat in size, and in the colour of the uppersurface, which shows sometimes a distinct metallic reflection, while sometimes the scutellum is more or less flavescent; the yellow colour of the undersurface is sometimes somewhat embrowned in parts, this being perhaps due to decomposition: the spine at the outer angle of the hind femora is sometimes more prolonged and distinct than in other cases. The sulcation of the prosternum is peculiar, and seems to be formed by two very obsolete slightly raised lines proceeding from each front angle of the middle portion, and extending backwards about as far as the lower part of the COXÆ.

Australia, Tasmania and New Zealand; (apparently very abundant and widely distributed in Australia). 1116.

1102. *Cybister hookeri*, White, *Trogus hookeri*, *M.C.*—Ovalis, sat convexus, supra niger, capite antierius prothoraceque ad latera testaceis, elytris vitta marginali, posterius angustissima, testacea; subtus nigro-piceus, pedibus anterioribus testaceis femoribus in medio piceis, pedibus intermediis piceo-testaceis; femoribus posterioribus angulo posteriori-externo acuto, parum producto; prosterno anguste obsoleteque sulcato. Long. 25, lat. 13 m.m.

This species is closely allied to *Cybister scutellaris*, but is readily distinguished by the colour of the undersurface; the groove of the prosternum though formed in a similar manner to that of *C. scutellaris*, differs by the lines which bound it becoming more approximate, and also by its being continued along the prosternal process. The sexual characters in male and female are almost indetical with those of *C. scutellaris*. The few specimens I have examined show very little variation.

New Zealand. 1117.

I. 78.—Genus *MEGADYTES*.

Coxal lines present; unguicular cleft narrow and angular at base; hind tarsi in the male sex terminated by two distinct claws; (females always with two claws, but the inner one frequently small and rudimentary).

The species* are all South American and may be arranged in six groups as follows.

- | | | |
|---|---|----------------------------------|
| Claws on hind feet of male two in number, of equal or nearly equal lengths; in female one long claw with a more rudimentary one on its under and inner side; the smaller spur of hind tibia simply acuminate at apex. | { Size moderate, about 30 m.m. long; a vague yellow lateral band on wing-cases; termination of metasternal wing far from epipleura. | } Group 1. (Nos. 1103 and 1104). |
| | { Size small (about 22 m.m.); no yellow lateral band; apex of metasternal wing near to epipleura; ♂ inner claw shorter and finer than outer one. | } Group 2. (No. 1105.) |
| | { Size small (about 23 m.m.); inner claw on hind foot of males as large as the other; apex of metasternal wing near to epipleura; with or without lateral yellow band on elytra; females with a beautiful sexual sculpture. | } Group 3. (Nos. 1106 to 1109). |
| | { Size moderate (29 m.m.); elytra with yellow stripe; apex of metasternal wing near to epipleura; female without sexual sculpture. | } Group 4. (No. 1110). |
| Each sex with two claws of nearly equal length on hind foot; the smaller spur of hind tibia minutely tridentate or trituberculate at the apex. | | } Group 5. (Nos. 1111 to 1116.) |
| Two claws of about equal length on hind tarsus in each sex; smaller spur of hind tibia largely bifurcate at extremity. | | } Group 6. (Nos. 1117 and 1118). |

GROUP 1.

1103. *Megadytes expositus*, n. sp.—Ovalis, elongatus, sat convexus, nitidus, supra olivaceus, vage testaceo-cinctus, subtus piceus, pectore prosternoque in mediis olivaceo-metallescentibus; pedibus quatuor anterioribus rufis, posterioribus piceis trochanteribus dilutioribus; pectore longitudinaliter arcuato; femoribus posterioribus angulo externo spinoso-acuto. Long. 32, lat. 16½ m.m.

The male has the front tarsi small attaining only 2 to 2½ m.m. in the transverse direction; the intermediate tarsi have long sexual hairs on the two basal joints, and a slight tendency to a similar development on the third joint. The females have a very fine and obsolete sexual sculpture on the wing cases, consisting of very fine punctuation and some very short indistinct scratches along the middle towards the base.

* Reference should also be made to *Cybister æneus*, Orm. (No. 1274 huj. op.)? No. 1104 var.; South America.

The species varies much in size and minute details, but I can see no signs of specific distinction. It cannot be mistaken for any other.

Chili. 1100.

1104. *Cybister glaucus*, Brullé, *Trogus glaucus*, M.C.—Ovalis, subdepressus, anterius angustatus, nitidus, lævigatus, supra olivaceus, capite anterius parum argute testaceo, thorace elytrisque lateribus plus minusve vage ferrugineo-tinctis; subtus vel piceus vel nigricans, pedibus quatuor anterioribus rufis, posterioribus vel ferrugineis vel nigris; femoribus posterioribus angulo externo minutissime acuto vel recto. Long. 28, lat. 16 m.m.

The male front tarsi are small, attaining only 2 m.m. in the transverse direction; the intermediate tarsi have elongate sexual hairs on the basal joint, and also a few on the extreme base of the following joint. The female appears to be quite without sexual developments, but under a powerful lens traces of a rudimentary sexual sculpture may generally be found, consisting of a very fine punctuation, more or less mixed with excessively fine scratches, along the middle of the wing-cases near the base.

This species also appears to be a variable one; there may be roughly said to be two forms, one in which the colour of the upper and under surface and the hind legs are tinted with ferruginous, and another in which the colour is nearly black with olive reflections; the former of the two forms generally has the apical angle of the femora more acute, and the females have the sexual sculpture more obsolete than in the other variety; but these characters are variable and indicate no specific distinction.

South America; especially in the south-east; Buenos Ayres, Monte Video; Bolivia (*vide* Mus. Castle-nau). 1101.

GROUP 2.

1105. *Dytiscus latus*, Fab., *Trogus lotus*, M.C.—Ovalis, crassus, sat convexus, sæpe ad basin elytrorum subsulcatus, olivaceus, capite anterius vage ferrugineo; subtus niger, prosterno in medio olivaceo; pedibus quatuor anterioribus rufo-obscuris, posterioribus piceis: antennis parum gracilibus. Long. 22, lat. 13 m.m.

The male has the front tarsi quite small, attaining only 1½ m.m. in the transverse direction, their fringing hairs at the heel are short and placed very near the palettes so that there is no pubescent area; the intermediate tarsi have a narrow line of quite short sexual pubescence along the underside of the basal joint, and there may be traces of a similar line on the following joint; the inner claw on the hind feet is much smaller and shorter than the outer one. The female has a sexual sculpture

on the wing-cases, consisting of more or less coarse punctures which are scarcely elongated, they vary in the extent of their distribution, sometimes extending along half the length of the elytra, but are always widely separated from the outer margin, and only approach the suture at the base; the rudimentary claw of the posterior tarsi is not much developed and is only to be seen on the underside of the other claw.

The species is a variable one in size and colour, and in form is most inconstant, being sometimes greatly narrowed in front, sometimes not at all; it possesses a scattered fine punctuation on the wing-cases, which also is variable; the sides of the thorax are often vaguely ferruginous, but never distinctly yellow.

It may always be distinguished from the following species by the male front tarsi and hind claws, by the shorter and less slender antennæ and by the deflexed lacinie of the hind coxæ being nearer to the epipleuræ, the female moreover has its sexual sculpture tending to spread less towards the outer margin of the wing-cases.

South America, (Buenos Ayres, Monte Video, Uruguay, Entre Rios, Parana). 1102.

GROUP 3.

1106. *Dytiscus lævigatus*, Ol., *Trogus lævigatus*, *M.C.*—Ovalis, sat latus et convexus, supra olivaceo-niger, capite anterieus prothoraceque ad latera anguste testaceis, elytris versus apicem plus minusve vage ferrugineo-tinctis vel submaculatis; subtus nigricans, pedibus quatuor anterioribus rufis, posterioribus piceis; antennis gracilibus. Long. $21\frac{1}{2}$, lat. $12\frac{1}{2}$ m.m.

The male has the anterior tarsi small, attaining 2 m.m. in the transverse direction, their claws are only moderately elongate, and are therefore not conspicuously unequal in length; on the undersurface the palettes are rather narrow, the basal fringing hairs are rather fine and moderately short, and at the heel diverge much from the palettes, so that a distinct pubescent area is formed; the intermediate tarsi are rather slender, and the three basal joints bear beneath an elongate sexual pubescence, and on the fourth joint there is a less conspicuous development of such pubescence. The female has usually a distinct though not extensive sexual sculpture on the base of the elytra; this sculpture consists of elongate punctures, which at the extreme base extend from the scutellum to quite near the lateral margin, they do not extend, however, more than one-third of the way to the apex, diverge greatly from the suture as they proceed, and also to a less extent from the lateral margin. On the hind tarsi of the male the inner claw is quite as long as, or even longer than, the outer one, while in the female this inner claw remains rudimentary, and is only to be perceived by examining the undersurface of the other claw, to which this rudimentary one remains closely applied.

This species is variable, but it is possible that some of what I have considered

varieties may prove to be good species ; the sexual characters of male and female distinguish it amply from the following ones.

In Mexico the females appear to be usually nearly or quite destitute of sexual sculpture.

South America to Mexico ; Bahia (Castlenau) ; Santa Cruz, 10 to 17, 10, 1872, Van Volxem ; Panama, Chontales, Mexico. 1103.

1107. *Megadytes fraternus*, n. sp.—Ovalis, sat latus et convexus, anterieus angustatus, capite anterieus prothoraceque ad latera anguste testaceis, elytris versus apicem obsolete ferrugineo-maculatis, subtus nigricans pedibus quatuor anterieis rufis, tarsis intermediis picescentibus, pedibus posterioribus nigro-piceis ; antennis gracilioribus. Long. $22\frac{1}{2}$, lat. 13 m.m.

The front tarsi of the male are large, attaining nearly 3 m.m. in the transverse direction, their claws are elongate, the front one being conspicuously longer than the other ; on the undersurface the palettes are broad, the basal fringing hairs are stout and elongate, and at the heel diverge distinctly but not greatly from the palettes ; the pubescent area has a great extension in the transverse in comparison with the longitudinal direction. The intermediate tarsi bear elongate sexual pubescence on the three basal joints. The female has the thorax more dull than the male, and the elytra show a highly developed and beautiful sexual sculpture, consisting of very short but regular rectilinear impressions covering the whole surface, except on a quite small space at the apex.

This species is variable, or rather perhaps will prove to be one of several closely allied species ; what I have decided to treat as varieties being in that case really distinct species.

In Guadeloupe and St. Domingo the sculpture in the females does not reach quite to the lateral margin. In Surinam and Demerara a very large variety occurs, with the male tarsi very highly developed. The type above described by me is from Panama ; and in the more southern parts of South America the sexual characters appear to be not quite so highly developed.

Panama ; Guatemala (Ducnas, G. C. Champion), Guadeloupe, St. Domingo, Demerara. 1104.

1108. *Megadytes steinheili*, Wehneke (*ex parte*) Stet. Ent. Zeit. xxxvii, p. 359.—Ovalis, latiusculus, anterieus minus angustatus, capite anterieus prothoraceque ad latera anguste testaceis, elytris versus apicem obsolete ferrugineo-maculatis ; subtus nigricans, pedibus quatuor anterieis rufis, tarsis intermediis picescentibus, pedibus posterioribus nigro-piceis ; antennis gracilioribus. Long. 23, lat. $13\frac{1}{2}$ m.m.

This species is very closely allied to *M. fraternus*, but is broader in front, and the sexual characters are even more highly developed, and the shape of the male tarsi

is a little different, owing to the heel being very little prolonged (*i.e.*, the basal fringing hairs diverging but little from the palettes near the articulation with the tibia) they are nearly elliptical in form; they attain about $3\frac{1}{2}$ m.m. in the transverse direction. In the female the thorax is very dull, and the sexual sculpture is deep and close, and as in the preceding species covers the greater part of the elytra.

Wehneke's description of the female must have been made from another species, as he states the elytra to be free from sexual sculpture.

South America (Medellin, Columbia; Steinheil). 1105.

1109. *Megadytes flohri*, n. sp.—Ovalis, sat latus et convexus, supra nigricans, capite anterius, prothorace anterius elytrorumque lateribus rufescentibus; subtus picus, pedibus rufis, femoribus posterioribus picescentibus; antennis gracilioribus. Long. 22, lat. 12 m.m.

The front tarsi of the male are small, being 2 m.m. in the transverse direction, the basal fringing hairs are rather short and elongate, and at the heel diverge a little but not greatly from the palettes. The intermediate tarsi bear elongate sexual pubescence on their three basal joints. The female has no trace of any sexual sculpture.

This species has the male tarsi as small as in *Dytiscus lævigatus* (No. 1106) but their structure beneath is more like that of *M. fraternus* (No. 1107): from both these allies it departs by the rufescent outer margin of the wing-cases; this red colour extends to and includes the epipleuræ. I have seen only a single pair and they are rather immature.

Mexico, (found by Mr. Flohr.) 1126.

GROUP 4.

1110. *Cybister puncticollis*, Aubé, *Trogus puncticollis*, M.C.—Ovalis, parum latus, nigricans, nitidus, capite anterius prothoraceque ad latera testaceis, elytris vitta intramarginali versus apicem parum arguta testacea; pedibus quatuor anterioribus rufis; pedibus posterioribus picis, femoribus fere nigris, angulo externo tibiisque plaga superiori rufescentibus, calcaris superiori simpliciter acuminato; elytrorum epipleuris sat latis. Long 29, lat. $16\frac{1}{2}$ m.m.

I have not seen the male of this species; the female seems at first sight to be destitute of sexual sculpture, but on careful examination there is seen on the basal portion of the elytra a rudimentary sculpture of short irregular scratches, mixed with a very fine punctuation; on the thorax there is an extremely fine close

punctuation near the sides, and there are also a few fine punctures scattered over its surface; the internal claw of the hind feet remains rudimentary and can only be seen at the base and underside of the larger claw.

The only two specimens I have seen of this species, I obtained from Castlenau's collection; one of them which is rather larger and broader than the other, was standing side by side with a male of another species, labelled "Cybister fallax, Aubé, dubius Lucz. Cayenn.;" the other was standing alone labelled "Cybister puncticollis, Brullé, Bø. Ayres," while on the pin was a label, "Bresil, Col. Dejean" I am not at all sure that this is really Brullé's *C. puncticollis* which was found on the River San Miguel, centre of Bolivia.

South America, (? Buenos Ayres; ? Cayenne). 1106.

GROUP 5.

1111. *Cybister fallax*, Aubé, *Trogus fallax*, *M.C.*—Ovalis, parum latus, convexus, nitidus, supra olivaceo-niger, capite antierius prothoraceque ad latera testaceis, elytris vitta intramarginali posterius lata sed parum arguta, testacea; subtus niger pedibus quatuor anterioribus rufis, pedibus posterioribus picescentibus; elytrorum epipleuris parum latis. Long. 27, lat. 15½ m.m.

I have not seen any male of this species, the female has no trace of any sexual sculpture.

The species is readily distinguished from others of this group, by its smaller size and narrower form; the yellow band on the elytra is broad, at the shoulder it quite touches the lateral margin, after that is distinctly separated from it, behind the anterior two-thirds of its length it becomes broader and again reaches the margin, though in a somewhat vague manner, just before the extremity it is dilated by joining an agglomeration of small ferruginous dots, and terminates as a point at the suture.

I have seen only two individuals of this species, one of them, from Dejean's collection, was there labelled "Trochalus fallax mihi, h. in Cayenne, D. Lacordaire": the other was in Edwin Brown's collection and labelled in his handwriting "Cybister flavocinetus, Chev., Mexico." The determination being wrong it is probable that the locality also of this latter specimen may be erroneous.

Cayenne; ? Mexico. 1107.

1112. *Megadytes obesus*, n. sp.—Ovalis, latus, parum elongatus, convexus, supra olivaceo-niger, capite antierius prothoraceque lateribus testaceis, elytris vitta intramarginali ante apicem evanescente testacea; subtus niger, pedibus quatuor

anterioribus rufis, tarsis intermediis piceis, pedibus posterioribus nigricantibus; elytrorum epipleuris versus apicem parum latioribus. Long. 30, lat. 18 m.m.

In the male the front tarsi are small, attaining about $2\frac{1}{2}$ m.m. in the transverse direction, their claws are rather short; the middle feet have elongate sexual pubescence on the three basal joints, their claws are of moderate size and simply curved, the inner one being a good deal shorter than the outer. The female I have not seen.

The species much resembles *Cybister costalis* (No. 1116), but is smaller and narrower, and the male anterior tarsi are smaller, and the claws of the intermediate feet much less developed, and the epipleuræ of the elytra are much narrower. It is smaller than *C. robustus*, and has the epipleuræ narrower.

Panama. 1108.

1113. *Cybister robustus*, Aubé, *Trogus robustus*, M.C.—Ovalis, latus, antierius angustatus, sat convexus, nigricans, capite antierius prothoraceque ad latera testaceis, elytris vitta intramarginali, ad apicem lata sed parum determinata, testacea; pedibus quatuor anterioribus rufis, tarsis intermediis piceis; pedibus posterioribus piceis, tibiis superne rufescentibus, femoribus nigris; elytrorum epipleuris sat latis. Long. 35, lat. 20 m.m.

I have seen only one male of this species; the sexual characters of that sex seem to be the same as in *M. obesus*, the front tarsi being scarcely $2\frac{1}{2}$ m.m. in the transverse direction.

South America. (Buenos Ayres, fide Castlenau). 1109.

1114. *Megadytes perplexus*, n. sp. —Ovalis, latus, antierius angustatus, convexus, supra olivaceo-niger, capite antierius prothoraceque ad latera testaceis, elytris vitta intramarginali ad apicem obsoletescente testacea; subtus niger, pedibus quatuor anterioribus rufis, tarsis intermediis piceis; pedibus posterioribus piceis, tibiis superne rufescentibus, femoribus nigris; elytris ad apicem punctis impressis conspicuis, epipleuris parum latis. Long. 35, lat. 20 m.m.

The characters of the male are the same as in *Cybister robustus*; the species must indeed be very closely allied to *C. robustus*, but the only individual before me I cannot reconcile therewith; it differs somewhat in colour and form, and has the epipleuræ decidedly narrower throughout its whole length. It is perhaps still closer to *M. obesus*, but is considerably larger: in both these species the impressed punctures on the apex of the elytra are much more conspicuous than in the allied species.

The only individual I have seen of this species existed in Edwin Brown's collection, without any indication of locality.

South America? 1110.

1115. *Megadytes gravidus*, n. sp.—Ovalis, latus, antèrius angustatus, sat convexus, supra olivaceo-niger, capite antèrius prothoraceque ad latera testaceis, elytris vitta intramarginali obsoletissima, fere tantum ad basin distinguenda; subtus niger, pedibus quatuor anterioribus rufis, tarsis intermediis piceis; pedibus posterioribus piceis, tibiis superne rufescentibus, femoribus nigris; elytrorum epipleuris sat latis. Long. 33, lat. 19½ m.m.

I am acquainted only with the female of this species, which shows no trace of any sexual sculpture.

The species is probably very closely allied to those preceding, especially to *C. robustus*, but the very obsolete lateral band of the elytra if constant, will render it easily distinguishable.

Brazil. (Santa Cruz, Van Volxem). 1111.

1116. *Cybister costalis*, Aubé, *Trogus costalis*, M. C. —Ovalis, latus, supra olivaceo-niger, capite antèrius prothoraceque ad latera testaceis, elytris lateribus antè apicem sub-explanatis, vitta intramarginali, posteriori lata sed parum determinata, testacea; subtus niger, epipleuris latoribus, pedibus anterioribus rufis, femoribus in medio nigricantibus, intermediis piceis, femoribus rufescentibus medio nigricantibus, posterioribus nigro-piceis, tibiis superne plus minusve rufescentibus. Long. 31, lat. 19 m.m.

The male has the front tarsi moderately large attaining 3 m. m. in the transverse direction; the intermediate feet have the three basal joints furnished with elongate sexual pubescence, and their claws elongate and unequal, the outer one being conspicuously thickened, and its under edge nearly straight.

The female has a highly developed sexual sculpture, the thorax being entirely covered with deep irregular scratches, and the elytra bearing similar scratches on the greater part of the surface, the sutural portion, however, remains smooth except at the base, and the explanate lateral portion is also smooth.

In the *Stet. Ent. Zeit.* 1847, p. 52, will be found a long discussion on Fabricius' species of this name; the discussion being based on an examination of the Fabrician types in the collections at Kiel and Copenhagen; the conclusion arrived at is that *Dytiscus costalis*, Fab., is not *Cybister costalis*, Aubé. Schaum's discussion, however, was imperfect, inasmuch as he seems to have been unaware that the earliest description of *Dytiscus costalis* is contained in the *Systema Entomologiæ*, p. 230. (1775), not in *Ent. Syst.* I, p. 187, which dates only from 1792. If reference be made to the earlier description, it will be found that it agrees sufficiently with Aubé's *Cybister costalis* to have justified Aubé in citing it. On the other hand, it would be improper to assign the name *Dytiscus costalis*, Fab., to *Cybister dejeani*, Aubé, as is suggested by Schaum on the authority of the type, for Fabricius says, "habitat Surinami, D. Yeats," while *C. dejeani* is found only in the East Indies.

The simple course seems to be to use the name *Cybister costalis*, Aubé, for Aubé's species; this does not prevent those who are fond of archæological nomenclature citing “? *Dytiscus costalis*, Fab.,” in addition if they desire so to do.

South America, (Cayenne, Guyana, Demerara) (? Antilles ? United States of North America). 1112.

GROUP 6.

1117. *Cybister giganteus*, Cast., *Trogus giganteus*, M.C.—Major, ovalis, sat convexus, nitidus, nigricans, capite anteriori prothoraceque lateribus testaceis, elytris vitta intramarginali posteriori obsoleteseente testacea; pedibus quatuor anterioribus pieco-rufis, femoribus versus basin magis nigricantibus; posterioribus fere nigris Long. 41, lat. 23 m.m.

In the male the anterior tarsi are small, (for the size of the species) attaining from $2\frac{1}{2}$ to 3 m.m. in the transverse direction, their claws are short; beneath the palettes are narrow, the pubescent area is large, and the basal fringing hairs are very little developed; on the middle feet there is a narrow line of sexual pubescence on the under side of the basal joint, and the claws are short. The female has no trace of sexual sculpture.

This species varies much in size and form, and also in the width of the marginal yellow band on the elytra, as well in the distinctness of its development near its termination.

I have not been able to find any means of distinguishing the variations with certainty, and cannot point out any character for separating Aubé's *C. L'herminieri* from *C. giganteus*. The smallest individual I have seen measures 36 m.m. by 20 m.m., the largest 41 m.m., by $23\frac{3}{4}$ m.m. I have examined the œdeagus, in all the males I have seen, and find slight variations in its form, but no difference of importance in this respect between the Brazilian *C. giganteus* and the *C. L'herminieri* from Guadeloupe. This organ in this species remains largely in a membranous condition, and does not exhibit the fine and perfect structure seen in *D. limbatus* (No. 1157), and its allies. Two individuals from Brazil, however, show so much difference in the form of the lower portion of the œdeagus as to render it probable they will form a distinct species; but as I can see no other character to distinguish them from certain varieties of *C. giganteus*, I do not think it proper to attempt to differentiate the species at present.

Brazil, Central America, Mexico, Guadeloupe, Antigua, Cuba. 1113.

1118. *Megadytes ducalis*, n. sp.—Maximus, ovalis, convexus, nitidus, niger, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali ante apicem evanescente testacea, pedibus quatuor anterioribus pieco-rufis, femoribus versus basin nigricantibus, pedibus posterioribus nigris. Long. $47\frac{1}{2}$ m.m., lat. $26\frac{1}{2}$ m.m., alt. $15\frac{2}{3}$ m.m.

The front tarsi of the male are rather small for the size of the insect, being about $3\frac{1}{2}$ m.m. in the transverse direction; beneath the palettes are narrow, the pubescent area large, and the basal fringing hairs fine and but little developed. On the middle tarsi the basal joint bears beneath a very large patch of elongate, dense sexual hairs, they cover the whole of the joint and greatly overlap the following one.

I have seen only a single individual of this species. It is the giant of the *Dytiscidae*, much exceeding in bulk the largest individuals of *Cybister giganteus*. It is closely allied to that species but is distinguished by its larger size, and the male is also conspicuous by the great development of the sexual pubescence on the basal joint of the intermediate foot. The swimming legs are very powerful, their femora measuring $5\frac{1}{2}$ m.m. across.

Brazil, (coll. Saunders). 1114.

I. 79.—Genus *CYBISTER*.

Coxal lines present; unguicular cleft narrow and angular at base; only a single claw on the hind tarsus in the male sex; (the females also have only a single claw but in some cases a very rudimentary second claw exists).

The numerous species* are widely distributed, but do not occur in South America. They may be arranged in six groups as follows:—

The female has swimming hairs only on the one side of the hind tarsus.	Female with rudimentary second claw on hind tarsus.	Elytra with yellow lateral stripe; male with axillar rugæ. (North American species.)	Group 1. Nos. 1119 to 1121.
		Elytra without yellow lateral stripe; male without axillar rugæ. (Asiatic and African species.)	Group 2. Nos. 1122 to 1134.
The female has swimming hairs on each side of the hind tarsi.	Female without rudimentary second claw on hind tarsus.	Elytra without yellow lateral stripe,	Group 3. Nos. 1135 to 1139.
		Elytra with yellow lateral stripe extending to and including the epipleura.	Group 4. Nos. 1140 to 1151.
		Elytra with yellow lateral stripe, which does not extend to or include the epipleura.	Group 5. Nos. 1152 to 1168.
		The female as well as the male furnished with swimming hairs on each side of the hind tarsi.	Group 6. Nos. 1169 to 1171.

* The descriptions cited in the following list refer probably in part to species unknown to me:—*Cybister auritus*, Gerst. (No. 1275, *huj. op.*)? = No. 1280; Africa.—*Cybister dejeani*, Aubé (No. 1276); India.—*Cybister jordanis*, Reiche, (No. 1279) ? No. 1169 var.; Syria.—*Cybister marginicollis*, Boh. (No. 1280), near No. 1129; Caffraria.—*Cybister olivieri*, Crotch. (No. 1281); North America.—*Cybister vulneratus*, Klug. (No. 1283) ? No. 1133 var.; Arabia.—*Dytiscus extenuans*, Walk. (No. 1289); Ceylon.—*Dytiscus tataricus*, Gebl. (No. 1295) ? = No. 1169; Tartary.—*Trochalus rugulosus*, Redt. (No. 1509) ? near No. 1167; India.—*Trogus natalensis*, Wehncke (No. 1510) ? near No. 1148; Natal.—The systematic position of the following is not quite clear:—*Cybister prosterno-viridis*, Orm. (No. 1282); ? South America.

GROUP 1.

1119. *Dytiscus fimbriolatus*, Say, *Trogus fimbriolatus*, M.C.—Ovalis, supra niger, subolivaceus, capite anteriori prothoraceque lateribus testaceis, elytris vitta laterali posteriori obsolete testacea; corpore subtus piceo, abdominis lateribus flavo-maculatis, antennis pedibusque anterioribus rufis, pedibus posterioribus tarsisque intermediis piceis. Long. $28\frac{1}{2}$, lat. 16 m.m.

The male has a narrow excessively obscure band of extremely short sexual pubescence, on the undersurface of the basal joint of the intermediate tarsus; and the hind coxa has at the apex just in front of the articulation three or four coarse plicæ. The female is without these folds; but has a well marked sexual sculpture on the upper surface, there are always some fine scratches on each side of the back of the head, and the thorax has numerous irregular scratches, while the elytra are generally covered with longitudinal scratches, anastomosing here and there, and leaving only a small space at the apex, and a band along the suture smooth: the epipleuræ, just behind the shoulder, are broader than in the male, and are flattened, and obliquely perpendicular, instead of being rounded, and transverse in direction, as they are in the male.

The species appears to be very variable, and it is quite possible that there will prove to be more than one distinct form mixed under its name; the yellow band on the side of the elytra is rather narrow, and at the apex is indefinite, indeed on the hinder half of the wing-case a line of darker colour separates the yellow line from occupying the outer margin, this darker band is not often very definite; at the apex at a distance from the suture there are some yellow maculæ, which when more than usually distinct give to the yellow marginal band the appearance of being dilated there. In a variety from Texas, the lateral band of the elytra is broader, and reaches in a definite manner to the suture, where however it is thinned out to a point. The sexual sculpture of the female also varies much; the scratches on the head are always present, and sometimes the scratches on the thorax and elytra are coarse and close, while in certain individuals they become finer, shorter and more isolated, and at the same time occupy a less area on the wing-cases, their disappearance being from the apical and sutural portions. The supplementary obsolete claw of the female hind tarsi also varies in its development, being sometimes so small as to be not very easily detected, while in other cases it is longer, more detached, and more conspicuous, it appears to be most largely developed in those cases where the terminal joint of the tarsus is shortest and thickest.

Besides these points of variation, considerable difference is also found in size and colour, and even in the extent of the development of the sexual pubescence on the intermediate tarsi of the male, the band on the basal joint being sometimes larger,

and when this is the case the following joint or two also show the rudiments of similar pubescent bands.

North America, and Mexico ; (Pennsylvania, Louisiana, Kansas, Georgia, sec. Crotch). 1050.

1120. *Cybister ellipticus*, Lec., *Trogus ellipticus*, M.C.—Oblongo-ovalis, parum latus, supra viridi-olivaceus, capite anteriori prothoraceque lateribus testaceis, elytris margine laterali testaceo lato, vix ad apicem attenuato ; corpore subtus rufo-piceo, antennis pedibusque anterioribus testaceis. Long. 28, lat. $14\frac{1}{2}$ m.m.

This species seems very closely allied to *Dytiscus fimbriolatus*, and shows in each of its sexes almost the same sexual characters as does that species ; it is however of narrower and more parallel form, and is different in colour, the undersurface being more dilute, and the upper surface green, while the yellow band on the elytra is very broad and distinct, and is continued at the apex to the suture ; at about the middle of the wing-case the breadth of the yellow vitta is $2\frac{3}{4}$ m.m. being just about one-half of the width of the green ground colour.

North America, (California). 1051.

1121. *Cybister flavocinctus*, Aubé, *Trogus flavocinctus*, M.C.—Ovalis, sat latus, posterius parum dilatatus, supra olivaceo-niger, capite anteriori prothoracisque lateribus testaceis, elytris vitta laterali etiam versus apicem argute determinata testacea ; corpore subtus piceo, abdominis lateribus flavo-maculatis, antennis pedibusque anterioribus rufis, tarsis intermediis pedibusque posterioribus piceis. Long. 29 m.m., lat. 15 m.m.

This species is excessively close to some of the varieties of *Dytiscus fimbriolatus* (No. 1119) ; the form however is more parallel in outline, and the yellow band of the sides of the elytra is more definite and distinct in its terminal portion, at the apex it reaches nearly or quite to the suture being however thinned out to a point at its termination. The male characters seem to be almost the same as in *Dytiscus fimbriolatus*, but the sexual distinctions in the female are less, the head behind the eyes and the sides of the thorax bear fine scratches, but the elytra appear quite smooth, on careful examination however there are found a few very fine short scratches placed on the basal portion of the yellow lateral band ; the sexual flattening and obliquity of the epipleuræ is also less than in *Dytiscus fimbriolatus*.

Mexico, (Corafalce, Madame Sallé) ; Texas (coll. Castlenau sub nom. C. pilati, Dup.) 1052.

GROUP 2.

1122. *Cybister sugillatus*, Er., *Trogus bisignatus*, M.C.—Ovalis, parum latus, supra olivaceo-niger, prothoracis lateribus plus minusve obsolete rufescentibus, subtus niger, pedibus nigris, plus minusve rufo-variis, tibiis posterioribus superne versus geniculam plus minusve rufescentibus; antennis rufis, extrorsum fusciscentibus. Long. 22, lat. 12 m.m.

In the male of this species the front tarsi are comparatively small, and the pubescent area on the undersurface of the basal joint is quite small; the longitudinal band of sexual pubescence on the undersurface of the basal joint of the middle tarsi is so little developed that it easily escapes detection, and consists only of a few short pale setæ. The female has no sexual sculpture; the obsolete supplementary claw of its hind foot is easily detected.

The species varies a good deal in size and in other respects; it is sometimes peculiarly dull and its upper surface has then a greasy appearance, at other times it is comparatively shining, and may even have a faint metallic tinge. The reddish colour at the sides of the thorax can be sometimes scarcely perceived while at other times it is very distinct; there is often a dark red spot near the extremity of each wing case, but sometimes it is quite absent: the colour of the legs also varies a little: the intermediate and anterior femora are nearly black, but are reddish towards their apex, and their trochanters are also red: there is a more or less obscure reddish spot on each side of the basal abdominal segments. *Cybister notasicus*, Aubé, and *C. olivaceus*, Boh., are pretty certainly merely synonyms of this species, which is usually known in collections under the name of *C. bisignatus*, Aubé.

China, Thibet, India, Malacca, Philippine Islands, Sumatra. 1053.

1123. *Cybister* (*Trogus*) *nigripes*, Wehneke, Stet. Ent. Zeit. XXXVII, p. 358.—Ovalis, sat latus, parum convexus, niger, elytris posterius subtiliter transversim corrugatis, epipleuris posterius sat latis et planatis. Long. 21, lat. 12 m.m.

I have seen but a single individual of this species, and it is in such very bad condition that I cannot exactly determine its characters; it differs from *C. sugillatus*, by its much broader form, by the corrugate elytra and broader epipleuræ; from *C. siamensis* it differs by its much smaller size and shorter form; it has probably the same sexual characters as the two species alluded to, and it is probable that the black colour of the legs is due to this being dyed by the complete rotting of the interior of the specimen.

Borneo. 1069.

1124. *Cybister siamensis*, n. sp.—Ovalis, latus, anterior angustatus, niger, pedibus anterioribus et intermediis rufo-variis, antennis rufis extrorsum fusciscenti-

bus, clytris subtiliter transversim corrugatis, tuberculisque omnium minutissimis elevatis. Long. 25, lat. 14 m.m.

This species is very closely allied to *C. sugillatus*, but is much larger and broader, and has the surface of the clytra more rugose, and the epipleuræ in their posterior portion broader and flatter. The sexual characters are quite the same, the male tarsi being proportionately as small as in *C. sugillatus*.

Siam, (Bangkok and Chantaboun), Andaman Islands. 1054.

1125. *Cybister prolixus*, n. sp.—Ovalis, elongatus, angustulus, supra olivaceo-niger, subtus niger, pedibus anterioribus et intermediis rufo-variis, antennis rufis. Long. 24, lat. 12 m.m.

This species of which I have seen only a single individual is extremely closely allied to *C. sugillatus*, but is more elongate, and has the male front tarsi larger, the breadth of their third joint being about 2 m.m., while in *C. sugillatus* it is only about $1\frac{1}{2}$ m.m.

Ceylon. 1055.

1126. *Cybister convexus*, n. sp.—Ovalis, sat latus, anterius parum angustatus, convexus, supra olivaceo-niger, marginibus magis viridibus, subtus niger, antennis rufis extrorsum fusciscentibus. Long. 29, lat. 16 m.m.

This species is much larger than *Cybister sugillatus*, and of a different form, being less narrowed in front, and so more regularly elliptical; the front and middle legs seem to be more nearly black in colour. The male front tarsi are slightly more developed than in *C. sugillatus*, and have the pubescent area at the base of the undersurface distinctly larger; the intermediate tarsi are wanting in the only individual I have seen. It also a good deal resembles the African *C. binotatus* (No. 1133), and is about the same size as the largest individuals thereof, but is much more convex in form, and the male anterior tarsi are much smaller; it is probable that the species will prove intermediate between the Asiatic *Cybister sugillatus* with its allies, and the African *C. binotatus*.

East India. 1056.

1127. *Cybister posticus*, Aubé, *Trogus posticus*, *M. C.*—Ovalis, latus, anterius conspicue angustatus, supra parum convexus, nigro-olivaceus, pedibus anterioribus et intermediis nigricantibus rufo-variis; antennis rufis. Long. 30, lat. 16 m.m.

I have seen of this species only a single individual; it is the male from Dejean's collection which served Aubé for his description. It is closely allied to *C. sugillatus* but is much larger and broader, the male front tarsi are larger, the pubescent area at their base beneath being moderately large; the line of sexual

pubescence on the basal joint of the intermediate tarsi is also less obsolete. From *C. siamensis*, it differs by its smoother surface, and by the larger male tarsi ; while from *C. convexus*, it differs by its comparatively broader form which is more narrowed in front, and by its upper surface being less convex in the transverse direction, and by the male tarsi being rather larger.

East India. 1057.

1128. *Cybister brevis*, Aubé, *Trogus brevis*, *M.C.*—Ovalis, latus, antèrius angustatus, supra olivaceo-niger, clypeo antèrius vage irregulariter testaceo, subtus niger, antennis rufis extrorsum fuscis, pedibus nigris rufo-variis ; capite crebre et fortiter, thorace sparsim subtilius, punctato. Long. 22, lat. 12½ m.m.

The front tarsi of the male are rather small, and the band of sexual pubescence on the basal joint of the intermediate tarsus is only very slightly developed ; the female shows no peculiar sexual sculpture.

The peculiar punctuation of the head renders this species unmistakable ; except for that character it is allied to *C. siamensis*, but it is smaller, has the elytra smoother, and their epipleuræ not so broad and flat in their posterior portion. The yellow mark on the front of the clypeus consists of an angular mark on each side, the two being connected together by a very short middle portion.

Japan. 1058.

1129. *Cybister filicornis*, n. sp.—Parvus, ovalis, latiusculus, antèrius fortiter angustatus, supra parum convexus, niger, clypeo antèrius prothoracisque lateribus testaceis, pedibus anterioribus et intermediis rufis, femoribus basin versus fuscis ; pedibus posterioribus piceis ; antennis rufis, extrorsum fuscis, elytrorum epipleuris versus apicem latis, et planatis. Long. 17½, lat. 10 m.m.

The anterior tarsi of the male are small, and the basal joint shows beneath a shining space instead of the usual pubescent area ; the basal joint of the intermediate tarsus shows beneath a linear band of short sexual pubescence, and there is a very slight development of similar pubescence at the extreme base of the second joint : the female has no sexual sculpture.

This peculiar little species bears a great resemblance to small specimens of the American *Dytiscus lævigatus* (No. 1106), but the male has only one claw on the hind tarsus, and the female has no trace of sexual sculpture : it cannot be mistaken for any other.

According to the few specimens before me it varies somewhat in size and colour ; a variety from Portuguese Guinea, is smaller than the specimens from the Gaboon, has the upper surface more olivaceous, and the yellow band on the sides of the thorax broader.

I expect from Boheman's description of *Cybister marginicollis* (Ins. Caff. I. p. 235) that it is an insect allied to this species, possibly actually this species, although some of the details he mentions seem scarcely applicable.

West Africa, (Gaboon, Isubu, Portuguese Guinea). 1059.

1130. *Cybister irritans*, Dohrn, Stet. Ent. Zeit. XXXVI, p. 290.—Ovalis, sat latus, anterieus angustatus, niger, antennis pedibusque anterioribus et intermediis rufis, his femoribus late nigricantibus, pedibus posterioribus piceis; epipleuris elytrorum ultra medium latis et planatis. Long. $20\frac{1}{2}$, lat. 12 m.m.

In the male of this species the anterior tarsi are rather small, and the pubescent area of the basal joint is but slightly developed; the basal joint of the intermediate tarsus bears beneath a patch of long hairs, the patch being in form an elongate narrow triangle, and the second joint has also a large development of similar hairs; the female has no sexual sculpture.

Western tropical Africa, (Guinea, Monrovia). 1060.

1131. *Cybister deplanatus*. n. sp.—Ovalis, latus, anterieus angustatus, supra parum convexus, olivaceo-niger, pedibus anterioribus et intermediis nigris, rufo-variis, posterioribus piceis, antennis rufis; epipleuris elytrorum ultra medium latis et planatis. Long. 24, lat. $13\frac{1}{2}$ m.m.

This species differs from *C. irritans*, by its larger size and broader form, and by the rather greater development of the male anterior tarsi, the dilated joints of which have a greater development in the transverse direction.

Western tropical Africa, (Cameroons, Cape Coast Castle). 1061.

1132. *Cybister operosus* (Dej.) n. sp.—Ovalis; latus, sat convexus, supra olivaceo-niger, nitidus, pedibus anterioribus et intermediis nigris, rufo-variis, posterioribus nigris, antennis rufis; epipleuris elytrorum ultra medium latis et planatis. Long. 31, lat. $17\frac{1}{2}$ m.m.

This species differs from *C. deplanatus*, by its larger size, and the greater development of the male front tarsi; these are moderately large, and have a distinct though not large basal area of pubescence beneath: the middle tarsi have a rather large, moderately broad patch of long sexual hairs on the basal joint, and a smaller patch on the following joint. The female has no sexual sculpture.

The fine scattered punctures which are seen on the upper surface of the two preceding species are scarcely to be detected in the present one.

Madagascar. 1062.

1133. *Cybister binotatus*, Klug, *Trogus binotatus* M.C.—Ovalis, parum latus, convexus, supra olivaceo-niger, prothoracis lateribus plus minusve obsolete rufescentibus, elytris versus apicem sæpius rufo-notatis, subtus niger, pedibus nigricantibus, anterioribus et intermediis plus minusve rufo-variis, antennis rufis, extrorsum parum fusciscentibus: epipleuris angustis. Long. 28, lat. 15 m.m.

The male in this species has the front tarsi rather large in the transverse direction, but the pubescent area beneath remains small; the intermediate tarsi have on the basal joint a rather large patch of rather short hair, this patch has the form of a narrow triangle; there may sometimes be a very slight development of sexual hairs also on the following joint. The female has always some sexual sculpture on the elytra, though sometimes it is excessively scanty, while sometimes there is even a highly developed sculpture on the thorax, and in the most extreme cases also on the head.

The species is a very variable one, and four forms may be distinguished as regards the female sex, although the corresponding males can scarcely or not at all be separated from one another. First there is the African form; the female of this has some short, isolated scratches on the middle of the elytra in their basal portion, these are variable in their number and extent, and in the most advanced cases they extend from the scutellum to the shoulder and one half of the length of the elytra, the sutural portion of the elytra remaining smooth however through nearly its whole length; in these extreme cases there are even a few fine scratches on the basal portion of the thorax.

The second form of the female is found in Madagascar, and is the *Cybister madagascariensis* of Aubé; in this the sexual sculpture is usually greater, and extends more on the anterior part of the insect, the scratches on the elytra are in the least sculptured specimens very few, but they are then placed more on the basal and humeral portion of the elytra, than in the corresponding slightly sculptured individuals of the first form, and there are always fine scratches on the sides of the thorax and one or two behind the eye; in the most advanced cases of this Madagascar form, the scratches become a good deal deeper and more numerous, and extend over a similar area to what they do in the first form, the thorax becomes nearly covered with short scratches, and those about the eyes though always fine, are more numerous.

The third form of the female is that found in Mauritius, (*Cybister desjardinsii*, Aubé), the sexual sculpture seems to be here always (to judge from the few individuals I have seen) highly developed, and extends over two-thirds or three-fourths of the whole area, the sutural portion being much less free from scratches than in the first two forms: the thoracic sculpture is highly developed and beautiful, and quite covers the surface; on the head there are scratches all along the occiput, and even the central area of the head bears fine scratches.

The fourth form of the female is that found in Arabia; the sculpture of the wing

cases is more definitely limited in its area than in the preceding form, the sutural portion being quite smooth except on the basal one-fourth or one-fifth, and there is also a much larger apical portion free from sculpture; the thoracic sculpture is the same as in the Mauritian form, but that on the head is but slight, there being only some scratches in the neighbourhood of the eyes. In this therefore the chief difference from the Mauritian form is that the sculpture is more concentrated on the middle portions of the body: it is possible that this is the insect Klug described as *Cybister vulneratus*.

The males of these forms can scarcely be distinguished *inter se*. The Madagascar individuals are usually rather broader than the African ones, while the Mauritian examples are rather broader and shorter, and the Arabian individuals are rather narrower, and approach nearer to a truly elliptical form than do any of the others.

The species varies a good deal in size and colour, independently of the local variations, and the size of the patch of sexual hairs on the male middle tarsus likewise varies somewhat: as does also the supplementary obsolete claw of the female hind tarsus; I have indeed an individual of this sex from Lake Nyassa in which no trace of this claw can be detected.

The species is widely distributed in Africa; in the North it reaches to the coasts of the South of Europe, but is there very rare, while in the South it extends to Lake Nyassa; it is also found in Madagascar, Mauritius, and Arabia (Hedjaz, Dr. C. Millingen). 1063.

1134. *Cybister insignis*, n. sp.—Ovalis, antierius angustatus, nigricans, prothorace ad latera vage ferrugineo, pedibus anterioribus et intermediis, (antennisque ?) rufis; pedibus posterioribus piccis, tarsis fere nigris. *Mas*, Long. 26, lat. 13½ m.m. *Fem.*, Long. 26, lat. 12 m.m.

The male of this species has the front tarsi large, attaining 3 m.m. in the transverse direction; the intermediate tarsi, have on the basal joint beneath, a very large and broad patch of short sexual pubescence, and there is also a large patch on the following joint, the claws are elongate and nearly straight, the anterior one being thick, and but little longer than the other. The female has the occiput, the thorax and the elytra covered with deep, coarse scratches; the sculpture on the elytra consists of deep coarse elongate scratches which extend about four-fifths of the length of the elytra, but are represented near the suture by only a few scratches, near the lateral margin there is a kind of plica or fold, and the sculpture is abruptly terminated at this fold, so that within the lateral margin there appears to be, as it were, a smooth groove, which commences in an indefinite manner a little behind the shoulder, gets broader as it goes backwards, and extends as far backwards as the scratches do; the epipleuræ of the elytra are broad, flattened and obliquely perpendicular a little distance behind the shoulder, and the supplementary claw of the

hind tarsus is largely developed in comparison with the allied species. The male is considerably broader than the female, and has the sides of the thorax a little explanate.

Although this species resembles superficially in each sex the Mauritian variety of the preceding species, it is perfectly distinct therefrom; the male has the sexual pubescence of the intermediate tarsi and their claws quite different; and the sculpture of the female though superficially similar is really quite different.

I have seen only a single pair of this remarkable species, the male in the collection of the Genoa Museum, the female in my own. I purchased my specimen from a dealer some years ago, and the Genoa Museum specimen was obtained from the same source; although both specimens are labelled as being from the Gaboon, I suspect an error of locality, and believe they may be from Madagascar; the two individuals are old worn specimens and have been pinned two or three times, this of itself makes an error probable; while the sexual characters are approached only by the Madagascar *C. owas*.

Africa, (Gaboon). 1064.

GROUP 3.

1135. *Cybister owas*, Lap., *Trogus owas*, M.C.—Grandis, ovalis, latus, convexus, supra olivaceo-niger, subtus niger; pedibus nigris, femoribus anterioribus et intermediis basi apiceque, et tibiis anterioribus plus minusve rufescentibus. Long. 36—40 m.m., lat. 20—22 m.m.

The male of this species has the front tarsi very large and highly developed, and attaining as great a length as $4\frac{1}{2}$ m.m. in the transverse direction, the fringing hairs even at the base are highly developed and regular, and the pubescent area is large; on the intermediate feet the basal joint bears a large elliptical patch of very dense short sexual pubescence, and there may occasionally be a very minute patch of similar pubescence on the following joint, the claws are rather elongate and but little curved, the anterior one being a little longer and much thicker than the other.

The female has a highly developed sexual sculpture, the occiput being covered with scratches, which on each side near the eye extend much forward, the thorax is also very much sculptured with scratches, these however become scanty or wanting on the middle, the elytra on their basal portion bear deep elongate scratches, which however scarcely, or very slightly only, anastomose here and there; at the base these scratches reach from the scutellum to the shoulder, they extend rather more than half way of the length of the wing-case, and almost immediately behind the scutellum they begin to diverge from the suture, so that they cover in fact a

large almost triangular area, they do not quite reach to the lateral margin but leave a narrow elongate space there smooth: the epipleuræ behind the shoulders are broad and flattened and obliquely perpendicular.

The species varies a good deal in size and somewhat in the colour of the legs, and often the epipleuræ and metathoracic episterna are more or less rufescent: and occasionally there may be seen in the male as well as in the female, the rudiments of a second claw on the hind tarsus; this claw is of short broad triangular form, and is placed at the extremity of the inner terminal point of the unguicular cleft; in the female of *C. binotatus* this rudimentary claw appears as a slender elongate process placed along the inner margin of the unguicular cleft.

Aubé has described as occurring in Senegal a species closely allied to *C. owas*, and has called it *C. bimaeculatus*; the characters he gives to distinguish the two are quite without importance.

I have a female specimen from Doué's collection, said to be from Algeria, and this differs in no respect from large elongate individuals found in Madagascar. I have also a male individual from Lake Nyassa, which is of decidedly more elongate form than any specimen I have seen from Madagascar, and the patch of sexual pubescence on the intermediate tarsus is only one-half the width of what it is in the Madagascar examples. I consider it, however, only a variety of *C. owas*. In the Munich Catalogue, Harold has proposed the name of *Trogus caffer* for the *Cybister binotatus* of Boh. (nec. Klug), but it is doubtful whether Boheman's description indicates more than a female variety of this species.

Madagascar. 1065.

1136. *Cybister immarginatus*, Aubé.—Gravidus, ovalis, latus, convexus, supra nigro-olivaceus, prothoracis lateribus omnino vage et obsolete rufescentibus, subtus niger, pedibus anterioribus et intermediis piceis femoribus basi apiceque, tibiisque anterioribus sæpius dilutioribus, pedibus posterioribus nigricantibus; antennis rufis. Long. 37, lat. 21 m.m.

The male of this species has the front tarsi rather small, attaining only $2\frac{3}{4}$ —3 m.m. in the transverse direction, the pubescent area is correspondingly small, and the basal fringing hairs are short so as to project but little beyond the basal pubescence. The intermediate tarsi have a rather large patch of moderately short pubescence, the patch is narrowly oval in form, its basal termination being particularly narrow; their claws differ but little from those of the female. The female has no trace of any sexual sculpture, and there is never the least rudiment of a supplementary claw to the hind tarsi.

The species varies a good deal in size and in colour, it is sometimes nearly entirely black; at other times the metathoracic episterna are very rufescent, and other parts of the undersurface also become more or less rufescent; the largest specimens attain the

size of *C. owas*, but the males of the two species may always be very easily distinguished by the difference in the tarsi, and the females by the want of sculpture and the simple epipleuræ.

Dytiscus immarginatus, Fab.—This name first appeared in Ent. Syst. App. p. 444, (1794), that in the Syst. El., quoted in Munich Catalogue, being several years subsequent. The description appears to me to point to *Cybister binotatus*, rather than to this species, to which it has been assigned by Aubé and subsequent authors. I am not aware that any Fabrician authentic example exists to settle this point; and in Dejean's collection the name of *immarginatus* was assigned to the species for which Aubé quoted Fabricius. It will be desirable therefore, it appears to me, to cite Aubé as the authority for the name of the species, and to add to the synonyms “? *Dytiscus immarginatus*, Fab. Ent. Syst. App. p. 444.”

Tropical Africa, (Senegal, Gambia), Caffraria, (Madagascar?). 1006.

1137. *Cybister modestus*, n. sp.—Ovalis, sat latus, parum convexus, supra olivaceus, prothoracis lateribus vage ferrugineis, subtus nigro-piceus, pedibus anterioribus et intermediis piceis, rufo-variis, pedibus posterioribus nigricantibus, antennis rufis; elytrorum epipleuris versus apicem sat latis, planatis. Long. 33, lat. 18 m.m.

In the male of this species the front tarsi are only moderately developed, attaining about $2\frac{1}{2}$ m.m. in the transverse direction, and are very similar to those of *C. immarginatus*, as are also the intermediate feet. The female too is quite without sexual sculpture.

The species is closely allied both to *C. immarginatus* and *C. operosus*; it differs from *C. immarginatus* by its less convex form and smaller size, and by the fact that the epipleuræ in their posterior portion are distinctly a little broader and flatter; from *C. operosus* it differs by a more elongate and less convex form, by its showing on the upper surface less tendency towards explanation of the sides of the elytra near their posterior part, by the male front tarsi being rather larger, and the sexual hairs of the middle feet shorter, and by the entire absence of any rudiment of a supplementary claw on the female hind tarsus.

West Africa, (Cameroons, Isubu, Gaboon.) 1067.

1138. *Cybister distinctus*, Regt., Ann. Soc. Fr. V, VII, p. clvii.—Robustus, ovalis, sat latus, convexus, supra olivaceus, subtus niger, pedibus anterioribus et intermediis femoribus basi apiceque tibiisque anterioribus sæpius dilutioribus, pedibus posterioribus nigris; antennis rufis; elytrorum epipleuris versus apicem sat latis, planatis. Long. 35, lat. $19\frac{1}{2}$ m.m.

The male has the front tarsi rather large, attaining about $3\frac{1}{2}$ m.m. in the transverse direction, and their pubescent area is correspondingly large; on the intermediate tarsi the basal joint has a linear patch of rather short sexual pubescence; the female is without sexual sculpture, or trace of rudimentary claw on the hind tarsus.

This species is excessively similar to *C. immarginatus*, but is comparatively a little narrower in form, the male has the front tarsi better developed, and the sexual pubescence of the intermediate feet much less: the epipleuræ in their terminal portion are broader and flatter, and on the upper surface the elytra have a slight explanation at the lateral margin before the extremity.

The species is much larger and more elongate than *C. operosus*, and the male front tarsi are twice as large, and the intermediate feet with quite different sexual pubescence.

From *C. modestus*, this species is distinguished by its more convex form and rather larger size, the larger front male tarsi, and the narrow patch of sexual pubescence on the intermediate feet, and also by the explanation of the elytra just within the lateral margin in their posterior portion; the species has a very slight tendency to show a metallic lustre on the upper surface.

A female from Damara land in my collection is perhaps a variety, it has a very slight sexual sculpture on the thorax towards the sides, the epipleuræ are slightly broader, and on one of the hind tarsi there is a very slight rudiment of a supplementary claw.

Tropical Africa, (Senegal). 1068.

1139. *Cybister dehaani*, Aubé, *Trogus dehaani*, M.C.—Parvus, ovalis, convexus, supra nigro-olivaceus, subtus niger, antennis pedibusque anterioribus et intermediis rufescentibus, pedibus posterioribus nigro-piceis; elytrorum epipleuris capiteque anterieus plus minusve vage rufescentibus. Long. $13\frac{1}{2}$, lat. $7\frac{1}{2}$ m.m.

In the male of this species the front tarsi are small, and their pubescent area is absent; the basal fringing hairs appear at first sight to be absent, but on careful examination they are seen to exist, although very short, and they are placed not quite at the hind margin, but run across the basal joint just behind the palettes, so that there is behind them a short glabrous space or heel to the tarsus; on the intermediate tarsus there are some long hairs on the underside of the three basal joints, those on the third joint being, however, but very few in number, and considerably shorter than those on the preceding joints. The female has no sexual sculpture, and no trace of a supplementary claw on the hind tarsus.

The species is very distinct by its small size from any other as yet known.

Siam and Cambodia. 1070.

GROUP 4.

1140. *Dytiscus tripunctatus*, Ol., *Trogus tripunctatus*, M.C.—Ovalis, supra olivaceo-niger, capite antierius prothoraceque lateribus testaceis, elytris margine externo (cum epipleuris) argute et sat late testaceo; subtus piccus, metathoracis episternis abdominisque lateribus testaceo-maculatis, pedibus quatuor anterioribus testaceis, femoribus anterioribus fusco-maculatis, tibiis intermediis fusco-testaceis, tarsis intermediis pedibusque posterioribus piccis; antennis testaceis. Long. 22—31 m.m., lat. $11\frac{1}{2}$ —16 m.m.

The anterior tarsi of the male are rather small; their pubescent area is of moderate size; the intermediate tarsi have the two basal joints bearing well developed patches of moderately short sexual pubescence, and their claws are simple, very little unequal, and in fact scarcely different from those of the female. The female is either entirely without sexual sculpture, or may have on the basal portion of the wing-cases, very short irregular isolated scratches; the thorax never shows the least trace of sexual sculpture.

The species is very variable in size, form, and the sexual sculpture of the females, and shows even considerable variation in the sexual pubescence of the intermediate tarsi of the male, as well as in the width of the yellow marginal cincture which varies on head thorax and elytra. I have made a careful review of its numerous variations, and give below the results. It may be said roughly that there are four forms, an Eastern Asiatic one found in China, Japan, Formosa, Mantchuria, Philippine Islands, Malay peninsula, Hindostan, and Ceylon,—as well as in Australia; while the New Caledonia individuals approach the second form which is found in the islands of the Malay archipelago, from Sumatra to Celebes, the specimens from Bourbon and Mauritius approach very nearly to the Malasian specimens: the third form is rare and appears to occur in a sporadic manner in the Philippine Islands and the islands of the Malay archipelago. The fourth form is found in Africa and Southern Europe.

The forms may be thus defined:—

First, or east Asiatic form; moderate size, rather narrow and little convex form, sexual sculpture of the females either fine or entirely wanting; and the patches of sexual pubescence on the intermediate tarsi of the male are rather narrow, that on the second joint especially being narrow, much narrower than that on the basal joint.

The second or archipelagic form, is usually of rather broader, more robust and more convex form, the sexual sculpture of the females is very variable indeed, either entirely wanting or largely developed, and the patches of sexual pubescence on the male middle tarsi are broad, that on the second joint being scarcely larger than that on the first.

The third or sporadic form is of large size, broader behind the middle than the

other, the female sexual sculpture is very largely developed, while the patches of sexual pubescence on the intermediate tarsi of the male are largely developed as in the second form.

The fourth or African form is usually large and very elongate, with the yellow eincture largely developed: the females never have the least trace of sexual sculpture, and the patches of sexual pubescence on the intermediate tarsi of the male are moderately developed, intermediate in size between those of the first and second forms, but with the hairs usually rather longer than in either.

The characters are however variable, and no definite limits can be assigned to the four forms as will be seen from the following more detailed sketch of the local variations.

Japan.—Eight individuals from three sources are before me from this locality: the smallest individual (a male) is 24 m.m. long, $12\frac{1}{2}$ m.m. broad, $7\frac{1}{2}$ m.m. high; the largest (a female) 28 m.m. long, $14\frac{2}{3}$ broad, $8\frac{2}{3}$ m.m. high: the yellow mark on the clypeus is broad, but shows in the middle a slight descent forward of the dark colour: the thoracic and elytral bands are never very broad, but are distinctly broader in some individuals than they are in others, the anterior tarsi of the male attain fully $1\frac{1}{2}$ m.m. in the transverse direction; the pubescence on the basal joint of the intermediate tarsi is intermediate in shape between a narrow triangle and an oval form, and that on the second joint forms a patch which has a much less width than the termination of the patch on the basal joint: the females have no sexual sculpture.

A female from Formosa agrees with the Japanese individuals; while another from Mantchuria differs only by having a fine but distinct sexual sculpture extending along the middle of the wing-case, from near the base to about one-third of the distance towards the apex.

Numerous specimens from China agree with the Japanese form, but some of the females have a well marked sexual sculpture, while others have no trace of it; the largest individual is a female with well marked sexual sculpture, and agreeing nearly in size with the largest Japanese female, being fully 28 m.m. long, 15 m.m. broad, 9 m.m. high. In a large male the front tarsi attain quite $1\frac{2}{3}$ m.m. in the transverse direction.

Specimens from the Malay peninsula show no further variation than those mentioned above; the females have no sexual sculpture; one male is of very diminutive size, 22 m.m. long, $11\frac{1}{2}$ m.m. broad, 7 m.m. high.

From the Philippine islands numerous specimens, (some of which are labelled "Manilla") show no differences from the forms already alluded to: and the females have also variable sexual sculpture, which is sometimes completely absent. Three individuals from these islands differ, however, by their large size and by their form which is more dilated behind: the male has the patches of pubescence on the middle tarsi much broader, and the females a sexual sculpture on the elytra, consisting of

short scratches which are rather more widely separated from one another than in the form above mentioned: the size of a large specimen is $28\frac{1}{2}$ m.m. long, $15\frac{2}{3}$ m.m. wide, and $9\frac{1}{2}$ m.m. high.

A few specimens from Sumatra, Borneo and Labuan, seem to be intermediate between the large broad form just mentioned, and the ordinary East Asiatic form.

In Java the species appear to be very common, and the individuals from there are of a rather short, broad, robust form, with the yellow margin to the elytra broad, and the patches of pubescence on the two basal joints of the male intermediate tarsi broad, while the sexual sculpture of the females is slight or entirely wanting; a male measures 25 m.m. long, by 14 m.m. broad, by $8\frac{1}{2}$ m.m. high.

The *Cybister temnickii* of Aubé is said to be from Java, it differs from all other Javanese individuals I have seen by its very elongate form; one of the individuals which served Aubé for his description is before me, it is a female, with slight sexual sculpture, and is fully 30 m.m. long, 15 m.m. broad, by 9 m.m. high.

A small series from Celebes, Batchian, Amboina, differ scarcely at all from the Javanese individuals, but are perhaps on the average a little larger in size; of four females before me from this locality, three have no sexual sculpture, and on the fourth the sculpture is but slight.

A single female from Menado, agrees with the larger of the Philippine Island forms, except that the scratches forming its sexual sculpture are finer and denser.

I have seen no specimens from New Guinea, though the species no doubt occurs there.

In Australia the species is common, and I have before me a series of about twenty-four specimens from localities which indicate the species as there very widely distributed; they differ scarcely at all from the East Asiatic form as found in China and Japan, but are perhaps on the average slightly larger in size, and the dark colour on the head usually approaches in the middle rather nearer to the labrum; the male tarsi are the same as in the Chinese form, and all the females show a fine sexual sculpture except one which is quite smooth.

In New Caledonia the species appears also common; the individuals are rather shorter than the Australian individuals, and the patches of pubescence on the male intermediate tarsi are rather broader, so that here the specimens seem to approximate to the Javanese forms. The females have a slight sexual sculpture.

One very large female from this locality is remarkable, it attains $29\frac{1}{2}$ m.m. in length by 16 m.m. broad, and has a largely developed sexual sculpture, so that it differs but little from the broader of the two forms mentioned as found in the Philippine Islands. *Cybister artensis* and *C. novæ-caledoniæ*, as well as *Dytiscus hamatus* described by Montrouzier from this locality seem all to be merely varieties of *D. tripunctatus*.

From Ceylon I have seen only a single pair, which are very small, but do not

differ in any definite manner from the East Asiatic form : the female has no sexual sculpture.

A pair from the Andaman Islands agree tolerably with individuals from Sumatra, but are perhaps of still shorter form, and the male is very small, the dimensions being 24 by 13 by $7\frac{1}{2}$ m.m.

From Hindostan I have seen but two or three individuals, they agree with the East Asiatic form ; the female has no sexual sculpture.

The specimens from Bourbon and Mauritius are of short, robust and convex form, and the females have usually a fine sexual sculpture which occasionally is nearly or quite absent ; I cannot distinguish the specimens from these insular localities from some of the Javanese specimens.

The specimens from Madagascar although extremely similar at first sight can nevertheless be always distinguished with certainty, and are therefore considered by me as a distinct species : but I believe connecting specimens will ultimately be found.

The species is very abundant in Africa and is there usually of elongate form, with the lateral band on the elytra broad ; the form, however, varies a good deal, the most elongate specimen before me is 31 m.m. long, by $15\frac{1}{2}$ by 9, while one of the shortest measures 27 m.m. by $14\frac{1}{2}$, by $8\frac{1}{2}$; the females never show any sexual sculpture, and the tarsi of the male do not differ in any appreciable manner from what obtains in the Australian individuals ; indeed many Australian individuals are quite indistinguishable from African ones, yet in Africa the females never have sexual sculpture while in Australia they nearly always possess such. The most elongate and peculiar of the African specimens are found in South Africa.

The specimens found in the South of Europe quite agree with the African individuals.

The Nubian *Trogus haagi*, Wehneke, and the Caucasian *C. gotschi*, Hoch., are both pretty certainly to be referred to this species.

1141. *Cybister cinctus*, n. sp.—Ovalis, convexus, supra olivaceo-niger, epistoma totum prothoraceque lateribus late testaceis, clytris margine externo (cum epipleuris) argute et late testaceis, subtus piceus, metathoracis episternis abdominisque lateribus testaceo-maculatis ; pedibus quatuor anterioribus testaceis, femoribus anterioribus fusco-maculatis, tibiis intermediis tarsisque pedibusque posterioribus piceis ; antennis testaceis. Long. 27, lat. $14\frac{1}{2}$ m.m.

This species or race greatly resembles such convex forms of *D. tripunctatus* as have the yellow cincture very broad, it has, however, the yellow colour on the front of the head and at the sides of the thorax extended over a larger area than in any of those forms ; certain individuals from tropical Africa approximate a good deal to it in this respect, but the females found in Africa never have the least sexual

sculpture, whereas the present species has in that sex, a perfectly distinct although very fine sexual sculpture of excessively short scratches near the base of the wing-cases; the form too, is always shorter than in the African individuals which most resemble it; the male front and middle tarsi seem quite the same as in the African specimens.

Madagascar. 1072.

1142. *Cybister asiaticus*, n. sp.—Ovalis, supra olivaceo-niger, capite anteriori prothoracisque lateribus testaceis, elytris margine externo (cum epipleuris) argute et sat late testaceo; subtus variegatus, pectore testaceo, in medio ferrugineo vel piceo, ad latera anguste nigricante, prosterno abdomineque picescentibus; pedibus quatuor anterioribus testaceis, femoribus anterioribus fusco-maculatis, tarsis intermediis piceis; pedibus posterioribus tibiis tarsisque piceis, femoribus rufescentibus; antennis testaceis. Long. 27, lat. $14\frac{1}{2}$ m.m.

The anterior tarsi of the male are rather small, and similar to those of *Dytiscus tripunctatus*; the two basal joints of the intermediate tarsi bear rather narrow patches of moderately short sexual pubescence, that on the second joint being a good deal narrower than that of the basal one: there is sometimes an extension of this pubescence on to the third joint. The female never has any trace of sexual sculpture.

This species is closely allied to *Dytiscus tripunctatus*, but is readily distinguished by the colour of the undersurface; the whole of the epistome is yellow, the lateral band of the elytra is very similar to that of *D. tripunctatus*, that is to say it is sharply defined even to the apex of the elytra, near which it shows a hook-like dilatation, beyond this becoming narrower till it touches the suture as a point. The species varies much in size, and as a rule the largest individuals show the greatest extension of dark colour on the undersurface.

India, Persia, Mesopotamia. (Northern India, Calcutta, Central India; Northern Persia, 1862-3, Doria; Mesopotamia Dr. Millingen). 1073.

1143. *Cybister fumatus*, n. sp.—Ovalis, parum elongatus, convexus, supra olivaceo-niger, capite anteriori prothoracisque lateribus testaceis, elytris margine externo (cum epipleuris) sat late testaceo; corpore subtus piceo, pectore prope latera plaga vaga ferruginea; pedibus quatuor anterioribus testaceis, femoribus anterioribus fusco-maculatis, tibiis intermediis fusco-testaceis, tarsis pedibusque posterioribus piceis: antennis testaceis. Long. 24, lat. $13\frac{1}{2}$ m.m.

The anterior tarsi of the male are small, and nearly similar to those of *Dytiscus tripunctatus*; the intermediate feet have rather narrow patches of sexual pubescence on the three basal joints, that on the third joint being quite narrow, that on the second intermediate in width between the other two. The female has on the

basal portion of the wing-cases a fine sexual sculpture consisting of very short isolated scratches.

The species differs from *C. asiaticus*, by its form which is broader in front and more convex, the colour of the undersurface is darker and the female has a fine sexual sculpture. The hook-like dilatation near the termination of the elytra is less distinct, and the terminal portion of the band is less definite: the epistome is nearly entirely yellow, but there is generally a little descent of the dark colour in the middle so as to diminish there the length of the yellow mark.

It also resembles excessively the Javanese varieties of *D. tripunctatus*, but is smaller, has a pale patch on the sides of the breast; and the patches of pubescence on the intermediate male tarsi are narrower, and extend on to the third joint.

Siam, and interior of Malay peninsula, Castlenau. 1074.

1144. *Cybister lewisianus*, Sharp, Tr. Ent. Soc. Lond. 1873, p. 46.—Ovalis, convexus, antèrius evidenter angustatus, supra olivaceo-niger, capite antèrius prothoracisque lateribus testaceis, elytris margine externo (cum epipleuris) sat late testaceo; corpore subtus testaceo, ad latera anguste nigricante, pectore in medio plus minusve infuscato; pedibus quatuor anterioribus testaceis, tarsis intermediis piceis; pedibus posterioribus femoribus rufis, tibiis tarsisque nigricantibus; elytrorum epipleuris versus apicem distincte latioribus et planatis; processibus coxalibus apice conjunctim fere truncatis. Long. 25, lat. 14 m.m.

The male anterior tarsi are small, but do not differ much from those of *D. tripunctatus*; the intermediate feet appear at first entirely destitute of sexual pubescence, but on careful examination there is seen a narrow line of very short hairs on the first two joints. The female has no sexual sculpture.

Although very similar to *C. asiaticus* and *C. fumatus* the species is readily distinguished by the form of the coxal processes which are soldered together to the apex so that there is scarcely any notch between them: the epipleuræ before their termination are also slightly, but undoubtedly, broader than in the allied species.

The specimens from China are larger and broader than those from Japan, and the colour of the undersurface is darker in the middle.

Japan, China, (Shanghai, Felder and Abbé David), Assam. 1075.

1145. *Cybister senegalensis*, Aubé, *Trogus senegalensis*, M.C.—Minor, ovalis, sat convexus. parum latus, supra olivaceo-niger, capite antèrius prothoracisque lateribus testaceis, elytris margine externo (cum epipleuris) sat late testaceo; corpore subtus nigricante, pedibus quatuor anterioribus testaceis, tarsis intermediis pedibusque posterioribus picescentibus, antennis testaceis. Long. 20, lat. 10 m.m.

The male anterior tarsi are small ; and on the intermediate feet the three basal joints are furnished beneath with rather short sexual pubescence, the patch on the basal joint is broad, that on the third joint quite narrow, the one on the second joint being intermediate in width. The female has no trace of any sexual sculpture.

The species is readily distinguished amongst its allies by its small size : it varies somewhat in form ; some individuals being notably more elongate than others, it also varies somewhat in the colour of the undersurface, this being sometimes nearly black, more rarely piceous red.

Algeria, Senegal, Madagascar. 1076.

1146. *Cybister occidentalis*, Aubé, *Trogus occidentalis*, M. C.—Latus, ovalis, parum convexus, nitidus, niger, parum olivaceus, capite antierius prothoraceque ad lafera testaceis, elytris margine externo (cum epipleuris) late testaceo ; pedibus anterioribus rufis, femoribus fusco-maculatis, intermediis piceis, femoribus basi apiceque rufescentibus, posterioribus nigricantibus, femoribus angulo externo posteriore recto : antennis rufis ; elytrorum epipleuris versus apicem sat latis et planatis. Long. 33, lat. 19 m.m.

The male has the front tarsi rather large in the transverse direction ; the intermediate feet bear patches of moderately short sexual pubescence, on the three basal joints, the basal patch is broader than the others, that on the third joint being quite narrow, the claws are rather long and stout, curved and distinctly unequal ; in the hollow just in front of the articulation of the swimming legs there are four or five coarse, short, raised ridges. The female has a well marked sexual sculpture on the wing-cases and thorax ; on the former there are fine scratches of variable length, some of them elongate, they are directed in the long axis of the body and show a tendency to converge or anastomose here and there, at the base they extend from the scutellum to the shoulder, elsewhere they reach neither to the suture nor to the lateral margin although they invade the inner portion of the yellow band ; they reach about four-fifths of the way to the apex ; on the thorax the scratches are short, and not numerous, they are also absent altogether from the disc ; on the head there are some fine scratches behind the eye.

In this as in the following species, the yellow band at the apex of the elytra does not terminate in quite a point at the suture, so that it is distinctly connected with that on the other wing-case.

I have seen specimens of this species in more than one collection, said to be from MonteVideo and Buenos Ayres, but I believe erroneously.

Cuba. 1077.

1147. *Cybister explanatus*, Lec., *Trogus explanatus*, M.C.—Ovalis, convexus, parum iatus, supra olivaceus, capite antierius prothoraceque ad latera testaceis, elytris margine externo. (cum epipleuris) late testaceo ; subtus ferrugineus, in medio plus minusve olivescens, pedibus quatuor anterioribus testaceis, tarsis intermediis picescentibus, pedibus posterioribus ferrugineis, tarsis magis picescentibus, femoribus angulo externo posteriore spinoso-acuto ; elytrorum epipleuris versus apicem sat latis et planatis . Long. 27, lat. $14\frac{1}{2}$ m.m.

The male has the anterior tarsi moderately large ; the intermediate tarsi have the three basal joints with long sexual hairs beneath, there is a slight development on the fourth joint of sexual pubescence, and on the fifth joint the setæ have undergone a partial transformation into long sexual pubescence. The female has fine sexual sculpture largely distributed over the thorax and head, but none at all on the wing-cases. Both male and female have in the hollow near the articulation of the swimming legs four or five short, coarse folds or ridges, these are better developed in the male than in the female.

This is a very distinct species bearing a superficial resemblance to *Cybister ellipticus* Lec., (No. 1120). It has a tendency to development of yellow colour along the anterior and posterior margins of the thorax.

North America. (California). 1078.

1148. *Cybister reichei*, Aubé, *Trogus reichei*, M.C.—Minor, ovalis, parum convexus, fere angustus, nitidus, capite olivaceo, antierius late testaceo, prothorace ad latera et ad marginem anteriorem testaceo, basi in medio late olivaceo, elytris olivaceis, late testaceo-cinctis ; corpore subtus testaceo, pectore in medio prosternique processu obscurioribus, tarsis intermediis, tibiis tarsisque posterioribus piceo-rufis ; elytrorum epipleuris versus apicem latis et planatis ; trochanteribus posterioribus apice libero, spinoso-acuto. Long. 20, lat. $9\frac{3}{4}$ m.m.

The male has the anterior tarsi small ; the intermediate feet with the three basal joints largely furnished beneath with rather short sexual hairs, and their claws a little elongate.

The female has fine, short, distant scratches on the basal portion of the wing-case, and on the thorax.

This little species cannot be confounded with any but the following one on account of the spinose posterior trochanters. The extent of the dark colour on the thorax is no doubt variable ; the yellow band of the elytra does not terminate in a point at the suture, but is joined distinctly to the band on the other wing-case.

There is some doubt as to the habitat of this little known species. Aubé was acquainted with only two individuals, one of which was said to be from Brazil the other from Senegal. I have myself seen only two individuals, a male from Chevrolat's collection, labelled " Egypte, Flourens," and a female in my own collection

which I have possessed for a good many years, without label or indication whence I obtained it, but I believe it was from M. Doué's collection. I should think Upper Egypt is undoubtedly its country, and it may occur also in Senegal.

Egypt, (Senegal?). 1079.

1149. *Cybister crassipes*, n. sp.—Minor, ovalis, robustus, latiusculus, parum elongatus, supra olivaceus, capite antierius prothoraceque ad latera late testaceis, elytris late testaceo-cinctis; corpore subtus testaceo, prosterno pectoreque in medio obscurioribus, tarsis intermediis, tibiis tarsisque posterioribus piceo-rufis; elytrorum epipleuris versus apicem latis et planatis; trochanteribus posterioribus apice libero, spinoso-acuto. Long. 22, lat. 12 m.m.

I have not seen the male of this species: the female possesses a rather dense but fine sexual sculpture on the wing-cases and thorax; this sculpture consists of moderately fine scratches some of which are quite short, others elongate, at the base this sculpture extends from the scutellum to near the lateral margin, and it extends also two-thirds of the distance towards the apex, but becomes more distant both from the suture and lateral margin as it proceeds backwards; the thorax is nearly covered with irregular scratches but there are none at all on the head.

The single individual I have seen indicates that this species is closely allied to *Cybister reichei*, but is of broad instead of narrow form.

Arabia, (Dr. C. Millingen). 1080.

1150. *Cybister tibialis*, n. sp.—Ovalis, sat latus, antierius evidententer angustatus, supra niger, capite antierius prothoraceque ad latera testaceis, elytris margine externo (cum epipleuris) testaceo-cinctis; subtus piceus, pectore ad latera late testaceo; pedibus quatuor antierioribus testaceis, tibiis intermediis piceo-testaceis, tarsis intermediis pedibusque posterioribus piceis; elytrorum epipleuris versus apicem sat latis et planatis. Long. 30, lat. 16 m.m.

The male has the anterior tarsi large attaining fully 3 m.m. in the transverse direction; on the intermediate tarsi there is a patch of quite short sexual pubescence on each of the three basal joints, these patches are not very broad, that on the third joint being indeed quite narrow, the claws are rather elongate and little curved, the anterior one much thickened. The female has a largely developed sexual sculpture on the wing-case, consisting of elongate scratches or striæ, which however scarcely anastomose with one another, they extend about three-fourths of the way to the apex, at the base they extend quite across the wing-case, and for nearly their whole length are but little separated from the lateral margin; on the thorax there are very fine short scratches on the lateral parts and extending along the base: the epipleuræ are oblique, though not dilated in front of the middle.

This species attains the size of the smallest individuals of *Dytiscus rœselii* (No. 1169)

but is less broad behind: it stands about equally near to that species and to the *Dytiscus tripunctatus* group of species: it is readily distinguished from *D. rœselii* by the lateral band of the elytra which is similar to that of *D. tripunctatus* and by the sexual characters, the female having no swimming ciliæ along the outer margin of the hind tarsi beneath, and the male having a largely developed sexual pubescence on the intermediate tarsi.

From *C. asiaticus* (No. 1142), the species of the *D. tripunctatus* group to which it has the most resemblance on account of the colour of its undersurface, it is readily distinguished by the broader epipleuræ, and the different sexual characters; the anterior tarsi of the male being large, and the female having sexual sculpture on the thorax.

I have seen only a single pair of this interesting species; the male was in Castlenau's collection, labelled, "*Cybister tibialis*, Reich. Madagascar"; the female is in M. de Bonvouloir's collection and bore no other indication of locality than a blue ticket on the pin. I have no doubt that Madagascar is the habitat.

Madagascar. 1081.

1151. *Cybister pectoralis*, n. sp.—Robustus, ovalis, convexus, sat latus, parum nitidus, supra nigricans, capite anteriori prothoraceque ad latera testaceis, elytris vitta marginali ad apicem angustissima ad basin lata (cum epipleuris) testacea; subtus fusco-piceus, coxis posterioribus externe macula parva testacea, metasterno gibboso, laciniis impressis; pedibus quatuor anterioribus testaceis, posterioribus nigricantibus; elytris transversim rugosulis, epipleuris versus apicem latis. Long. 23, lat. 13, alt. $8\frac{1}{2}$ m.m.

The male has the front tarsi rather large, but their pubescent area on the undersurface is small: the middle feet have the three basal joints furnished with very long sexual hairs, their claws are rather long, but slender: the female has the basal portion of the elytra covered with dense short scratches, which extend about half way to the apex, but in their terminal portion are very obscure, the thorax is nearly covered with short deep scratches so densely placed as to render the surface rugose, but they do not extend to the head, and indeed leave even the anterior margin of the thorax (in front of the transverse series of punctures) smooth.

This species is a most remarkable one, owing to the peculiar conformation of its undersurface; the metasternum in front is swollen or gibbous, and the breast of a peculiar metallic colour along the middle; the curved series of punctures which runs parallel with the inner margin of the middle coxal cavities are peculiarly deep and coarse.

I have seen only a pair of this species, the male I purchased from a dealer about twelve years ago with the locality India; the female was in the collection of M. Castlenau, labelled "India, Deccan."

East India. 1082.

GROUP 5.

1152. *Cybister wehneckianus*, n. sp.—Minor, ovalis, fere angustus, parum nitidus, supra nigricans, capite antè prothoraceque ad latera testaceis; elytris vitta submarginali angusta ante apicem omnino obsolescente testacea, epipleuris nigricantibus; subtus piceus, coxis posterioribus externe vage testaceo-maculatis, metasterno antè subprominulo, laciniis impressis, pedibus quatuor anterioribus testaceis, femoribus in medio tibiisque intermediis obscurioribus, pedibus posterioribus nigricantibus; clytris transversim rugosulis, epipleuris versus apicem latis. Long. 20, lat. 11 m.m.

I have not seen the male of this species; the elytra has on the basal portion of the elytra rather numerous short irregular scratches, which do not reach either to the suture or lateral margin, and, becoming very obscure as they extend backwards, cease entirely about half way to the apex: the thorax is almost free from sexual sculpture, although its surface is uneven; on careful examination however traces of excessively fine short scratches may be detected along its basal portion.

This species seems allied to the preceding one although very distinct therefrom; the gibbosity of the anterior part of the metasternum is indistinct, but the coarse series of punctures, and the impressions on its laciniæ are much the same; the colour of the epipleuræ of itself renders the two species very distinct.

India (?). 1083.

1153. *Cybister cephalotes*, n. sp.—Ovalis, sat latus, antè parum angustatus, capite majore; supra olivaceus, capite antè prothoraceque ad latera testaceis, elytris vitta integra determinata laterali cum epipleuris testaceis, his externe nigro-lineatis; subtus niger; pedibus anterioribus et intermediis rufis, nigro-variis, posterioribus nigricantibus; prothorace ad latera subimpresso. Long. 28, lat. 14 m.m.

The male has the front tarsi rather small, and their pubescent area is small; on the middle tarsi the two intermediate joints bear moderately long sexual hairs, and there is a very slight development of sexual pubescence on the following joint: the female has a patch of peculiar sexual sculpture along the middle of the wing-case but not reaching the base; this sculpture consists of very short, deep, punctiform impressions, mixed with which are some short angular or curved impressions and numerous fine punctures, but extends only over a small space and is widely separated both from the suture and lateral margin.

This species is a peculiar one, bearing a considerable resemblance to *Dytiscus tripunctatus* (No. 1140), but has the head larger, and the thorax with a sort of impression along the side; the form of the yellow band along the elytra is quite as in *D. tripunctatus*, but the epipleuræ externally are margined with dark colour;

the series of punctures along the middle coxal cavity is coarse, although somewhat obsolete and irregular, but there is no gibbosity of the metasternum; the epipleuræ are but little dilated in their posterior portion.

The specimens I have seen are in bad condition.

Abyssinia, Raffray and Beccari, (Lebka, Bogos.) 1087.

1154. *Cybister buqueti*, Aube, *Trogus buqueti*, M. C.—Major, ovalis, latus, convexus, antèrius conspicue angustatus, supra niger, capite antèrius et prothorace marginibus omnibus testaceis, elytris vitta intramarginali (ad apicem suturam fere attingente) testacea; subtus testaceus, capite pectoreque in medio fuscis, pedibus antèrioribus testaceis, posterioribus piceis, femoribus apice testaceo; elytrorum epipleuris antè apicem latis; trochanteribus posterioribus apice libero, acuto. Long. 39 m.m., lat. 22 m.m., alt. 13 m.m.

The male has the front tarsi rather small, attaining about 3 m.m. in the transverse direction; the two basal joints on the middle tarsi have each along the middle an elongate, narrow patch of short sexual pubescence, their claws are rather short and slender, but a good deal unequal; in the hollow near the articulation of the hind coxæ there are about ten short, coarse depressions or grooves. The female is unknown.

This and the following species are remarkable by their thorax being entirely margined with yellow, just in the same way as *Dytiscus marginalis* and its allies: at the sides the margin is very broad, in front it is moderately broad, but at the base narrow, so that on each side it almost thins out before joining the lateral yellow band.

Africa, (Senegal.) 1085.

1155. *Cybister dytiscoides*, n. sp.—Major, ovalis, convexus, antèrius angustatus, supra niger, capite antèrius prothoraceque marginibus omnibus testaceis, elytris vitta intramarginali (ad apicem suturam fere attingente) testacea; subtus testaceus, capite et medio pectoris nigricantibus; pedibus antèrioribus testaceis, posterioribus piceis, femoribus apice testaceo; trochanteribus posterioribus apice libero, acuto. Long. 37 m.m., lat. 19½ m.m., alt. 12½ m.m.

The male has the front tarsi small, attaining about 2½ m.m. in the transverse direction; the two basal joints of the intermediate tarsi have each along the middle a broad patch of short sexual pubescence; in the hollow near the articulation of the hind coxæ, there are five or six short longitudinal depressions, these depressions are irregular and the inner two or three quite obscure.

This species is very closely allied to *Cybister buqueti*: the only specimen I have seen indicates a smaller species, with broader patches of sexual pubescence on the

intermediate tarsi; it has too the prosternum with its anterior front angle much rounded off, whereas it is prominent and robust in *Cybister buqueti*.

Madagascar. 1086.

1156. *Cybister confusus*, n. sp.—Major, ovalis, niger, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali (apice parum hamato-dilatata), suturam attingente testacea; corpore subtus nigricante, pedibus anterioribus et intermediis rufis, his tibiis infuscatis. Long. 36, lat. $19\frac{1}{2}$ m.m.

In the male the front tarsi are large, attaining 4 m.m. in the transverse direction; the intermediate tarsi have on each of the two basal joints a very large broad patch of quite short sexual pubescence, and there may generally be seen a line of rudimentary pubescence on the third joint, their claws are rather long, the outer one is thick and but little curved till near the apex when it takes a sudden bend, the inner one is shorter and much thinner. The œdeagus has the inferior lobe with its apical part oblong in form, (becoming however just slightly broader towards the extremity), and its apex shows a deep well marked notch; the dorsal lobe terminates in two contiguous processes, which reach as far as the apical notch, they are flattened and roughened near the apex which is minutely turned upwards. The female has a very highly developed sexual sculpture, the thorax being covered with short, curved, or angular, irregularly directed scratches; these scratches entirely cover the thorax (except the front margin) though they are usually finer about the middle than at the sides; the epipleuræ of the elytra are flattened and obliquely horizontal, but not very broad, the obliquity commences very near the base, and ceases in a gradual manner at about the hind margin of the second ventral segment.

Although this species is excessively similar to the following one and universally mixed with it in collections, it is nevertheless perfectly distinct, the form of the œdeagus in the male being characteristic and quite constant; while the female has the epipleuræ in their flattened part less broad. As smaller characters, it may be mentioned that the form of this species is usually flatter with the outline less curved at the sides, and with the yellow band of the elytra not forming a well marked hook near the apex, and nearly or quite attaining the suture; while the female has the sexual sculpture less absent along the mesial line of the body.

India, Ceylon, China, (this latter locality somewhat doubtful). 1087.

1157. *Dytiscus limbatus*, Fab., *Trogus limbatus*, M.C.—Major, ovalis, supra olivaceo-niger, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali testacea, apice argute hamato-dilatata, suturam haud attingente; corpore subtus nigricante, pedibus anterioribus et intermediis rufis, his tibiis infuscatis. Long. 34, lat. $19\frac{1}{2}$ m.m.

The front and middle tarsi of this species are similar to those of *C. confusus* ; but the œdeagus presents constant and well marked differences ; its inferior lobe becomes narrower till close to the termination, when it becomes much broader, its extremity is broadly emarginate, so that it has a furcate appearance, and is also arched in the transverse direction ; the dorsal lobe terminates in two processes which do not extend to the apex, and which diverge from one another before their termination, the apices however are again a little incurved, but not contiguous, being separated in the condition of repose by a broad longitudinal elevation which runs along the middle of the under lobe. The female has a highly developed sexual sculpture, similar to what exists in *C. confusus*, but less distinct on the disc of the thorax, and absent from a rather wider space along the suture of the wing-cases. The epipleuræ of the elytra are flattened and obliquely horizontal, and rather broad, the torsion commences very close to the shoulder, and ceases in a gradual manner about the hind margin of the second ventral segment.

The species is a rather variable one ; and there may be distinguished three varieties : the first is of short, convex form a good deal narrowed in front, and the sculpture of the female on the thorax and elytra is comparatively less developed, extending on the latter only three-fifths of the length towards the extremity ; this is especially common in northern China and Manchuria if I may judge correctly from the material before me ; the second form is more elongate, and rather flatter and the sculpture of the female is nearly as largely developed as in *C. confusus*, extending four-fifths or five-sixths of their length ; I have individuals of this variety from Shanghai. The third form is broad and robust, and the yellow band of the elytra has a tendency to be prolonged nearer to the suture at the extremity, and the female sculpture is largely developed ; this variety occurs I believe in Southern Hindostan (Madras). In all the variations of this abundant insect the form of the œdeagus remains absolutely without variation ; the varieties in colour, form, &c., already alluded to, merge quite gradually into one another by intermediate specimens.

Manchuria, China, Formosa, Southern India. 1088.

1158. *Cybister guerini*, *Trogus guerini*, *M.C.*—Ovalis, niger, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali testacea, ad apicem haud argute hamato-dilatata, suturam haud attingente, pedibus anterioribus et intermediis rufis, femoribus late nigricantibus, tibiis tarsisque intermediis fere nigris. Long. 34, lat. 19½ m.m.

The male has the front and middle tarsi the same as in *C. confusus* and *D. limbatus* ; and in the structure of its œdeagus is intermediate between the two ; the female has a highly developed sexual sculpture, the thorax being entirely covered with irregular scratches, and the elytra bearing elongate longitudinal scratches, these

entirely cover them at the base, behind the base leave a narrow space along the suture smooth, and at the apex leave about one-sixth of the length uncovered: the epipleuræ are flattened and oblique, but this torsion does not extend farther back than the first ventral segment.

The species varies a good deal in size and especially in width, but is easily discriminated from the preceding one, by the colour of the front and middle femora; the wing-cases of the males generally bear excessively fine tubercles, with rudiments of transverse aciculations between them, thus showing a slight development of the sculpture which becomes so remarkable in *C. rugosus*.

Aubé's description of the female of *C. guerini* was probably taken from another species, for he states that it has very little sexual sculpture, I have seen only a single example agreeing with this statement, and think it very probably a distinct species.

Manchuria, China, Siam, Laos, Java, Celebes. 1089.

1159. *Cybister bengalensis*, Aubé, *Trogus bengalensis*, M.C.—Ovalis, supra olivaceus, capite antérieur prothoraceque ad latera testaceis, elytris vitta intramarginali, apice hamato-dilatata, suturam haud attingente, testacea; corpore subtus variegato, ex parte majore nigro, pectore utrinque late testaceo, abdomine nigro, segmento basali plaga laterali testacea, segmentis 3—5 testaceo-maculatis; pedibus quatuor anterioribus testaceis, tarsis intermediis pedibusque posterioribus nigricantibus, his femoribus apice rufo; elytris extrorsum versus apicem subtiliter sed perspicue coriaceo-rugulosis. Long. $29\frac{1}{2}$, lat. 16 m.m.

The front tarsi of the male attain scarcely 3 m.m. in the transverse direction; the intermediate feet have rather large patches of sexual pubescence on the two basal joints and generally an obscure narrow patch on the following joint. The female has no trace of any sexual sculpture, and the epipleuræ are quite simple as in the male.

The species seems to vary but little; I have seen only one specimen stated to be from India, and I consider it doubtful whether it occurs there.

I have little doubt, from individuals before me, that other species with a similar colour of the undersurface exist, differing, however, in the sexual characters. As regards the name of the species, this is the only one to which Aubé's description is applicable; but as far as I know it is found only in China, but the French author says it occurs "aux Indes orientales et en Chine"; it is possible, therefore, that his description was made from Chinese examples, and the epithet "bengalensis" was used for the species because individuals from Bengal were supposed to be conspecific.

China; especially towards the North. (Szechuan, A. David.) 1090.

1160. *Cybister gracilis*, n. sp.—Ovalis, fere angustus, supra nigricans, capite antierius prothoraceque ad latera testaceis, elytris vitta intramarginali, ad apicem parum argute delimitata, testacea; corpore subtus variegato, ex parte majore testaceo, prosterno pectoreque in medio nigricantibus, abdomine testaceo fuseoque fasciato, segmentis 2° et 3° ex parte majore fuscis; pedibus anterioribus et intermediis testaceis, his tarsis piceis, pedibus posterioribus piceis, femoribus ad apicem et superne testaceis. Long. 28, lat. 15 m.m.

The male has the front tarsi large (in proportion to the size of the insect), being fully 3 m.m. in the transverse direction; and the intermediate feet have large patches of short sexual pubescence on the two basal joints, as in the allied species; the female is unknown to me.

This species is of narrow form, and more oblong than its allies, and the colour of the outer margin of the elytra is such that the yellow band is less distinctly limited externally; the wing-cases are without coriaceous rugosity; the different colours of the undersurface are sharply defined, the yellow being notably predominant.

India. 1091.

1161. *Cybister ventralis*, n. sp.—Ovalis, sat latus, antierius evidentier angustatus, supra olivaceo-niger, capite antierius prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem hamato-dilatata, tenui, testacea; corpore subtus variegato, ex parte majore testaceo, prosterno pectoreque in medio nigricantibus, abdomine testaceo nigroque fasciato; pedibus anterioribus et intermediis testaceis, his tarsis piceis; pedibus posterioribus nigricantibus femoribus ad apicem late rufis. Long. 31, lat. 17 m.m.

The male front tarsi are large attaining 3½ m.m. in the transverse direction; the intermediate feet bear a large patch of short sexual pubescence on each of the two basal joints as in the allied species. I have not seen the female.

This insect is of broader less oblong form than the preceding one; the dark colour on the second and third ventral segments does not extend to the outside of the segments, which remains yellow.

India, (Madras). 1092.

1162. *Cybister chinensis*, Motsch., *Trogus chinensis*, M.C.—Ovalis, supra nigricans, capite antierius prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem hamato-dilatata, testacea; corpore subtus variegato, ex parte majore testaceo, prosterno pectoreque in medio nigricantibus, abdomine testaceo nigroque fasciato; pedibus anterioribus et intermediis testaceis, his tarsis piceis; pedibus posterioribus nigricantibus, femoribus ad apicem late rufis; elytris versus apicem subtilius coriaceo-rugulosis. Long. 28½, lat. 15½ m.m.

The male has the front tarsi rather large, attaining 3 m.m. in the transverse direction; the intermediate feet are as in the allies.

This species is closely allied to *C. ventralis*, but is smaller, and the elytra are finely coriaceous-rugulose in their hinder part.

A female, possibly belonging to this species, agrees closely with the corresponding sex of *C. crassus*, except that it is more elongate and less convex; if it be really the female of this species it is of more elongate form than the male: it is $30\frac{3}{4}$ m.m. long, by $16\frac{1}{4}$ m.m. broad.

Motschoulsky's description of *Cybister chinensis* is very deficient, but as the present is the only species known to me to which it is applicable, I have adopted the name with some doubt as to the propriety of so doing.

China, (Mus. Castlenau). 1093.

1163. *Cybister crassus*, n. sp.—Ovalis, robustus, convexus, supra nigricans, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem hamato-dilatata, testacea; corpore subtus variegato, ex parte majore testaceo, prosterno pectoreque in medio nigricantibus, abdomine testaceo nigroque fasciato; pedibus anterioribus et intermediis testaceis, his tarsis piceis; pedibus posterioribus nigricantibus, femoribus ad apicem late rufis; elytris versus apicem subtilius coriaceo-rugulosis. Long. $30\frac{1}{2}$, lat. $16\frac{1}{2}$ m.m.

The male has the front tarsi large attaining $3\frac{1}{2}$ m.m. in the transverse direction; the intermediate feet as in the allied species. The female has a highly developed sexual sculpture, the thorax being covered with curved irregular scratches, and the elytra with deep elongate ones, which extend about four-fifths of the length, and either reach quite to the suture or leave a narrow elongate space along it smooth; the epipleuræ in this sex are flattened and obliquely perpendicular, the torsion commencing near the base, and disappearing in a gradual manner about the hind margin of the second ventral segment.

This species is larger than the preceding one to which it is very closely allied; although it and the three preceding species are so extremely similar, the œdeagus presents in each slight distinctions, which I believe will prove to be characteristic.

A female of this species existed in Dejean's collection, where it was ticketed as a variety of "*Dytiscus limbatus*."

India, (Sylhet). 1094.

1164. *Cybister javanus*, Aubé, Spec. p. 59.—Major, ovalis, latus, supra olivaceo-niger, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem hamato-dilatata, testacea; corpore subtus variegato, prosterno pectoreque in medio nigricantibus, abdomine ex parte majore fuscescente, segmentis ad latera testaceis; pedibus anterioribus et intermediis testaceis, his tarsis piceis; pedibus posterioribus nigricantibus, femoribus ad apicem rufis; elytris versus apicem subtiliter coriaceo-rugulosis. Long. 34, lat. $19\frac{1}{2}$ m.m.

The male has the front tarsi large, attaining 4 m.m. in the transverse direction; the two basal joints of the intermediate feet are entirely clothed beneath with short sexual pubescence. The female has a highly developed sexual sculpture, the thorax being entirely covered with short irregular scratches, and the elytra having elongate scratches on all but about the hinder one-sixth of their surface, the scratches however do not quite attain the suture except at the base; the epipleuræ are flattened and obliquely horizontal, the torsion commencing near the base and ceasing gradually about the hind margin of the second ventral segment.

The variegation of the ventral segments is in this species indefinite, the first and second ones are largely pale towards the sides, while the yellow lateral colour on the following segments assumes more the form of indefinite yellow spots.

The locality of this species is open to some little doubt. I have a pair from W. W. Saunders' collection, labelled "bengalensis, Aubé," but with no locality; another specimen stood in Dejean's collection labelled "Dytiscus javanus, mihi h. in Ins. Java;" a fourth individual stood in Chevrolat's collection as one of three individuals under the label "Cybister limbatus, Fab. Dj. Aubé, aciculatus Olivier, India or. ex Mus. olivieri;" the other two individuals were females of *Dytiscus limbatus*.

India (?) (Java?). 1095.

1165. *Cybister cognatus*, n. sp.—Major: ovalis, supra olivaceus, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem argute hamato-dilatata, testacea: corpore subtus variegato, prosterno pectoreque in medio nigricantibus, abdomine in medio late fusciscente, lateribus late vageque testaceis; pedibus anterioribus et intermediis testaceis, his tarsis piccis, pedibus posterioribus nigricantibus femoribus ad apicem rufis. Long. 35, lat. 19½ m.m.

The male tarsi are only moderately large attaining about 3 m.m. in the transverse direction; on the intermediate feet the patches of short sexual pubescence on the first and second joints seem to be a good deal smaller than in the allies, the one on the second joint being quite narrow.

The sexual sculpture of the female is but moderately developed, being obsolete on the thorax, and on the elytra extending only about half way to the apex, and being broadly absent along the sutural region; the epipleuræ are only slightly and obscurely flattened, and the torsion extends but for a small distance in the longitudinal direction.

This species bears an extreme resemblance on the upper side to *Dytiscus limbatus* (No. 1157) but is readily distinguished by the colour of the undersurface: it is allied to the preceding species, but is distinguished readily enough, the form being less narrow in front, and less convex, the dark colour on the undersurface is less extensive, and the male tarsi are different, and the sexual distinctions in the female much feebler. The two species differ moreover remarkably from all their allies by the highly developed and remarkable structure of the œdeagus.

I have seen only four individuals of this species; three were in Castlenau's collection, labelled "Cybister javanus, Aubé, Java;" the fourth specimen is in M. de Bonvouloir's collection, labelled "Javanus" but without locality. The specimens were all in very bad condition, and all four evidently from one source.

Java. (?) 1096.

1166. *Cybister celebensis*, n. sp.—Ovalis, supra olivaceo-niger, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem hamatodilatata, testacea; subtus niger, pectore utrinque late testaceo, abdomine segmentis 3-5 ad latera testaceo-maculatis; pedibus quatuor anterioribus testaceis, tarsis intermediis piceis; pedibus posterioribus nigricantibus, femoribus ad apicem late rufis; elytris versus apicem subtiliter sed perspicue coriaceo-rugulosis. Long. 29, lat. 16 m.m.

The male front tarsi are rather large, being about 3 m.m. in the transverse direction; the intermediate feet have a large patch of short sexual pubescence on each of the two basal joints. The female has a highly developed sexual sculpture, the thorax being nearly covered with irregular rather fine scratches, and the elytra bear elongate scratches which extend about four-fifths of the length, but leave the sutural portion smooth except at the base; the epipleuræ are somewhat flattened and oblique.

The species is closely allied to the following one, but is really distinguished from it by the fine rugulosity on the elytra. From *C. crassus* and allies the greater extent of dark colour on the undersurface readily distinguishes it. I have seen only a pair of the species.

Celebes, (A. R. Wallace). 1097

1167. *Cybister rugosus*, Macleay, *Trogus rugosus*, M.C.—Ovalis, parum latus, nigricans, capite anteriori prothoraceque ad latera testaceis, elytris vitta intramarginali, versus apicem hamata, testacea, pectore utrinque pallido, abdomine segmentis 3-5 ad latera testaceo-maculatis; pedibus quatuor anterioribus testaceis, tarsis intermediis piceis; femoribus posterioribus ad apicem rufis; elytris versus apicem profunde coriaceo-rugulosis. Long. 29, lat. 16 m.m.

The male front tarsi are rather large, attaining 3 m.m. in the transverse direction; the intermediate feet have a large patch of short sexual pubescence on each of the two basal joints. The female characters are very variable: usually that sex has a highly developed sexual sculpture, the thorax being covered with irregular scratches and the elytra bearing coarse, elongate ones, which extend four-fifths of the way to the apex, but leave the suture bare except at the base; in certain specimens the elytra are entirely covered with scratches except on a minute space at the

extremity; on the other hand some females are quite without sexual sculpture, resembling exactly in this respect the males; the females with highly developed sculpture have also a distinct, though not great, torsion of the epipleuræ, and even in the smooth females a very slight departure from the male structure in this respect may be observed; intermediate specimens between these forms occur.

The species also varies a good deal in size and form, and also somewhat in the extent of the pale colour on the breast, and also somewhat in the depth of the rugulosity on the elytra; the œdeagus varies very little however even in the most different individuals.

The species is readily distinguished by the peculiar roughness on the elytra; this character cannot however be seen in the case of such females as have the elytra quite covered with sexual sculpture; the extent of pale colour on each side of the breast is always less than in the allied species with which it might be confounded. Widely distributed in the Malay peninsula and archipelago.

Siam, Penang, Cambodia, Malacca, Sumatra, Borneo, Java. 1098.

1168. *Cybister* (*Trogus*) *godeffroyi*, Wehncke, Stet. Ent. Zeit. XXXVII, p. 357.—*Ovalis, latus, anterius fortiter angustatus, parum convexus, nitidus, niger, capite anterius prothoraceque ad latera testaceis, elytris vitta intramarginali, ad apicem obsolete testacea; pedibus quatuor anterioribus testaceis, intermediis tibiis picco-testaceis, tarsis nigris, pedibus posterioribus nigris, geniculo superne rufescente.* Long. 34, lat. 19½ m.m.

In the male the front tarsi are not large, scarcely attaining 3 m.m. in the transverse direction; the intermediate feet have large patches of short sexual pubescence on each of the two basal joints, and there is generally a very slight line of such pubescence on the following joint, their claws are unequal but rather short in comparison with the allied species. The female is without sexual development; the upper surface being quite smooth as in the male, and the epipleuræ simple.

The species cannot be easily mistaken for any other, it is rather larger and broader than *D. rœselii* (No. 1169), and quite as similar at first sight to it as to *D. limbatus* (No. 1157); from this latter it can be easily distinguished by the yellow band of the elytra being indefinite at the termination; from *D. rœselii* the colour of the undersurface distinguishes it at a glance.

The structure of the œdeagus is peculiar, and shows the species is really an isolated one.

Australia, (Cape York, Rockhampton, Clarence River). 1099.

GROUP 6.

1169. *Dytiscus rœselii*, Fab., *Trogus virens*, M.C.—Ovalis, posterius conspicue latior, supra olivaceus, capite antè prothoraceque lateribus testaceis, elytris vitta laterali versus apicem attenuata, et a margine laterali separata, testacea; corpore subtus testaceo, pectore in medio plus minusve brunneo, tarsis intermediis et tibiis tarsisque posterioribus piceis; femoribus posterioribus angulo externo acuto, subspinoso. Long. 34, lat. 18½ m.m.

The male has the claws on the intermediate feet a good deal longer than in the female, and unequal, the front one being much thicker and a little longer than the other; it has the uppersurface of the body smooth and shining, while in the female the thorax is covered with curved irregular depressions or scratches, and the wing-cases bear longitudinal scratches which anastomose here and there, a space at the apex remains, however, always smooth. On the undersurface the epipleuræ of the female are conspicuously flattened just behind the shoulder, while at the same spot they are rounded in the male.

In this species the yellow band of the elytra at the shoulder starts from quite the outer margin, but becomes thinner towards the extremity, and is in a gradual manner more and more separated from the outer margin, it becomes quite obsolete before the apex, but at the apex the external margin is itself vaguely yellow, and the extremity of the yellow band is only separated in a very vague manner from this terminal yellow colour. The colour of the undersurface varies somewhat, the infuscation of the breast along the middle being sometimes very slight, while at other times it is quite conspicuous, and when it is greatest the coxal processes become quite greenish or olivaceous in colour. The most remarkable variety, however, is one found in Portugal, it is of small size, being about 31 m.m. long, and the sexual characters differ remarkably from what is usual in the species, the female being quite smooth on the uppersurface, and the anterior tarsi of the male are unusually small, attaining only 2½ m.m. in the transverse direction, the normal dimension being 3½ m.m. This variety may be designated as var. lusitanicus, I have seen only three individuals of it, two females and one male found by d'Oliveira, it is worthy of remark that the intermediate tarsus on the left leg of the male is like that of a female, while the right foot is normal.

The species does not extend its range to Britain or Scandinavia. The smooth variety of the female seems very rare, the only specimens I have seen of it come from Portugal.

Cybister chaudiiri, Hoch., was founded on two females found at Lenkoran, and from the description and remarks of its describer it seems highly probable that it is a variety of *Dytiscus rœselii*.

Europe and Northern Africa. Northern France, Belgium, Germany, Portugal, Corsica, Italy, Greece, Corfu, Siberia, (East India?)

1170. *Cybister ponticus*, n. sp.—Ovalis, latus, posterius conspicue latior, supra olivaceus, capite anterieus prothoraceque lateribus testaceis, elytris vitta laterali, fere ad apicem producta sed ibidem parum discreta, testacea; corpore subtus testaceo, tarsis intermediis, tibiis tarsisque posterioribus piccis; femoribus posterioribus angulo externo acuto. Long. 37, lat. 21 m.m.

I have seen only a single individual of this form, and although it is quite without sexual sculpture, I think it may prove to be only a local race of *Dytiscus ræselii*; it is however considerably larger, and has the hind legs thicker, and the marginal band of the elytra remains broader and more distinct at the extremity; the epipleuræ of the elytra are rather broader, but the sexual flattening is scarcely so conspicuous as in *Dytiscus ræselii*.

I am not acquainted with *Cybister jordanis*, Reiche (*vide* No. 1279), which is said scarcely to differ from *Dytiscus ræselii*, except by the female being quite smooth. I have seen from Northern Persia, two females which may be perhaps but little different from this Jordan form; they have the upper surface quite free from sculpture, and differ from *Cybister ponticus* in being considerably smaller, and of narrower and more parallel form, the swimming legs are more slender and the sexual flattening of the epipleuræ is less: these two specimens were found by the Marquis Doria in Northern Persia in 1862-3. Whether these forms with smooth females, viz., *lusitanicus*, *jordanis*, *ponticus*, are really closely allied but distinct species, or are only races occurring at the extreme geographical limits of the distribution of *Dytiscus ræselii* is a very difficult question which I am quite unable to answer.

Mesopotamia, (Millingen). 1048.

1171. *Cybister japonicus*, Sharp, Tr. Ent. Soc. Lond. 1873. p. 45.—Robustus, supra sat convexus, ovalis, posterius latior, supra olivaceo-niger, capite anterieus prothoraceque lateribus testaceis, elytris vitta laterali sat lata, apicem fere attingente sed ibidem parum discreta, testacea; corpore subtus variegato, testaceo, prosterni processu pectoreque in medio olivaceo-nigris, abdominis coxarumque posticarum suturis nigris; pedibus testaceis, tarsis intermediis, tibiis tarsisque posterioribus piccis, femoribus posterioribus versus basin plus minusve piccescentibus; femoribus posterioribus angulo externo acuto. Long. 35. lat. 19½ m.m.

This species is closely allied to *Dytiscus ræselii*, and possesses in each sex the same sexual characters as that species, but it is considerably larger, and has the yellow band on the sides of the elytra broader, and less distinctly separated from the lateral margin, and has the undersurface very distinctly variegated: the female has the flattened portion of the epipleuræ broader: it is also rather different in form, being less narrowed in front, and it has the hinder tarsi longer.

Japan, Formosa, Mantchuria, China, (Shanghai). 1049.

APPENDIX

OR

DESCRIPTIONS NOT IDENTIFIED WITH SPECIES KNOWN TO THE AUTHOR.

In this appendix I have collected together all such descriptions of species of Dytiscidæ as I have been unable to indentify certainly with any species known to me. Some of these descriptions can never be surely recognised except by the aid of authenticated specimens. A certain number are moreover probably identical with species described by other authors under different names ; where such indentification is probable but not certain I have not felt justified in assigning the names to the list of synonyms, and the descriptions are consequently here reprinted. Most of the descriptions are given in full, but in some cases only the diagnoses are reproduced. Where I could make any guess of importance as to the position and characters of a species I have appended a brief suggestion after the description. For convenience of reference these descriptions are numbered consecutively, the numbers being a continuation of those used in my own preceding species-descriptions, in order to avoid repetition of numbers and consequent confusion : thus they commence with No. 1172.

1172. *Acilius cinctatus*, Aubé, spec. p. 151. Mexico.

“Ovalis vix ellipticus, convexiusculus, supra niger, infra nigro-piceus ; thorace nigro, ad latera luteo ; elytris nigris, vitta longitudinali postice abbreviata ad marginem punctisque minimis ad apicem luteo-notatis. Long. $9\frac{1}{2}$, larg. $5\frac{1}{2}$ mill.”

[*Followed by a description.*]

“Je n’ai vu qu’un seul individu male de cette espèce ; il appartient à M. Gory, qui l’a reçu de M. Klug comme venant du Mexique.”

This is placed by Aubé next to *Acilius margineguttatus* (No. 1070), to which it is apparently similar.—D. S.

1173. *Acilius lævisulcatus*, Motch., Bull. Mosc. 1845, I. p. 30. Crimea.

“*Acilius lævisulcatus* n. de la Crimée a les sillons sur les élytres lisses comme l’*Ac. semisulcatus*, Dej. de Sitka, mais il est plus grand.”

I do not think this can be accepted as a description ; I anticipate moreover that it is probably only *Dytiscus sulcatus* (No. 1052).—D. S.

1174. *Acilius laporti*, Aubé, spec. p. 139. Brazil.

“Oblongo-ovalis, convexiusculus, supra nigro-cinereus, infra ferrugineo-testaceus ; thorace ad latera et

transversim in medio luteo; elytris nigris, maculis minimis irregulariter rotundatis undique luteo-ornatis, et fascia nigra confusissima ultra medium transversim notatis. Long. 12 m.m., larg. $6\frac{1}{2}$ m.m."

[Succeeded by a description.]

A single individual in the collection of Castlenau, who received it from Brazil. The species is probably closely allied to *A. ornaticollis* (No. 1059).—D. S.

1175. *Acilius laticinctus*, Lec., Ann. Lyc. V. p. 203. North America.

"Fere ellipticus minus convexus, ferrugineus, supra nigro-piceus nitidus, thorace latitudine triplo brevior, lateribus late fasciaque transversa angusta luteis, elytris margine lato nigro-irrorato, fascia subbasali, (sæpius interrupta) apiceque luteis, ore, epistomato, macula verticali transversa, pedibusque anterioribus flavo testaceis. Long. 45. *Femina*, thoracis lateribus rugosis, elytris versus basin striolis approximatis strigosis. Ad flumen Colorado, et Vallecitas frequens. A. inciso similis."

A male individual of this species recently communicated to me by Dr. Leconte seems to be structurally very closely allied to *Dytiscus basilaris* (No. 1071); and it must remain at present an open question whether it be a distinct species; if not it is at any rate the most extreme variation I have seen of *D. basilaris*.—D. S.

1176. *Acilius maculatus*, Aubé, spec. p. 141. Mexico.

"Ovalis, paulo ellipticus, convexiusculus, supra nigro-cinereus, infra testaceus, thorace luteo, antice et postice in medio nigro; elytris luteis, punctis minimis confluentibus, fascia transversa ultra medium, maculaque ad apicem confuse nigro-ornatis."

"*Mas*: elytris lævibus. *Femina*: ad basin lineolis brevissimis punctiformibus impressis; thorace lævi. Long. 12— $12\frac{1}{2}$ m.m., larg. 7— $7\frac{1}{2}$ m.m."

[A description follows, i.e., the above.]

This is placed by Aubé near *A. ornaticollis* (No. 1059), to which it is probably similar.—D. S.

1177. *Acilius subimpressus*, Motsch., Bull. Mosc., 1845, I. p. 30. Kamtschatka.

"*Acilius subimpressus* m. du Kamtschatka, ressemble aussi à l'espèce de Sitka, mais il s'en distingue par les couleurs du dessous du corps."

I do not think the above can be considered a "description," however wide be the extension anyone may be inclined to claim for that term.—D. S.

1178. *Acilius tomentosus*, Motsch., Bull. Mosc., 1845, I. p. 30. Russia.

"*Acilius tomentosus*, m. C'est une espèce des environs de St. Petersbourg qui ressemble beaucoup à *PA. sulcatus* L., mais qui est constamment plus petite."

These few words do not constitute a description, and are moreover perfectly applicable to the well known European *Dytiscus fasciatus*, (No. 1053).—D. S.

1179. *Agabus amœnus*, Solsk., Fedt. Turk., II, 5. p. 142. Urgut. Turkestan.

"Ovalis, apice utrinque subacuminato-rotundatus, subconvexus, glaber, nitidus; piceo-niger, ore, antennis, vertice maculis duabus, pedibus segmentorumque abdominalium marginibus ferrugineis, pedibus posticis fusco-maculatis; capite thoraceque nigro-ameis, virescentibus, hoc lateribus late testaceis; elytris fusco-testaceis, basi lateribusque dilutioribus."

“*Mas*: tarsis anticis dilatatis, compressis, subtus longe pilosis, unguiculo interno latiore et crassiore, basi subtus obtuse dentato. Long. 10 (thor. 2, elytra $7\frac{1}{2}$), lat. elytra $5\frac{3}{4}$ m.m.”

This is followed, *l. c.*, by a description in Russian. The species is apparently peculiar in its colouration.—D. S.

1180. *Agabus atratus*, Mann., Bull. Mosc., 1853, III, p. 157. Russian North America.

“Oblongo-ovalis, aterrimus, opacus, striis anastomozantibus subtilissime reticulato-strigosus; ore, antennis, capite antice, epipleuris, segmentorum ventralium marginibus, tibiis tarsisque quatuor anterioribus obscure rufis; elytrorum lateribus disco parum dilutioribus; pedibus posticis piceis. Longit. 5 lin., latit. $2\frac{2}{3}$ lin.”

This is omitted in Crotch's “Revision of the North American Dytiscidæ.”—D. S.

1181. *Agabus bakewelli*, Clk., Journ. Ent. II, p. 19. Australia.

“Ovalis, subtilissime reticulosus; striato-punctatus, niger, nitidus; capite impunctato, inter oculos undique foveolato, nigro, ore mentoque rufis; thorace antice emarginato, lateribus rotundatis, tenui marginatis, basi sinuato, antice ad marginem punctis transverse notato: elytris punctorum seriebus duabus subtiliter notatis, ad latera infra medium obscure rufo maculatis; pedibus antennisque rufis, corpore subtus fusco-rufo. Long. corp. 3 lin., lat. $1\frac{1}{2}$ lin.”

“*A. bakewelli* resembles in size and appearance *A. affinis*, Payk.; it is (besides other differences) more ovate and less parallel: it is probable that in some examples the subcircular rufous marking near the margin of the elytra may be obsolete.”

This should no doubt be referred to the genus *Platynectes*.—D. S.

1182. *Agabus confertus*, Lec., Proc. Ac. Phil. 1861, p. 340. California.

“Ovalis, modice convexus, æneo-niger, nitidus, dense punctulatus, haud reticulatus, thorace minus fortiter marginato, latitudine fere triplo brevior, elytris lineola laterali guttaque postica pallidis ornatis, seriebus punctorum solitis distinctis, antennis ore pedibusque anticis piceo-rufis. Long. .32. Cabo de los Reyes.”

[*A comparison with A. semivittatus, Lec., follows the above diagnosis.*]

I have recently received for examination an individual of this species and find it difficult to locate in any of the groups proposed by me; it seems in fact to be between group 12, and group 19; it has the approximate middle coxæ of the former group, but its thorax is less rounded at the sides and less discontinuous with the outline of the elytra, and the anterior portions of the coxal lines are fine, and although much divergent, are but little prolonged in the outward direction.—D. S.

1183. *Agabus dilatatus*, Sol., Gay, Hist. Chil. IV, p. 277. Chili.

“*A. fuscus*, margine et capite ochraceus, postice dilatatus et obtusus, ovatus supraque obsolete punctulatus; prothorace medio transverse confuse ochraceo-fasciato; elytris fuscis luteo-subreticulatis, striis tribus laxè punctatis, obsolete; palpis, labro antennisque luteo-pallidis; pedibus obscuris. Long. 4 lin. $\frac{1}{2}$; lat. 2 lin. $\frac{1}{4}$. Habita tambien in la republica.”

I am doubtful to what genus this should be referred; in the Munich catalogue it is recorded under *Agabus*, but the trivial name *dilatatus* is replaced by that of *valdiviensis*.—D. S.

1184. *Agabus eminens*, Kirsch, Berl. Ent. Zeit. XVII, p. 131. Peru.

“Ovalis, nitidus, bruanus, prothoracis lateribus elytrorumque macula magna basali, humerum et

scutellum non attingente, luteis; prothorace intra latera impresso, subtilissime coriaceo, versus latera punctulato; elytris seriebus 4 punctulatis. Long. $5\frac{3}{4}$, lat. 3 mill."

The description which follows this diagnosis, *l. c.*, leaves it doubtful to what genus this should be referred.—D. S.

1185. *Agabus foveolatus*, Muls., Op. Ent. XI, p. 177. France.

"Oblongo-ovalis, vix convexus, postice depressiuseulus, subtilissime punctulato-substrigosus, subtus nitidus, supra subopacus, niger; thoracis disco leviter bifoveolato; elytris fuscis, extrorsum gradatim fusco-ferrugineis, margine inferiori ferrugineo; antennis pedibusque ferrugineis, femoribus nigris. Long. 0,0072 ($3\frac{1}{4}$ l.)—Larg. 0,0061 ($2\frac{3}{8}$ l.)."

"Elle se rapproche des *A. uliginosus* et congener. Elle diffère de l'un et de l'autre par l'absence de taches rouges sur le vertex: elle s'éloigne du premier, par son prothorax noir, excepté le rebord marginal, par ses cuisses noires: du second, par toutes ses cuisses noires: de tous les deux par les deux petites fossettes du disque de son prothorax."

Found in the Basses Alpes at 2,000 mètres of elevation.

1186. *Agabus fuscoænescens*, Regt., Ann. Soc. Ent. Fr. (v) VII, p. CXLVIII. Austria.

"*A. sturmi*, Gyll. sat affinis: vix convexus, subtiliter reticulatus, nitidus, fusco-niger, vix ænescens, ad prothoracis elytrorumque latera vage rufescens, subtus niger, cum abdominis segmentis postice vix ferrugineo-limbatis; antennis crassiusculis, omnino testaceis; capite maculis duabus ferrugineis postice et circa clypeum antice notato. *Mas*, abdominis ultimo segmento post dimidium punctato-strigoso, et unguiculis anticis æqualibus, simplicibus et valde incurvatis distinctus. Long. $9\frac{1}{2}$ à 10 mill."

[*A comparison with several other species follows this description.*]

1187. *Agabus glacialis*, Hoch., Chaud. Enum. Car. p. 218. Caucasus.

"Elongato-ovatus, subdepressus, nitidus, nigro-piceus, ore, cum palpis, capite antice, thoracis elytrorumque margine inflexo, segmentorum abdominalium summis marginibus, tibiis tarsisque late ferrugineis; thoracis lateribus subrectis; elytrorum punctis majoribus posterius irregulariter sparsis, anterieus in series ternas digestis."

"*Mas*: elytris nitidioribus, obsolete reticulatis, punctis distinctius impressis."

"*Femina*: elytris opacis, evidentius reticulatis, punctis minoribus."

"Variati: pedibus anticis totis ferrugineis. Long. 3 lignes."

"M. de Chaudoir a trouvé cette espèce près du sommet des montagnes d'Abbastouman, à 7,000 pieds environ d'élevation, sous les pierres au bord des ruisseaux qui découlent des amas de neige. (Juin)."

This species probably will go into my second group near *Agabus armeniacus* (No. 671); the description does not agree with the colour of that species.—D. S.

1188. *Agabus Goryi*, Aubé, Ic. V, p. 162, pl. 20, f. 1. Spec. p. 337. Asia Minor.

"Oblongo-ovalis, supra castaneo-brunneus, infra niger; elytris macula paulo ultra medium ad latera alteraque minima ad apicem pallido luteo-notatis; pedibus nigro-ferrugineis. Long. 8 à 9 m.m., larg. $4\frac{1}{4}$ — $4\frac{3}{4}$ m.m."

[*A description follows.*]

Found at Smyrna by M. Careel.

In the Munich Catalogue this is recorded as a variety of *Agabus dilatatus*, Br., (*Col. dilatatus*, No. 1220, *huj. op.*), but it is doubtful whether this be correct.—D. S.

1189. *Agabus gougeleti*, Reiche, Ann. Soc. Fr. 1863, p. 474. Corsica.

“Ovalis, parum convexus, atro-piceus, nitidus. Caput coriaceum, ante oculos utrinque transversim impressum; antennis palpisque rufo-testaceis, his apice piceis. Thorax capite fere duplo latior, latitudine plus dimidio brevior, antice profunde emarginatus; angulis acutiusculis; a latere paulo rotundatus, postice parum sinuatus; angulis rectis, acutiusculis; disco coriaceo, antice transversim punctato-impresso, a latere late rufo-testaceo, basi medio kevigato utrinque linea transversali punctata instructo. Scutellum piceum, coriaceum. Elytra thoracis basi latitudine, inde ad medium parum dilatata, ultra medium attenuata, apice conjunctim rotundato-acuminato, triseriatim punctata; punctis piligeris; fusca; basi et ad latera vage testaceo-maculata, paulo infra medium macula albida translucida laterali indeterminata et inde ad apicem maculis similibus minoribus nonnullis sparsis. Subtus niger, pedibus rufescentibus, femoribus basi nigris. *Mas et fem.* Long. $8\frac{1}{2}$, lat. $4\frac{3}{4}$ m.m.”

I cannot from the description identify this species with any certainty; the specimens I have seen in collections under the name are a variety of *Dytiscus conspersus* (No. 714).—D. S.

1190. *Agabus hæffneri*, Aubé, Ic. V. p. 170, pl. 21, f. 2.—Spec. p. 345. Suecia.

“Oblongo-ovalis, brevior, nitidus, subtilissime reticulato-punctatus, niger; antennis ferrugineis; pedibus ferrugineo-piceis; elytris paulo ultra medium vix ampliatis, tribus seriebus punctorum minorum notatis. Long. $7\frac{1}{4}$, larg. $3\frac{3}{4}$ m.m.”

[*A description follows the above diagnosis*].

“G. Wasastjernæ simillimus, sed paulo major, prothoracis angulis posticis magis obtusis, elytris punctura minus distincta, subtiliter reticulatis; *mas*, tarsis anterioribus magis dilatatis et elongatis distinctus.”—Thoms. op. Ent. VI., p. 539.

1191. *Agabus hydroporoides*, Murray, Ann. Nat. Hist. 1859, p. 120. Old Calabar.

In the reprint, Col. Old Calabar, p. 75, this is assigned to the genus *Celina*, and diagnosed as follows:

“Elongatus, oblongo-ovalis, parum depressus, nitidus, impunctatus, supra brunneus, infra rufo-ferrugineus; capite toto late ferrugineo; thorace late ad latera (interdum fere toto) pedibusque ferrugineis; elytris ad basin anguste et macula oblonga apicali ferrugineis. Long. $2\frac{1}{2}$ lin., lat. $1\frac{1}{4}$ lin.”

Further the insect is stated to have a visible scutellum, the anterior tarsi 4-jointed, the middle ones 5-jointed. It would thus appear probable that the insect cannot be placed in any genus known to me.—D. S.

1192. *Agabus interruptus*, Perroud, Ann. Soc. Linn. Lyon. 1864, p. 79. New Caledonia.

“Elongato-ovatus, minus convexus. Capite nigro in vertice macula ferruginea. Prothorace nigro, rufo-marginato. Elytris flavis, nigro-striatis, striis interruptis; subtus piceo-niger; ore, antennis pedibusque ferrugineis. Long. 0 m., 009, larg. 0 m., 003.”

“Pris à Kanala par M. Montrouzier.”

“Cette espèce doit se placer près de l'*Agabus oblongus*; mais elle est plus petite, plus atténué en avant, un peu moins conv. et la dilatation des trois premiers articles des tarses soit antérieurs, soit intermédiaires chez les males est moins forte.”

This is probably a *Copelatus* allied to No. 847, possibly identical therewith.—D. S.

1193. *Agabus irregularis*, Mann. Bull. Mosc. 1853, III, p. 159. Russian North America.

“Ovatus, minus convexus, posterior rotundatus, nigro-piceus, supra nonnihil aeneo-micans, nitidissimus, subtilissime punctulatus; ore antennis, elytrorumque margine late, rufo-ferrugineis; thorace impres-

sionibus aliquot inæquali; elytris punctis numerosis majoribus impressis irregulariter subseriatis; pedibus piceis tibiis tarsisque anterioribus parum dilutioribus. Longit. 3 lin., latit. $1\frac{2}{3}$ lin."

Crotch (Tr. Am. Ent. Soc. IV, p. 423) considers this to be the same as *Agabus hypomelas* (No. 668)—D. S.

1194. *Agabus kessleri*, Hoch., Bull. Mosc. XLIV, p. 238. Russia.

"Oblongo-ovalis, leviter convexus, niger, elytris antice longitudinaliter—infra medium transversim—subtiliter strigosis, ore, antennis pedibusque rufo-ferrugineis. Long. 3 l. Flüsse Irpin."

"Von der grösse und Form des *A. femoralis* und des *A. affinis* denen er am nächsten steht, ist jedoch leicht von ihnen zu unterscheiden. Vom *A. affinis* schon dadurch dass keine puncte auf den Flügeldecken sichtbar. Vom *A. femoralis* durch die rein schwarze Farbe der oberseite."

"Ausserdem sind zwei merkwürdige caractere vorhanden, die diese art nicht leicht mit anderen verwechseln lassen. Die Flügeldecken, obgleich sie etwas glänzen, sind nämlich dicht und fein nadelrissig und zwar auf den vorderen Hälfte der Länge nach, auf der hinteren in die quere gestrichelt. Ferner sind bei frisch gefangenen Stücken die Ränder der Flügeldecken, besonders nach hinten zu, mit einzelnen feinen Haaren, gerade abstehend bewimpert."

The statement as to the sculpture of the wing-cases suggests that this may be allied to *Colymbetes bifarius*, (No. 757).—D. S.

1195. *Agabus lugubris*, Blanch., Voy. Pole Sud. IV, p. 49, pl. 4, f. 4. Tasmania.

"Ovatus, nigrescens; capite nigro, macula frontali rufa; antennis palpisque testaceis; prothorace nigro, marginibus lateralibus fulvis; elytris nigris, linea laterali punctoque prope scutellum rufescentibus. Long 7 m.m. De la Tasmanie."

This is perhaps a variety of *Dytiscus decempunctatus* (No. 763).—D. S.

1196. *Agabus luniger*, Kol., Melet. Ent. I, p. 82, pl. 2, f. 13. Armenia.

"Ovalis, niger, supra flavus; thoracis margine antico piceo in disco postico margine nigro ad latera semilunariiter antice flexo; elytris fuscis, retro scutellum macula communi irregulari picea. Long. 4 lin."

I do not identify this; it is perhaps near *Dytiscus nebulosus* (No. 713); the figure is very poor.—D. S.

1197. *Agabus morosus*, Lec., Ann. Lye. V, p. 201. California.

"Ovalis, pone medium paulo latior, apice rotundato-acutus, nigro-æneus modice convexus, subtiliter reticulatus, thorace latitudine triplo brevior, lateribus rotundatis, subtilius marginatis, angulis posticis subrotundatis, cum elytris angulo obtusissimo formante, his punctis solitis subconfusis, margine postice lutescente, antennis, tibiis tarsisque rufo-piceis. Long. .29. Specimen unicum ad San Francisco inventum."

This is perhaps near *Agabus borealis* (No. 707).—D. S.

1198. *Agabus mulleri*, Kirsch, Berl. Ent. Zeit. 1865, p. 43. Bogota.

"Elongato-ovalis, depressus, niger, nitidus; verticis fascia transversa, thoracis margine laterali, abdominis segmentorum quatuor fascia laterali, ano pedibusque rufo-ferrugineis. Long. 7 m.m."

"Dem peruvianus Aubé nahe verwandt, aber kleiner, weniger gewölbt und mehr parallelseitig. Die allgemeine sculptur ist dieselbe, nur feiner; das halschild kommt in der form ganz mit dem des peruvianus überein, auch ist die lichtere färbung des seitenrandes wie bei jenem an den vorderecken am breitesten: innerhalb und längs des ganzen ränder mit ausnahme der mitte der basis stehen sehr deutliche, zum theil grobe punkte. Die seitlich sehr wenig, hinten breit zugerundeten flügeldecken

haben drei unregelmässige reihen sehr deutlicher Punkte. Die rostrothen seitenbinden der abdominal segmente ziehen sich bis über $\frac{1}{4}$ der ganzen breite nach innen. Klauen wenig gebogen."

This perhaps belongs to the genus *Leuonectes*.—D. S.

1199. *Agabus opacus*, Aubé, Spec. p. 347. Finland.

"Oblongo-ovalis, latus, subdepressus, opacus, vix visibiliter subtilissime reticulato-coriaceus; supra brunneus, subtus rufo-ferrugineus; antennis, pedibus, marginibusque thoracis et elytrorum rufescentibus (*Fem*). Long. 9 m.m. Larg. $4\frac{1}{2}$ m.m."

[*A description follows this diagnosis.*]

For a more recent description see Sahl., En. Col. Car., p. 185, who places the species in front of *Dytiscus striolatus* in the genus *Agabus* (*Gaurodytes*, Sahl., *l. c.*)—D. S.

1200. *Agabus rotundatus*, Wehneke, Berl. Ent. Zeit. XVI, p. 136. Sardinia.

"Ovatus, convexus, nitidus, supra nigro-piceus, subtus niger, antennis, pedibus ferrugineis, femoribus omnibus tibiisque posticis nigris. Long. 8 m.m."

"Diese art steht *A. uliginosus* L., am nächsten, doch ist sie etwas grösser, durch die weitläufig stehenden grossen punktreihen auf den flügeldecken, und durch die farbe, welche überall gleich ist unterscheiden. Bei *uliginosus* sind die seiten des halschildes röthlich."

"Eiförmig hoch gewölbt, wie *A. uliginosus*, stark glänzend, äusserst fein punktirt, von bräunlich schwarzer farbe, die am vorderkopfe und am seitenrande vom halschild und den flügeldecken etwas lichter ist. Die flügeldecken mit drei reihen von weitläufig stehenden grösseren punkten versehen. Fühler und beine rothbraun, sämmtliche schenkel, die hinteren schienen sowie die unterseite schwarz."

1201. *Agabus scapularis*, Mann., Bull. Mosc., 1852, II, p. 303. North America.

"Ovalis, subconvexus, niger, nitidus, striis anastomozantibus subtiliter reticulato-strigosus; ore antennis, vertice maculis duabus, thoracis margine laterali elytrorumque linea intra-humerali rufo-ferrugineis; tibiis piceo-testaceis tarsis anterioribus rufo-piceis. Long. $3\frac{1}{3}$ — $3\frac{3}{4}$ lin. Lat. $1\frac{5}{8}$ —2 lin."

"Habitat in palude prope oppidum Nov. Archangelsk."

This is considered by Crotch, Rev. N. Am. Dytis., p. 420, to be the same as *A. anthracinus* (No. 710).—D. S.

1202. *Agabus subopacus*, Mann., Bull. Mosc., 1853, III, p. 157. Russian North America.

"Oblongo-ovalis, depressus, niger, subtilissime reticulato-strigosus; palpis et antennis basi, fronte antice triangulariter, vertice lineolis duabus transversis, thorace, antice et lateribus late, epipleuris pedibusque quatuor anterioribus rufo-ferrugineis; elytris obsolete subsulcatis, obscure ferrugineo-testaceis, confertim et crebre nigro-irroratis, maculis sparsis nigris majoribus. Longit. 5 lin., latit. $2\frac{3}{4}$ lin."

This is not noticed by Crotch in his "Revision of the North American Dytiscidæ."—D. S.

1203. *Agabus tasmaniæ*, Clk., Journ. Ent. II, p. 18. Tasmania.

"*A. breviter ovatus*, latus, sat depressus, obscure punctato-striatus, subtilissime vermiculatus, niger, nitidus; capite inter oculos undique bipunctato, nigro, ad apicem rufo; thorace antice emarginato, ad latera rotundato et leviter marginato, basi siuato; elytris punctorum seriebus tribus obscuris; pedibus rufo-fuscis, antennis flavo-rufis, corpore subtus nigro. Long. corp. $3\frac{1}{4}$ lin., lat. $1\frac{3}{4}$ lin."

This diagnosis is followed by some comparative remarks. The species is perhaps allied to No. 764, *Platynectes daemeli*.—D. S.

1204. *Agabus terminalis*, Melsh., Proc. Acad. Phil. II, p. 27. North America.

"Black, opaque, densely and very finely striate; labrum, palpi and antennæ testaceous. Nearly 5 l. long, $2\frac{2}{3}$ l. wide. Inhabits Pennsylvania."

This is not mentioned by Crotch in his "Revision of the North American Dytiscidæ."—D. S.

1205. *Agabus truncatipennis*, Sol., Gay, hist. Chil. IV, p. 278, pl. 5, f. 1. Chili.

"A. oblongus, ellipticus; capite nigro; prothorace ochraceo, medio macula transversa, trapeziformi, fusca; elytris apice oblique truncatis, subacuminatis, ochraceis, nigro irregulariter reticulatis maculisque quatuor oblongis, nigris, lateribus utrinque notatis, ore antennisque luteis; pedibus obscuris. Long. sub 4 lin. $\frac{1}{2}$, latit. 2 lin."

"Esta especie se parece mucho al *Colymbetes nigriceps*, pero es menos angosta y difiere ademas por los caracteres genericos. La encontramos en Santiago y en los bajas cordilleras de Coquimbo."

The figure indicates a species of *Laneetes*, and I expect it will prove to be *C. nigriceps*, or *C. præmorsus*.—D. S.

1206. *Agabus venturii*, Bert., Bull. Ent. It. II, p. 242. Italy.

"Ovatus, subtiliter reticulato-strigosus, niger, elytris margine extremo fuscis, opacis, antennis pedibusque ferrugineis. Long. 7 mill., lat. 4 mill."

"Assai somigliante nella forma all' *Agabus arcticus*, Payk., &c.,"

1207. *Anisomera bistriata*, Brullé, Hist. Nat. V, p. 205, pl. 8, f. 3, Aubé, Spec. p. 396. Chili.

"Oblongo-elongata, depressa, supra flavicans, infra rufescens; thorace postice angustiore; elytris elongatis, ad apicem dilatatis, creberrime nigro-irroratis. Long. $6\frac{1}{2}$, larg. 3 m.m." Aubé, *l.c.*

[*This is followed by a description.*]

This insect is, I believe, still only known by the above described mutilated female individual; its genus is quite doubtful to me.—D. S.

1208. *Anisomera recta*, Lec., Ann. Mag. Nat. Hist., 4th ser. IV, p. 375. North America.

"Elongato-ovalis, æneo-nigra, subtiliter dense reticulata; prothorace longitudine plus triplo latiore, postice subangustato, lateribus antice late rotundatis, versus basin paulo obliquis vix subsinuatis, angulis posticis reectis, basi truncate; elytris thorace vix latioribus, utrinque seriebus tribus punctorum solitis, externa minus distincta. Long. 10 m.m."

According to an individual recently transmitted to me by the describer, this species differs from No. 662, by the more evidently reticulate surface, and the less degree of sinuation of the sides of the prothorax. It should be placed in the genus *Agabus* after *A. eordatus* (No. 662)—D. S.

1209. *Celina grossula*, Lec., New spec. Col. I, 1863, p. 22. North America.

"Picco-rufa, nitida, elytris obscuris haud dense punctatis, punctisque majoribus triseriatim digestis, serie interna evidentiore, apice conjunctim breviter acuminatis. Long. 22. Louisiana."

"This species is very much larger than *C. angustata*, but agrees with it in form, colour and sculpture; the upper surface is, however, a little more convex, and the sides of the thorax slightly less rounded."

A specimen of this species recently transmitted to me by its describer seems extremely close to *C. aculeata* but is a little larger and paler in colour.—D. S.

1210. *Colymbetes alpinus*, Motsch., Schrenck Reise, p. 102, pl. 7, f. 2. Mongolia.

“Elongato-ovalis, antice posticeque æqualiter attenuatus, nitidus, scarificatus, supra nigro-fuscus, subtus niger; capite thoraceque antice, elytrorum basi angustissime, lateribus, palpis, antennis pedibusque testaceis. Long. $2\frac{1}{3}$ l., lat. $1\frac{1}{3}$ l.”

“Très voisin du *Colymb. arcticus*, Payk., dont il se distingue par une forme plus atténuée postérieurement, la tache postérieure du corselet plus développée et un couleur un peu plus foncée. Peut-être seulement une variété alpine du premier. Je l’ai pris sur les glaciers du Hamaar-Daban en Mongolie.”

This is most probably, as indicated by the describer himself, a variety of *Dytiscus arcticus*. (No. 736).—D. S.

1211. *Colymbetes (?) angusticollis*, Curt. Tr. Linn. Soc. XVIII, 1839, p. 195, p. 15, f. E. Chili.

“Ochreus; oculis, capite, clypeo excepto, scutello subtusque nigris; thorace angusto; elytris longissimis nigro-lineatis reticulatisque. Length $4\frac{1}{2}$, breadth 2 lines.”

“Ochreous, shining; head and eyes black, leaving a semiorbicular ochreous space on the clypeus; thorax short, a little broader than the head, transverse-oblong, a line of punctures before and behind near to the margins, a short channel on the disc, sides a little depressed. Elytra nearly twice as broad as the thorax at the base, and seven times as long, elliptical, apex truncated a little obliquely; some scattered punctures in lines, a short black streak on each side of the scutellum, three long ones down the disc, and two or three oblique ones on the sides; the spaces between somewhat reticulated with black, leaving a broad marginal space free; underside piceous.”

“A male from Port St. Elena. The narrow thorax and very long elytra depart so far from the typical form of *Colymbetes*, that I have little doubt of this being a good genus; but as I have no specimen to dissect I have not ventured to establish it as such.”

This is a very distinct species of *Lancetes*, with very peculiar thorax.—D. S.

1212. *Colymbetes annulatus*, Zoub., Bull. Mosc. VI, 1833, p. 318. Turcomania.

“Long. $3\frac{1}{4}$ l., larg. $1\frac{3}{4}$ lig. La tête et le corselet sont ferrugineux; Les élytres sont d’un brun jaunâtre à la loupe ils paraissent ponctués. Le dessous du corps et les pieds sont ferrugineux. Chaque anneau de l’abdomen et la poitrine sont bordés de noir.”

This should perhaps be placed in the genus *Agabus*.—D. S.

1213. *Colymbetes assimilis*, Kirb., Faun. bor. Am. IV, p. 70. North America.

“Obovatus, depressus, laevis, niger; prothorace flavescenti, immaculato; elytris flavescentibus, nigro creberrime irroratis; pedibus flavis; brachiis brevissimis piceis. Length of body $5\frac{3}{4}$ lines.”

“This species represents *C. notatus*, which it is very like, but the elytra are wider towards the apex which gives the insect an obovate shape, the black dots of the elytra are more numerous and minute; the prothorax is without spots, and the arms or forelegs are shorter and of a different colour.”

This is not noticed by Crotch in his “Revision of the North American Dytiscidæ”; it is no doubt a species of *Rhantus*, but apparently not one known to me.—D. S.

1214. *Colymbetes basalis*, Gebl., Ledeb. Reis. II, p. 65. Siberia.

“Niger, thorace subquadrato elytrisque lividis, illo apice et lateribus, his basi margineque pallidis, pedibus ferrugineis. Long. 4 lin., lat. 2 l. Nitidus, supra subtilissime punctulatus caput nigrum,” &c., &c.

“Semel ad lac. Noor-Saisan captus.”

The Munich Catalogue has referred this to the genus *Agabus*.—D. S.

1215. *Colymbetes bicolor*, Kirb., Faun. bor. Am. IV, p. 70. North America.

“Ater, ellipticus, convexus, nitidus, ore antennisque testaceis; pedibus elytrisque latere externo, brunneis; prothoracis serie postico continuo. Length of the body, $3\frac{1}{2}$ lines. A single specimen in lat. 54° .”

The Munich Catalogue refers this to the genus *Agabus*.—D. S.

1216. *Colymbetes bimaculatus*, Perroud, Ann. Soc. Lin. Lyon. XI, 1864, p. 78. New Caledonia.

“Elongato-ovalis, depressiusculus, levis, nitidus, fusco-brunneus. Capite antice posticeque rufo, antennis testaceis. Prothorace lateribus paulo oblique rotundatis, rufo-brunneo, antice transversim punctato. Scutello triangulari. Elytris subtiliter striato-punctatis, brunneis, postice lateribus flavo limbatis et singulatim ad basin macula transversali flava notatis. Corpore subtus pedibusque testaceis. Long. 0,004m.; larg. 0,001 $\frac{1}{2}$ m.”

“Cette petite espèce prise par M. Montrouzier, à Jengen, dans la Nouvelle Calédonie a quelque ressemblance à première vue avec l'*Hydroporus sex-pustulatus*.”

Probably a *Copelatus* to be placed in my group I.—D. S.

1217. *Colymbetes clairvillei*, Mont., Ann. Soc. Fr. 1860, p. 242. New Caledonia.

“Long. 15 m.m.; larg. 8 m.m.; épaisseur. 4 m.m. Minor. niger, capite duplici zona luteo-rubro ornato. Thorace transverso, anteriori et in medio limbi nigro, alio luteo-rubro, lævi. Scutello conspicuo, triangulari, lævi. Elytris ovatis, convexis, lævibus, nigris, margine tribusque zonis, quarum duæ posteriores interruptæ, luteis.”

“La couleur générale du corps est d'un noir vernissé. La tête est d'un jaune rouge avec une large bande vineuse noire en travers.”

The colour would seem to point this out as a species of *Sandracottus*. In the Munich Catalogue it is recorded in the genus *Agabus*, but this is no doubt an error.—D. S.

1218. *Colymbetes costulatus*, Motsch., Bull. Ac. Pet. 1859, p. 541. Siberia.

“Oblongo-ovalis, dense scarificatus, nitidus, niger, elytris vix distincte costulatis, fuscis, margine dilutiore; palpis, antennis, tibiis tarsisque rufis. Long. $3\frac{1}{4}$ l. lat. $1\frac{3}{4}$ l.”

“Plus allongé et plus large vers la tête que notre *Col. Sturmii*; élytres plus étroites et plus ou moins rembrunies, avec deux lignes de points imprimés sur le milieu et quelques autres épars et irrégulièrement placés vers les bords.”

It is probable that this description indicates a species of *Agabus*.—D. S.

1219. *Colymbetes darwinii*, Bab., Tr. Ent. Soc., 1841, p. 8. Patagonia.

“Ovatus, supra flavescens, subtus niger vel nigro-fuscus, vertice nigro, macula transversa flava. thorace antice et postice maculaque disci nigris; elytris plus minusve crebre nigro-irroratis, striisque disci punctatis, antennis flavis pedibus flavis vel fusciscentibus. L. 5—6, lat. $2\frac{1}{2}$ —3 lin.” Tierra del Fuego.

“Ovate, flavescens, fusco flavescens, or fuscous. Crown of the head black, with a transverse flavescens spot, which is connected by its middle with the anterior concolorous part of the head, so as to form a T shaped mark. Antennæ yellow. Thorax margined before and behind more or less broadly with black and an ovate transverse spot of the same colour on the disc. Scutellum black. Elytra ovate, dilated slightly beyond the middle, flavescens or fuscous yellow, thickly irrorated with black, in some specimens so thickly as to make the whole appear fuscous black; the usual striæ rather strongly marked, and formed of irregular punctures. Body beneath black, or fuscous black. Legs dark yellow or fuscous.”

“Extremely variable in colour; some specimens being nearly black, and others quite pale.”

This appears to be a species of *Rhantus* very near *Dytiscus signatus*, No. 926, if not actually the same thereas.—D. S.

1220. *Colymbetes dilatatus*, Brullé, Exp. Mor. Ent. III, p. 127. Europe.

“Kolar. ined.—Fuscus, levigatus, depressus; capite maculis 3 piceis; elytris levissime seriato-punctatis, maculis 2 pone medium pallide croceis; corpore subtus cum femoribus posticis atro; pedibus oreque et antennis piceis. Long. 9 millim., lat. 5.—(Voyez notre Pl. XXXIV, fig. 11.)”

Descr. Tout le dessus de l'insecte est brun, et très-finement guilloché; la tête marquée de trois taches rougeâtres, savoir une vers le bord antérieur, de forme irrégulière et plutôt transversale, de couleur foncée, et deux autres sur le bord postérieur, plus claires et arrondies; antennes entièrement rougeâtres, ainsi que les palpes. Corselet court, transversal, légèrement sinue en avant et en arrière; ses angles antérieurs pointus et avancés, les postérieurs carrés: outre un commencement de sillon longitudinal, on distingue près des bords antérieurs et postérieurs un sillon transversal dans toute la largeur du corselet; en arrière ce sillon se termine par des points enfoncés, placés à distances inégales. Écusson en triangle élargi. Élytres un peu plus larges que la base du corselet, aplaties, ovalaires, marquées de quelques séries de points enfoncés peu profondes et écartés; un peu plus bas que le milieu des élytres, sur le bord latéral, on remarque une tache d'un jaune obscur de forme irrégulière: à partir de cette tache jusqu'à la base, le bord est un peu rougeâtre. Tout le dessous du corps est noir, ainsi que les deux cuisses postérieures; jambes et tarses de cette paire de pattes et les deux paires précédentes rougeâtres.”

“Hab. Dans les eaux stagnantes des marécages, qui se dessèchent vers la fin de la belle saison. Communiqué par M. de Laporte.”

It was suggested by Aubé (Spec. p. 341) that this may possibly be a variety of *Dytiscus guttatus* (No. 670); this remains still uncertain, and it is not quite clear to me that Aubé had really Brullé's species before him when he supposed he was describing it (*l. c.*)—D. S.

1221. *Colymbetes discicollis*, Aubé, Spec. p. 250. Java.

“Ovatus, supra flavicans, infra niger; thorace disco nigricante; elytris crebre nigro-irroratis; prosterno pallido. Long. 10 m.m. larg. 5 m.m.”

[*This is followed by a description.*]

I think this may probably prove to be only *Colymbetes pulverosus* No. 924.—D. S.

1222. *Colymbetes discolor*, Harris, New Farm. 1828, p. 164.

“Black, minutely and obsolete granulated. Head with two basal piceous spots; elytra fuscous, margin and base pale, epipleura yellowish; three series of setiferous punctures, which are obsolete behind, on each elytron: ventral segments at tip and feet piceous: nails alike in both sexes. Length over three-tenths of an inch.”

“Specimens five. Appears to differ from all of the species described by W. Say.”

This is perhaps an *Agabus*, but the species to which the description is intended to apply will not be recognised with any certainty. The name is not alluded to by Crotch, who however has changed the name of *Agabus discolor*, Lec., for that of *Gaurodytes lecontei*, I presume on account of the existence of this name of Harris'.—D. S.

1223. *Colymbetes distigma*, Brullé, Voy. d'Orb. Col. p. 48.—Aubé Spec. p. 222. South America.

“Niger, opacus, punctis minutis raris omnino tectus; macula in vertice et altera ad marginem elytrorum paulo ultra medium rubro-ferrugineis. Fem. Long. 14 m.m. larg. 7 m.m.” Aubé, *l. c.*

[*The above is followed by a description.*]

Found by D'Orbigny in the Cordilleras.

I cannot even form an idea as to what genus of the *Colymbetides* this will prove to be a member of.—D. S.

1224. *Colymbetes drewseni*, Lec., Proc. Ac. Phil. 1862. p. 523. Greenland.

“Elongate oval; thorax feebly punctured towards the base, with scarcely perceptible rugosities; lines of elytra deep, moderately approximate; legs pale brown, thighs darker. *Fem.* 60.”

“Sides of thorax strongly rounded, sinuate near the anterior angles, which are strongly acuminate.”

The sides of the thorax are peculiarly rounded and sinuate at the front angles (in the male), but it is possible that the insect is an abnormal form of *C. grenlandicus* (No. 967).—D. S.

1225. *Colymbetes duponti*, Aubé, spec. p. 260. S. America.

“Oblongo-ovalis, niger, capite cum labro, epistomo, maculaque transversa in vertice rufo-luteis; thoracis lateribus rufo-luteis; elytrorum margine et apice luteis, crebre nigro-irroratis; pedibus nigris femoribus anticis et intermediis apice rufo-ferrugineis. Long. 11 m.m., larg. 6 m.m.”

[*This diagnosis is followed, i.e., by a description.*]

This is probably near *Dytiscus signatus*, No. 926.—D. S.

1226. *Colymbetes fonticola*, Phil., Stett. Ent. Zeit., 1860, p. 247. Chili.

“Oblongo-ovatus, postice dilatatus, supra pallide ochraceus, subtus niger; capite prope oculos utrinque punctis 2 aut 3 impresso, nigro, punctis 3 orbicularibus, duobus prope basim, altero in medio, maculaque triangulari in epistomo aliquando cum puncto anteriore juncto pallide ochraceis; tergo prothoracis lineis punctorum in margine antico lateribusque impresso, et in medio macula transversali, trapeziformi, obscura, notato; elytris valde et dense nigro-punctatis, punctis in sutura et margine oblitteratis, utroque elytro lineis tribus longitudinalibus punctorum rare positorum impressis; femoribus anticis obscure ochraceis, mediis et posticis nigris, apice fuscis; tibiis tarsisque obscure fuscis; antennis palpisque testaceis. Long. $6\frac{1}{3}$ ”, lat. 3”.”

“Valdivia in rivulis.”

This would appear to be a species of *Rhantus* very near *Dytiscus signatus* (No. 926).—D. S.

1227. *Colymbetes fossiger*, Motsch., Bull. Mosc. 1859, III, p. 170. California.

“Oblongo-ovatus, depressiusculus, reticulatus, subnitidus, nigro-subeneus, elytris fuscis, ore, palpis, antennis pedibusque rufescentibus; capite triangulare, antice subtruncato, subtilissime reticulato, quadri-impresso; thorace transverso, basi arenato, utrinque subsinuato, lateribus marginatis, arcuatis, angulis anticis prominulis, posticis subrectis, elytris oblongo-ovatis, postice fere obtusis, striis punctorum indistinctis. Long. $3\frac{1}{4}$ l. lat $1\frac{3}{4}$ l. San Francisco.”

“Cette espèce ressemble assez à notre *C. congener*, dont il a aussi la taille, mais sa forme est moins obtuse et plus régulièrement elliptique. La tête est triangulaire tronquée en avant avec quatre impressions sur le front, dont deux en avant, en forme de foveoles, et deux autres plus rapprochées, très peu profondes et placées plus au dessus et entre les yeux: on voit en outre sur le vertex deux taches arrondies roussâtres, peu distinctes. Le corselet est plus large que la tête, assez fortement arrondi sur les côtés, avec la ponctuation marginale peu prononcée et confondue avec la reticulation de la surface, qui est beaucoup plus forte que sur la tête; les impressions latérales de la base sont bien marquées ainsi qu’une ligne foveiforme longitudinale sur le milieu. L’écusson est de couleur plus testacé que les élytres; celles-ci ont leur base de la largeur du corselet, et ensuite régulièrement ovalaires jusqu’à l’extrémité ayant la partie la plus large vers le milieu; la reticulation est aussi forte que sur le corselet; l’angle huméral, une tache latérale au milieu et la marge vers l’extrémité, ainsi que les épipleures paraissent un peu plus claires que le reste des élytres.”

This is evidently a species of *Agabus*.—D.S.

1228. *Colymbetes (Ilybius) fraterculus*, Lec., Proc. Ac. Phil. 1862, p. 521. North America.

“Base of thorax broadly rounded; brownish-black, slightly bronzed, oval, slightly dilated at the middle, not less obtuse behind; thorax with the sides nearly straight; elytra with the anterior pale spot very small, the hind one wanting; lines of punctures visible only behind the middle. 42. North Red River.”

1229. *Colymbetes gœdeli*, Villa, Col. Eur. dupl. 1833, p. 33. Italy.

“Ovatus, niger, subdepressus; pedibus elytrisque piceis; thoracis elytrorumque margine exteriore flavo.”

This may I think be allowed to be forgotten in future.—D. S.

1230. *Colymbetes gutticollis*, Say, Tr. Am. Phil. Soc. IV, p. 442. Mexico.

“Thorax yellowish with four black spots; head black, anteriorly and band of vertex yellow. Head black; a transverse yellowish band between the nearest points of the eyes; a dilated yellowish triangle occupying all the anterior part of the head, the apex being at the middle of the face; antennæ and palpi honey-yellow, dusky at their tips; thorax honey-yellow, anterior margin blackish; posterior margin dusky; four large black spots in a transverse series, the two intermediate ones nearer together; elytra honey-yellow with minute black points more or less crowded so as to give a dusky, sometimes almost blackish appearance; lateral margin destitute of black punctures, but with a black line on the posterior curvature; at base, particularly the humeral base, destitute of the black punctures; three regular series of small black dots; beneath black; pectus, feet and epipleuræ yellowish. Length, over two-fifths of an inch.”

“Taken in the river beyond Vera Cruz.”

“It is about the size of the *C. adpersus*, Fab., which it considerably resembles if we except the thoracic black dots.”

This is probably near if not actually identical with *C. binotatus* (No. 935); the description in several points does not apply to that species very well.—D. S.

1231. *Colymbetes impressus*, Zubk., Bull. Mosc., VI, 1833, p. 317. Turcomania.

“Long. 3 lig. larg. $1\frac{1}{2}$ lig. Il est brun avec les bords de la tête, du corselet et des élytres un peu ferrugineux. Le corselet à une impression bien marquée au milieu, près du bord postérieur. Les élytres paraissent lisses, mais avec une forte loupe on voit qu'ils sont couverts de petits points très rapprochés. Chaque élytre a le long de la suture une série de points enfoncés, rapprochés, inégaux. Le dessous du corps est noir; les pieds sont ferrugineux.

“Turcomania.”

1232. *Colymbetes inæqualis*, Horn, Tr. Am. Ent. Soc., 1871, p. 330. North America.

“Elongate oval, broader behind the middle. Head black with vertical rufous spot, and anterior margin pale yellow, very finely and densely punctured. Thorax yellowish or brownish with median transverse band and narrow margin at middle of base black, surface intricately and confluent lined and in the intervals punctured, lines obsolete at margin which is densely and finely punctured with a few coarser punctures intermixed. Elytra brownish, sometimes paler, margin paler than disc; surface sculptured with transverse lines more deeply graven at the basal two thirds, in which region the surface is subopaque from the intervals between the lines being scabrous; apical third more shining. Body beneath black shining, surface finely transversely strigose, strigæ becoming longitudinal at the first two abdominal segments and at the sides of the others, and at the middle of the segments the lines are nearly

transverse, but very distantly placed. Legs pale, femora picceous; legs sometimes entirely black. Length, .66-.70 inch; 16.5-17.5 m.m."

This species is closely allied to *C. seminiger*, Lec., (No. 963), but according to a female recently communicated to me, is narrower, has the legs and epipleuræ paler, and the sculpture of the thorax and elytra much coarser than in the male of *C. seminiger*.—D. S.

1233. *Colymbetes includens*, Walk., List. Col. Lord, p. 14. Arabia.

"Black, elliptical, smooth, shining. Head with an interrupted transverse tawny streak in the disc; forepart tawny, including a black spot on each side. Palpi, antennæ and legs tawny. Prothorax testaceous, with two abbreviated black bands, one in the disc, the other on the hind border. Elytra with a testaceous ground hue, which is very closely covered with minute black speckles. Length of the body 6 lines."

1234. *Colymbetes interclusus*, Walk., Ann. Nat. Hist. 3rd Ser. II, 1858, p. 204. Ceylon.

"Ater, capite antice, thoracis lateribus latis, elytrorum fascia lata basali et vitta marginali postice attenuata luteo-ferrugineis. Long. 5½ lin."

This is I believe a species of *Rhantus* unknown to me.—D. S.

1235. *Colymbetes lateralis*, Gebl., Nouv. Mem. Mosc. II, p. 40. Siberia.

"Oblongo-ovalis, luteus, supra subtilissime alutaceus, thorace macula apicali elytrisque nigro-æneis, his margine late luteo. Long. 4 lin., lat. 2 lin. Eneo-nitidus."

Motschulsky in Schrenck's Amur Reise, p. 102, assigns this species to the genus *Ilybius*.—D. S.

1236. *Colymbetes latus*, Gebl. Bull. Ac. Pet. VIII, 1841, p. 371. Siberia.

"Dilatatus, niger, subtilissime coriaceus, ore, antennis, thoracis extremo margine pedibusque anticis ferrugineis, thoracis lateribus longitudinaliter impressis, ruguloso-punctatis, elytris postice depressis, late rotundatis, lineis tribus subelevatis et pone illas striis tribus e punctis majoribus. Long. 4½ lin., lat. 2¾ lin."

"Valde affinis *C. bipustulato*; sed statura latiore et forma elytrorum differre videtur."

The genus appears to me doubtful, although the comparison made is, I suppose, with a species of *Agabus*.—D. S.

1237. *Colymbetes lineatus*, Redt., Hugel. Casch. IV, p. 503, pl. 23, f. 5. India.

"Ovalis, niger, clypeo, vertice, angulis anterioribus thoracis, antennis, palpis pedibusque anterioribus rufo-ferrugineis; elytris striis macularibus basique pallide-testaceis. Long 3.""

"Durch seinen flachen Körper und vollkommene ovale Form desselben auffallend von der gewöhnlichen Form der *Colymbeten* verschieden."

I know nothing like this, and am doubtful what it should go near; perhaps the Japanese *Agabus dissimilis*, No. 766.—D. S.

1238. *Colymbetes magellanicus*, Bab., Tr. Ent. Soc. III, p. 10. Patagonia.

"Ovatus, niger, subdepressus, elytris subcostatis macula parva laterali oblona fenestrata, subtus niger, antennis pedibusque fuscis. Long. 3, lat. 1½ lin."

"Ovate, black, very minutely reticulate strigose. Head immaculate. Antennæ fuscous. Thorax

much broader behind than in front, the hinder angles slightly acute. Scutellum black. Elytra oval, obscurely ribbed longitudinally, and having at a little beyond the middle, and near to the outer margin, a minute oblong fenestrated spot; the usual striæ scarcely distinguishable, and very irregular. Body beneath black. Legs fuscous."

Hab., Tierra del Fuego.

The type in the British Museum seems to be a species of *Platynectes*.—D. S.

1239. *Colymbetes marmoratus*, Perroud, Ann. Soc. Linn. Lyon., 1864, p. 77. New Caledonia.

"Oblongo-ovatus, niger, capite in vertice brunneo-rubro. Elytris rufo-brunneo vermiculatis, in singulis punctis triplici serie; palpis, antennis pedibusque rufo-piceis. Long. 0,012m., larg. 0,006m."

"Cette espèce qui se rapporte beaucoup du *Colymb. calidus*, Fab., a été prise à Kanala, dans le mois de Janvier, par M. Montrouzier. Elle paraît très rare."

This may possibly be a species of *Hydaticus* or *Rhantus*.—D. S.

1240. *Colymbetes monostigma*, Hope, Proc. Ent. Soc., 1842, pp. 39 and 47. Australia.

"Ater, nitidus, elytris uno aurantio stigmatè ornatis, corpore infra nigro, pedibus rufo-piceis. Long. lin. $3\frac{1}{4}$, lat. lin. 2. Port Essington."

This may possibly prove to be a species of *Platynectes*.—D. S.

1241. *Colymbetes obscuricollis*, Aubé, Spec. p. 251. Chili.

"Ovatus, supra flavicans, infra niger; thorace punctato rugoso, in medio amplius nigricante; elytris crebre nigro-irroratis; prosterno nigro. Long. 10 m.m., larg. $5\frac{1}{2}$ m.m."

[*This diagnosis is followed, l. c., by a description.*]

The description seems to indicate a species very similar to *D. signatus* (No. 926). The type in Chevrolat's collection has I believe been nearly eaten up by *Anthreni*.—D. S.

1242. *Colymbetes octodecimmaculatus*, MacL. Ann. Jav., p. 31. Java.

"Niger, capite maculis tribus, thorace marginali, elytris vitta marginali maculisque novem flavis. Long. corp. $\frac{5}{18}$ inch."

"Caput maculis tribus mediis. Thoraceque macula marginali flavis. Elytris striis tribus punctorum obsoletissimorum, vitta marginali nec basin nec apicem attingente, maculis flavis tribus basalibus, quatuor mediis fasciam fere formantibus et duabus apicalibus. Corpus subtus nigrum abdominis lateribus rufo-maculatis. Pedes quatuor antici flavi."

This probably belongs to the genus *Platynectes*.—D. S.

1243. *Colymbetes phæopterus*, Kirby, Faun. Bor. Am. IV, p. 70. North America.

"Ellipticus, subdepressus, ater, nitidus; elytris fuscis, margine laterali dilutioribus; ore, antennis pedibusque, ferrugineis; prothorace serie postico interrupto."

"Brown-winged *Colymbetes*, elliptical, subdepressed, very black, glossy; elytra brown, externally paler, mouth, antennæ, and legs ferruginous; prothorax with the posterior series interrupted. Length of the body $3\frac{1}{4}$ — $3\frac{1}{2}$ lines."

"Two specimens taken in Lat. 54° ."

"Description. Body nearly elliptical, rather depressed, smooth, very black, glossy. Head with a pair of transverse obscure red spots in the vertex; mouth and antennæ testaceous: posterior series of the prothorax thickly punctured, and discontinuous in the middle; elytra brown, a little paler at the base

and side; epipleura yellow; sculpture of the elytra like that of *C. semipunctatus*, but fewer punctures in the side; legs ferruginous; body underneath longitudinally scratched."

"This species appears to be the American representative of *C. paludosus* (*Dytiscus politus*, Marsh.) which it nearly resembles, but the anterior part of the front is black, and not yellow as in that species; and the prothorax is wholly black, without a broad rufous margin."

In the Munich Catalogue this is placed as a synonym of *Colymbetes discolor*, Harris (No. 1222). I do not know on what authority.—D. S.

1244. *Colymbetes picipes*, Kirb. Faun. Bor. Am., IV, p. 74. North America.

"Ovalis supra æneo-niger, obscurus, reticulatim confertissime aceductus; ore antennisque ferrugineis; pedibus quatuor anterioribus piceis. Length. 4½ lines. Near *C. ater*."

This is possibly an *Ilybius* near *I. ignarus*, (No. 789).—D. S.

1245. *Colymbetes rotundicollis*, Bab., Tr. Ent. Soc., 1841, p. 7. Patagonia.

"Oblongus, thorace elytrorum basin æquanti, lateribus rotundatis, fuscis, subtus niger; elytris crebre nigro-reticulatis striisque disci punctatis, antennis pedibusque fuscis. L. 4, lat. 2 lin."

"Whole insect fuscous. Head nearly black on the crown, minutely punctured, with two deep foveæ between the antennæ. Thorax transverse, short, broadly emarginate in front, with the angles acute, the sides rounded, depressed, rugose, the hinder margin sinuated with a small longitudinal impression on each side, the hinder angles rounded; the anterior margin black, and several irregular dark clouds upon the disk. Scutellum dark fuscous, with its acute apex paler. Elytra oblong-ovate, so thickly covered with dark broad reticulations as to appear nearly black, the interior margins paler, the usual striæ rather strongly marked. Body beneath black. Legs fuscous."

"Hab. alpine situations in Tierra del Fuego."

This is no doubt a species of *Lancetes*, very close to *C. pramorsus* (No. 916), possibly identical therewith.—D. S.

1246. *Colymbetes ruficeps*, Men. Cat. rais., p. 141. Caucasus.

"Oblongo-ovatus, subdepressus, niger; capite, antennis, thoracis medio, pedibusque obscure rufis. Long. 4 li., larg. 2 li."

"Il est un peu plus étroit et plus petit que le *Col. confinis*, Gyll., mais sa couleur le fait surtout facilement distinguer."

"Lenkoranka, juin, deux exemplaires non loin de la mer."

In the Munich Catalogue this is recorded as a species of *Agabus*, and probably this is correct.—D. S.

1247. *Colymbetes signatus*, Grinn., Steirn. Col., p. 32. Styria.

"3 Linien Länge, gegen 2 Linien breite; Farbe glänzend schwarz; flügeldecken sehr klein punktiert mit zwei auf jedem flügelrand befindlich braun-gelben puncten, wovon die oberen, über die mitte gegen hinten, gut bemerkbar, die anderen aber, gegen das ende der flügelspitzen fast unkenntlich sind; braune füllhörner, unten braun, gegen die spitzen schwarz. Halt sich im faulen Holz auf."

This description cannot be recognized as that of any particular species, although it perhaps indicates an *Agabus*; it had better pass into oblivion.—D. S.

1248. *Colymbetes simplex*, Walk., List. Col. Lord., p. 11. Arabia.

"Black, elliptical, smooth, shining. Head in front, palpi, antennæ and four anterior legs reddish; an impression on each side of the head. Prothorax with reddish sides, and with a transverse reddish streak

on each side near the fore border, and a middle longitudinal impressed line. Each elytron with four lines of impressed points and with a tawny costa. Length of the body, $7\frac{1}{4}$ lines."

It would appear from the above that this is a species near to if not identical with *Colymbetes piceus*, Kl. (No. 957).—D. S.

1249. *Colymbetes sobrinus*, Motsch. Bull. Mosc. 1859, III, p. 170. North America.

"*Depressiusculus*, ovatus, subdilatus, postice acuminatus ruguloso-reticulatus, nitidus supra niger, subtus ater, ore, palpis, antennis, epipleuris pedibusque plus minusve rufescentibus; capite triangulare antice areuato, quadrifoveolato; thorace transverso, ad basin utrinque transversim impresso anticeque grosso punctato, lateribus marginatus, angulis anticis prominulis, posticis subacutis; elytris subparallelo ovatis, punctis distinctis quadruplici serie; trochanteribus obtusis. Long. 4 l., lat. $2\frac{1}{6}$ l."

"Par sa forme aplatie et anguleuse il ressemble à notre *C. neglectus*, Er. et au *C. chalconatus*, Panz., mais paraît encore plus déprimé et plus parallèle. La tête est triangulaire, arrondie en avant, avec quatre fossettes, dont deux sur le front et deux sur la marge interne des yeux et postérieurement. Le corselet est transversal, avec des gros points épars le long du bord antérieur et de pareils dans les impressions transversales qui se voient de chaque côté de la base et qui s'effacent entièrement au milieu de cette dernière. Les élytres sont plus fortement reticulées que le corselet et marquées chacune de quatre stries formées par des points aussi gros que ceux du corselet, dont la quatrième n'est visible que sur la partie postérieure du côté latéral, qui fait un peu saillie; près de la carène latérale il y a encore une rangée de points imprimés." Ross Colony.

This is probably a species of *Agabus*.—D. S.

1250. *Colymbetes (Rantus) socialis*, Waterh., Ann. Nat. Hist. 4 ser. XVIII, p. 106. Rodriguez Island.

"*C. elongato-ovalis*, supra obscure flavicans, infra niger; capite postice nigro, vertice transversim flavo-notato; thorace disco guttis parvis duabus approximatis piceis notato; elytris obscurioribus (flavo-limbatis); prosterno pallido. Long. $4\frac{1}{2}$ lin., lat. $2\frac{3}{8}$ lin."

"Elongate oval, shining. Head yellow with an oblique spot on each side on the forehead, and the neck black, the black portions uniting at the eyes. Thorax yellow, with the middle of the anterior and posterior margins and two approximate discoidal spots pitchy; very shining, with a line of punctures along the front margin; there is also a line of obscure punctures along the sides and extending a short distance along the posterior margin; the extreme lateral margins are distinctly incrassate. Scutellum pitchy. Elytra shining, with the sutural line and the sides yellowish, the rest closely spotted with small brownish markings as in *C. notatus*, F.; each elytron with three rows of rather large punctures, each row containing about eight or ten punctures. Underside very shining, black, except the prosternum which is yellow, and the margins of the abdominal segments, which are obscurely pitchy. Legs pitchy yellow; intermediate femora and tibiae moderately thickly and finely punctured."

1251. *Colymbetes strigosus*, Lec., Proc. Ac. Phil. 1862, p. 522. North America.

"Elongate oval; thorax with sinuous rugosities, not connected together; lines of elytra deep and distant; legs very dark. 62. Fem. San Diego, California."

This is considered by Crotch to be the same as *C. strigatus*, No. 964; it may possibly I think prove to be a distinct species, but I have seen only the male in the case of one of the species, and a female in the other.—D. S.

1252. *Colymbetes submaculatus*, Cast., Etud. Ent., p. 102. Cayenne.

“Un peu allongé; d'un brun noir luisant; tête d'un rouge ferrugineux; une tache de même couleur aux angles antérieurs du corselet; élytres avec trois faibles points jaunes placés sur le bord extérieur; dessous du corps et pattes ferrugineux. Long. $2\frac{3}{8}$ lignes, larg. $1\frac{1}{2}$ lignes.”

See also Aubé, spec. p. 321.

This perhaps should be placed in *Platynectes*, near No. 769.—D. S.

1253. *Colymbetes subquadratus*, Motsch., Schrenck, Reise, p. 102, pl. VII, f. 7. East Siberia.

“Oblongo-ovatus, postice subdilatus, apice obtuse attenuatus, depressiusculus, subtilissime scarificatus fere glaber, nitidus niger, supra subæneus; ore, antennis, thoracis lateribus angustissime, abdominis segmentis margine pedibusque rufis; femoribus infuscatis; thorace antice sparsim punctato, angulis posticis rectis; elytris irregulariter triseriatim punctatis. Long. $2\frac{3}{4}$ lin., lat. $1\frac{1}{2}$ lin.”

“Il ressemble au *Colymb.* congener, Payk. de Lapponie, mais il est moins ovale sur les côtés et plus élargi postérieurement, tandis que le corselet est plus large en avant, et ses côtés plus droits et presque parallèles.

“Il habite tous les ruisseaux en Daourie jusqu' au fleuve Amour.”

This would appear to belong to the genus *Agabus*—D. S.

1254. *Colymbetes suturalis*, Macl., Ann. Jav., p. 31. Java.

“Elytris cinereo-nigroque variegatis: striis tribus punctorum impressis suturâ nigrâ lineâque utrinque rubrâ. Long. corp. $\frac{1}{2}$ inch.”

“Caput obscure ferrugineum punctis duabus impressis, medio utrinque nigrum, ore, palpis antennisque testaceis. Thorax glaber lævis marginatus subcanaliculatus rufus macula media transversali nigra. Elytra puuctis numerosissimis approximatis nigris cinereisque variegatis, striis punctorum obsolete, margine exteriori rubro. Corpus subtus nigrum pedibus quatuor anticis femoribusque posticis piceis.”

Possibly the same as *C. discicollis*, Aubé, (No. 1221).—D. S.

1255. *Colymbetes trivittatus*, Mont., Ann. Soc. Agr. Lyon. VII, 1, p. 8. Ins. Woodlark.

“Long. 6 lig., larg. 3 lig., $\frac{1}{2}$. Brun obscur brillant. Corselet fauve, avec le bord antérieur et le milieu rembrunis et de la couleur du corps. Elytres brunes, avec la bordure, une ligne prenant près du bord antérieur et se courbant à angle droit près du bord latéral, et deux autres lignes, plus voisines de l'extrémité, interrompues, transversales, fauves. Dessous brun olivâtre.”

The colour described is not what is usual in the *Colymbetides*, and it would thus appear that the insect is more likely a member of the *Hydaticides* than a *Colymbetes*.—D. S.

1256. *Colymbetes (Hybius) unguularis*, Lec., Proc. Ac. Phil., 1862, p. 521. North America.

“Base of thorax broadly rounded. Black, slightly bronzed, oval, not dilated at the middle, less obtuse behind; elytra with the usual pale spots; outer hind claw two-thirds as long as the inner one. .55. Middle States.”

Perhaps this may be the same as the European *Dytiscus ater* (No. 781).—D. S.

1257. *Colymbetes vibicollis*, Hoch., Chaud. En. Car., p. 216. Caucasus.

“Oblongo-ovatus, subdepressus, supra testaceus, vertice thoracisque macula media transversa obsoleta nigris; elytris creberrime nigro-irroratis; subtus niger, segmentorum marginibus pedibusque ferrugineis, thoracis medio carinula longitudinali parum perspicua abbreviata instructo. Long. $5\frac{1}{2}$ lignes.”

“ Il est incontestablement très voisin de pulverosus Knoch, mais il en diffère par une petite ligne longitudinale, finement élevée au fond d'un léger enfoncement sur le milieu du corselet (cette ligne est constante quoique quelquefois très courte), par la tache du milieu, toujours si distincte dans le pulverosus, et ordinairement presque effacée dans mon espèce, enfin par les bords rougeâtres des segments de l'abdomen. Le consputus offre ordinairement la même ligne sur le corselet, et la superficie est presque exactement la même, mais dans le vibicicollis, le dessous du corps est toujours d'un noir-brillant, et les bordures rougeâtres des segments de l'abdomen sont plus étroites. Les crochets des tarses antérieurs des mâles sont indifféremment égaux ou inégaux.”

I should suppose this may prove to be *Colymbetes pulverosus* (No. 924), but the statement as to the male claws makes one believe that more than one species was under the eyes of the describer.

1258. *Copelatus angustatus*, Chev., Ann. Soc. Fr., 1863, p. 201. Cuba.

“ *Angustus, elongato-ovatus, depressus, brunneo-piceus*; capite, antennis, prothorace fascia basali elytrorum pedibusque rufo-ferrugineis; sulco transversali antico prothoracis fortiter impresso, sed postico obsolete; elytris striis decem angustis, approximatis, alteraque ad latera antice abbreviata utriusque impressis. Long. $4\frac{1}{2}$ mill., lat. $1\frac{3}{4}$, 2 mill. Cuba (Havane), D. F. Poey.”

“ Cette espèce est très voisine du *C. celatipennis*, Aubé, et a bien pu être confondue avec elle. Celle-ci est plus étroite, les stries des élytres sont minces, plus profondes, très rapprochées, et les alternes impaires plus courtes vers le sommet, se prolongeant d'avant en arrière plus que chez l'espèce comparative.”

1259. *Copelatus australiæ*, Clk., Journ. Ent. II, p. 19. Australia (Victoria).

“ *Oblongo-ovalis, elongatulus, punctato-striatus, niger, capite impunctato, inter oculos undique bipustulato, nigro, ad apicem rufo-adumbrato*; thorace ad latera subrotundato, ad margines undique antice et postice depresso et plus minusve fortiter punctato, ad medium disci breviter canaliculato, lineolis brevissimis punctiformibus veluti aceductis, antice sparsis postice numerosis, nigro ad latera subrufulo; elytris subparallelis sat productis, punctorum seriebus tribus, ad latera et ad medium sparsim aceductis, nigris; pedibus antennisque rufo-fuscis vel rufis; corpore subtus nigro. Long. corp. $4\frac{1}{2}$ lin., lat. $1\frac{3}{4}$ lin.”

According to the specimens in the British Museum, this appears to be allied to both *C. extensus*, (No. 815), and *C. melanarius*, (No. 817), being of the size and form of *C. extensus*, but having more distinct sculpture on the thorax and elytra.—D. S.

1260. *Copelatus basalis*, Boh., Ins. Caffr. I, p. 244. Caffraria.

“ *Oblongus, depressiusculus, nitidus, supra fusco-piceus, subtus testaceus*; capite antennis prothoraceque ad latera rufo-testaceis, hoc medio transversim obsolete infuscato; elytris sat profunde 12 striatis, striis omnibus ante apicem modice, alternis magis abbreviatis, duabus exterioribus longe ante basin desinentibus; margine basali flavo-testaceo. Long. $5\frac{1}{2}$, lat. $2\frac{3}{4}$ m.m.”

[*This diagnosis is followed, i.e., by an expanded description.*]

1261. *Copelatus elongatulus*, MacL., Tr. N. S. W. II, 2, p. 127. Australia, (Gayndah).

“ Length $1\frac{3}{4}$ lines. Elongate-ovate, subconvex. Head dark red, with two short fine transverse striolæ on each side between the eyes. Thorax of a brownish red, and nearly truncate at the base, with the median line distinct in the centre only, and with two broad rather wrinkled depressions at the base. Elytra of a cloudy reddish brown, with the base margined with yellowish red, and with several rows of small distinct punctures not very regularly placed, and extending from the base to the apex on each elytron.”

This is probably allied to *C. gracilis* (No. 808).—D. S.

1262. *Copelatus externus*, Kirsch, Berl. Ent. Zeit. XVII, p. 132. Peru.

“Oblongo-ovalis, nitidus, fusco-ferrugineus, prothoracis lateribus elytrorumque basi flavidiis; prothorace disco punctulato, versus latera striolato, intra angulos posticos impresso, medio linea brevi; elytris disco externo striis sex antice posticeque valde abbreviatis. Long. $5\frac{1}{2}$, lat. $3\frac{1}{4}$ m.m.”

“Länglich-oval, nach hinten stumpf zugespitzt; bräunlich rostgelb, der kopf vorn und am scheitel, die seiten des halsschildes und der breite wurzelrand der flügeldecken gelblich, an den hinterbeinen die sehienen und füsse mehr rötlich. Das halsschild von den spitzen hinterecken an nach vorn fast geradlinig verengt, vor den hinterecken eingedrückt, die seiten durch eingedrückte punkte breit abgesetzt, auf der scheibe fein punktirt und mit einer kurzen längslinie versehen, nach den seiten hin mit kurzen und scharfen längsrissen besetzt. Die flügeldecken in der mitte der äusseren scheibe mit 6 streifen, die vorn und hinten stark abgekürzt sind und von denen der 1ste, 3te und 6te bis zur basis und spitze als feine punktreihen fortgesetzt sind, ausserdem auf der innern scheibe eine punktreihe. Die seiten der hinterbrust und des hinterleibs fein längsrissig.”

1263. *Copelatus formosus*, Woll., Col. hesp., p. 34. Cape Verde Islands.

“Niger, (interdum piceo-niger), subnitidus; capite prothoracisque lateribus plus minusve rufo-ferrugineis; elytris eleganter arguteque simpliciter striatis, per basin interstitiumque (apice excepto) sublaterale, neonon in macula parva subapicali rufo-testaceis; antennis pedibusque rufo-testaceis. Long. corp. lin. $2\frac{1}{3}$ – $2\frac{1}{2}$.”

“Hab., S. Iago; in aquis intermediis, precipue fluentibus, rarior.”

This is supposed by the describer, *l. c.*, to be an African species identical with one from Zululand.—D. S.

1264. *Copelatus gallapagoensis*, Wat., Ann. Nat. Hist. XVI, 1845, p. 23. Gallapagos Islands.

“*Copelatus* (?) *galapagoensis*, Cop. ovatus, parum convexus, piceus; capite, marginibus lateralibus thoracis et elytrorum, antennis pedibusque rufo-testaceis; thorace disco nigro, punctis minutissimis subremotis impressis; elytris distincte sed anguste striatis.—Long. corp. $2\frac{2}{3}$ lin.”

“The Galapagos species differs from the *Colymbetes elegans* of Babington (= *Dytiscus posticatus* No. 875, *Inj. op.* D. S.) in being smaller and proportionately rather narrower; in having the legs of a paler hue, (these being pitchy black in *C. elegans*, and pale testaceous in *C. galapagoensis*), and the striae of the elytra more perfect. In *C. galapagoensis* the striae are abbreviated but the second, fourth, sixth, eighth and tenth all terminate on the same line or nearly so, that line being about the posterior fourth of the elytron.

The thorax presents extremely delicate punctures, and numerous minute longitudinal scratches, requiring a tolerable powerful lens to perceive them; they are most distinct towards the sides and hinder part of the thorax. . . .”

The individual described is no doubt a female.—D. S.

1265. *Copelatus normalis*, Er., Wieg. Arch. 1847, I, p. 74. Peru.

“Oblongo-ovatus, depressus, nitidus, piceus, capite, prothoracis disperse striolati lateribus pedibusque rufis, elytris fuscis, striga laterali pallida, dorso 10-striatis. Long. $3\frac{1}{2}$ ”.

1266. *Copelatus obtusus*, Boh., Ins. Caffrar., p. 242. Caffraria.

“Ovalis convexiusculus, subtiliter punctulatus, nitidus, nigro-piceus; antennis palpis, capite antice et in vertice, pedibus prothoraceque ad latera rufo-testaceis; elytris apice obtusis, striis in disco sex tenuibus, interioribus versus apicem remote punctulatis, alteraque ad marginem utrinque abbreviata, impressis,

interstitiis planis 4 et 5 medio confertissime aciculatis, linea longitudinali disci, margine apiceque rufo testaceis. Long. 6, lat. $3\frac{1}{2}$ m.m."

Caffraria orientalis.

[*This diagnosis is followed, l. c., by a long description.*]

1267. Copelatus quadrisignatus, Regt., Ann. Soc. Ent. Fr. (V) VII, p. lxxviii. Manilla.

"Ovalis, elongatus, depressus; capite testaceo; prothorace testaceo-ferrugineo, late in medio nigro-infusato; elytris nigris utrinque striis sex haud abbreviatis et septima marginali antice abbreviata impressis, vitta transversa ad basin alteraque macula obliqua ad apicem flavo-notatis; subtus rufo-testaceus, pedibus concoloribus. Long. 6 mill."

[*At p. 356, op. cit., a detailed description is given of this species.*]

1268. Copelatus striatellus, Boh., Ins. Caffr. I, p. 243. Caffraria.

"Oblongus, convexiusculus, obsolete punctulatus, nitidus, supra nigro-piceus, subtus rufo-ferrugineus; capite, ore, antennis prothoraceque ad latera, rufo-testaceis, hoc medio infusato; elytris apice attenuatis, disco striis 9 tenuibus, inferiori antice valde abbreviata, alternis 3, 5 et 7 interruptis, mox pone medium desinentibus, margine laterali ultra medium latius rufo-testaceo. Long. 6, lat. $2\frac{3}{4}$ m.m."

Caffraria interior.

[*This diagnosis is followed, l. c., by a detailed description.*]

1269. Copelatus striaticollis, Luc., Cast. Voy. 1857, p. 48. South America.

"Long. 7 mill., larg. 4 mill. Il vient se placer dans le voisinage du C. Duponti, Aubé. Il est ovale allongé, légèrement atténué en arrière et à peine déprimé. La tête le labre et le vertex sont d'un rouge ferrugineux. Les antennes sont rougeâtres, ainsi que les palpes maxillaires et labiaux. Le thorax est noirâtre et assez largement rougeâtre sur les bords lateraux; il est à peu près deux fois et demie aussi large que long, assez largement échancré en avant, très légèrement coupé carrément en arrière, arrondi sur les côtés, qui sont finement relevés; les angles antérieurs sont saillants et aigus, les postérieurs droits et légèrement arrondis; il est couvert d'un assez grand nombre de très petites stries, courtes, lineaires, peu serrées et très légèrement onduleuses. Les elytres ovalaires, sont allongées, légèrement atténuées en arrière et à peine déprimées; elles sont noires avec leurs parties antérieures, médiane, et postérieure, rougeâtres transversalement; elles présentent sur le disque dix stries longitudinales, assez enfoncées; ces stries naissent de la base et ne vont pas jusqu'à l'extrémité; les première et deuxième sont très courtes; les 4me, 5me, 6me et 7me sont moins allongées que les autres. Les pattes sont rougeâtres."

"Minas Geraes."

1270. Copelatus substriatus, Kirsch, Berl. Ent. Zeit. XVII, p. 132. Peru.

"Elongato-ellipticus, nitidus, subtus fusco-testaceus, supra niger, capite ferrugineo, prothoracis lateribus elytrorumque vitta marginali postica flavidis; elytris lineis duabus discoidalibus antice dense punctulatis, postice obsolete, remote punctulatis. Long. $6\frac{1}{2}$, lat. 3 m.m."

" Die flügeldecken an den seiten sehr flach gerundet; oben schwach gewölbt, nach hinten flacher, mit 2 auf der vordern hälfte deutlich eingedrückten, dicht und sehr fein punktirten linien auf der scheinbe, die auf der hintern hälfte nur als punktreihen fortgesetzt sind und einer dritten punktreihe näher den seitenrande, ausserdem auf den beiden zwischenräumen noch je einer reihe sehr entfernt gestellter punkte; die beiden linien auf der scheinbe entsprechen in ihrer lage derjenigen streifen, die bei manchen mehrfach gestreiften Copelatus-arten stärker sind als die übrigen; die scheinbe ist schwarz, die basis und naht trübrot, der seitenrand nach hinten gelblich. Die seiten der hinterbrust längsstrichelig."

1271. *Copelatus undecimstriatus*, Aubé, spec. p. 383. Cayenne.

"Oblongo-ovalis, depressus, brunneo-castaneus; capite et thorace fere unilique rufo-ferrugineis; lineolis vix conspicuis in thorace; elytris in disco striis undecim longitudinalibus alteraque ad marginem antice abbreviata utriusque impressis. Long. $1\frac{3}{4}$. lat. $2\frac{2}{3}$ m.m."

(*A description follows, i.e., the above diagnosis.*)

"Ce *Copelatus* ressemble, au premier aspect, au *decemstriatus*, mais outre le nombre des stries des élytres qui n'est pas le même, il en diffère encore par la forme de son corselet qui est plus sinueux en arrière, la partie médiane de la base s'avancant un peu sur l'écusson, qui par cela même est plus court que dans cette dernière espèce."

1272. *Coptotomus difficilis*, Lee., Ann. Lye. V, p. 204. North America.

"Elongatus, utrinque attenuatus, rufus, subtilissime aciculatus, thorace latitudine plus triplo brevior, lateribus rectis, apice et basi media nigricante, elytris pallidis, sutura nigra, maculis latis discoidalibus, fuscis, margine postice. Long. .28."

"Specimen unicum ad Colorado."

This is considered by Crotch (Rev. N. Am. Dytisc., p. 413) to be the same as *Dytiscus interrogatus* Fab. (No. 911).—D. S

1273. *Coptotomus serripalpus*, Say, Trans. Ann. Phil. IV, p. 443. Mexico.

"Yellowish; elytra brownish varied with whitish. Body oblong-oval, honey-yellow; head black on the posterior margin; labial palpi with the penultimate joint crenate or bituberculate before; thorax on the middle of the anterior and posterior margins broadly black; elytra brownish, with very numerous, minute, honey-yellow points; two very slightly impressed striae, with punctures hardly distinguishable from minute inequalities of the surface, and an indistinct part of a series of hardly impressed punctures each side; from the base near the scutellum proceeds a whitish broad vitta, one-fifth of the length of the elytra, bifid at tip; from the humeral base to the tip proceeds a broad, interrupted and somewhat irregular vitta also whitish; venter piceous. Length less than three-tenths of an inch."

Found on the estate of the Conde del Regla, about ten leagues N.E. of the city of Mexico.

1274. *Cybister aeneus*, Orm., Rev. Zool. 1843, p. 332. South America.

"Ovalis, convexus, ad apicem rotundatus, supra aeneus infra niger, labro fusco, thoracis lateribus viridi-aeneis. Elytris limbo viridi-aeneis, pedibus anticis fusco-nigris, posticis nigris. Mas. . . . Femina elytris laevibus. L. 30 l., 16 mill."

"Il diffère du *C. prosteroviridis* par sa taille plus petite, sa couleur bronzée, et le prosternum qui est tout noir. Il habite le Brésil."

I cannot identify this species, but think it may prove to be a variety of *C. glaucus*, No. 1104.—D. S.

1275. *Cybister auritus*, Gerst., Arch. Nat. XXXVII, p. 43. Africa.

"Parvus, nigro-piceus, nitidus, supra aeneo-nicans, antennis, labro, clypei fascia anteriore, prothoracis margine laterali testaceis, vel ferrugineis, pedibus anterioribus elytrorumque macula subapicali (interdum obsoleta) rufis; elytris perspicue triseriatis punctatis, tibiaram posticarum calcare externo breviusculo, acute lanceolato. Long. $15\frac{1}{2}$ m.m.—17 m.m. Mas et Fem. Var. Fem., elytrorum disco obsolete et minus confertim pustuloso."

"Zu den kleinsten Arten der gattung gehörend, nicht grosser als die von Perty *C. marginithorax*

belegten, kleiner der *Cyb. levigatus*, Fab. welchen die hier in rede stehende art auch in der Färbung und Zeichnung sehr ähnlich ist."

Two males from Madagascar, three females from Zanzibar.

This is probably near *C. filicornis* (No. 1129), and may possibly be *C. marginicollis*, Boh. (No. 1280).—D. S.

1276. *Cybister dejeani*, Aubé, Spec. p. 64. India, (Malabar).

"Ovatus, postice dilatatus, ad apicem paulo oblique rotundatus, convexiusculus, nitidus, supra et infra nigro-piceus; labro, epistomo, thoracis lateribus vittaque longitudinali, simplici, versus elytrorum marginem luteis; elytris extrorsum coriaceo-rugulosis; pedibus anticis testaceo-luteis, posticis nigro-piceis."

"*Mas*: elytris inimpresis. *Femina*: striis minimis irregularibus; thorace dense reticulato-strigoso Long. 20 m.m., larg. 11 m.m."

[*A description follows*, l. c.]

1277. *Cybister goryi*, Aubé, Spec. p. 81. Australia.

"Ovatus, postice late dilatatus, ad apicem oblique rotundatus, convexiusculus, nitidus, supra nigro-piceus, infra ferrugineus; labro, epistomo, thoracis lateribus vittaque longitudinali, simplici, in elytrorum margine luteis; pedibus anticis testaceo-luteis, posticis ferrugineis.

Mas et femina: thorace et elytris laevibus. Long. 18½ m.m., larg. 10½ m.m."

[*A description*, l. c., *follows this diagnosis*.]

This species I should think is allied to *Dytiscus atratus* (No. 1100), but it appears to be paler beneath.—D. S.

1278. *Cybister insularis*, Hope, Proc. Ent. Soc. 1842, pp. 39 and 47. Tasmania.

"Niger, capite integro convexo, thorace sub lente subtilissime punctato, marginibus exterioribus flavescens; elytris nigris flavo-marginatis, disco binis lineis punctorum hand fortiter impresso; corpore infra nigro nitido, pedibus quatuor anticis flavo-ornatis, posticis atro-piceis. Long. lin. 8, lat. lin. 4½."

This is probably a *Homœodytes* near *Dytiscus atratus* (No. 1100).—D. S.

1279. *Cybister jordanis*, Reiche, Ann. Soc. Ent. Fr. 1855, p. 637. Syria.

"*Mas et femina*: thorace elytrisque laevibus. Long. 33–35 m.m. (15–16 lig.) lat. 17–18½ m.m. (8–8¼ lig.)

"Ovalis, postice dilatatus, ad apicem subrotundatus, minus convexus, nitidus; supra nigro-viridis infra testaceo-luteus; palpis, antennis, mandibulis, labro, epistomo, thoracis lateribus, vittaque longitudinali apice subhamato-dilatato elytrorum latera versus, testaceis; pedibus testaceis, tibiis intermediis posticisque fusciscentibus."

[*This is followed by an expanded description*.]

"La femelle entièrement lisse comme le mâle, sur le corselet et les élytres, n'en diffère que par une plus grande dilatation du corps, au delà du milieu."

"Des eaux de Jourdain."

"Cette espèce ressemble, pour la coloration, au *mas* du *Cyb. rœselii*, mais sa forme est plus allongée et moins elliptique."

It is doubtful whether this be a distinct species from *D. rœselii*, (*vide* Nos. 1169 and 1170).—D. S.

1280. *Cybister marginicollis*, Boh., Ins. Caff. I, p. 235. South Africa.

“Ovalis, depressiusculus, postice magis dilatatus, ad apicem nonnihil rotundatus; nitidus, supra atro-ceruleus, subtus nigro-piceus; antennis, labro, epistomate pedibusque luteis; prothorace anguste luteo-marginato, dorso subtilissime, longitudinaliter aciculato, lateribus confertim punctulato; elytris triseriatis punctatis; margine inflexo ferrugineo. Long. 17, lat. 10 m.m. Hab., ad portum natalense.”
[A description, i.e., follows this diagnosis].

It is probable that the species is closely allied to *Cybister filicornis* (No. 1129).—D. S.

1281. *Cybister olivieri*, Crotch, Tr. Am. Ent. Soc. IV, p. 399. North America.

“Very near *C. limbiolatus* but smaller, with the thoracic and elytral margin narrower, the elytral vitta leaves the margin gradually, and is attenuated at about three-fourths. L. 1-10 inch.”

“Mas, stridulating plate with three rugæ. Fem., elytra smooth.”

“Florida.”

According to a female recently communicated by Dr. Leconte to me, this does not belong to *Megadytes*, but is a *Cybister* unknown to me, and of very doubtful position.—D. S.

1282. *Cybister prosternoviridis*, Orm. Rev. Zool., 1843, p. 331. South America.

“Ovalis, convexus, postice dilatatus, ad apicem rotundatus et depressiusculus, nitidus, supra olivaceus, infra niger. Labro ferrugineo, thoracis lateribus viridis, in elytrorum margine viridis, prosternum viridis, pedibus anticis nigro-piceis, posticis nigris. Mas, elytris levibus. Femina. L. 36½ l., 20 mill.

“Il habite le Brésil?”

No comparison with any other species is made, and as the locality is doubtful, the species will not easily be identified. I do not think it would be really from Brazil, and should suspect an African species may be intended.—D. S.

1283. *Cybister vulneratus*, Klug, Symb. phys. IV, pl. 33., f. 1 (the letter-press is not numbered). Arabia.

“*Cybister niger*, thorace lateribus, elytris (in mare levibus, remote punctato-striatis, in femina dense aciculatis) macula postica sanguineis. Long. lin. 12. Habitat in Arabia deserta.”

“Statura fere *D. immarginati*, Fab. at angustior ac dimidio fere minor. Obscurus, niger. Caput obsolete rugosum, subalutaceum, ore antennisque testaceis. Thorax subrugosus, subalutaceus (in femina aciculatus) antice late sinuatus, postice obsolete bisinuatus angulis productis, lateribus obliquis, vix rotundatis, parum reflexis, late obscure sanguineis. Pectus abdomenque levia. Abdominis segmenta intermedia puncto utrinque sanguineo. Segmentum ultimum apice obscure sanguineum. Pedes: Trochanteres anteriores toti, postica apice ferrugini. Femora anteriora apice late ferruginea postica obscure sanguinea. Tibiæ anteriores (in mare cum tarsis) rufo-testaceæ, intermediae extus sanguineæ. Tarsi postici dense ferrugineo-ciliati. Elytra thorace plus quadruplo longiora, ante apicem parum dilatata, lateribus marginata, in mare levia, in femina dense aciculata, lineis punctorum impressorum ad basin approximatorum tunc remotorum tribus instructa maculaque pone apicem ad marginem externum elongata sanguinea ornata.”

I think this is probably one of the forms of *Cybister binotatus*, Klug. (No. 1133).—D. S.

1284. *Cymatopterus obscuratus*, Mann., Bull. Mosc., 1853, III, p. 154. Russian North America.

“Oblongo ovatus, ultra medium valde ampliatus, posterius modice attenuatus; supra nigro-fuscus, subtus cum pedibus aterrimus: labro, frontis margine antico late bisinuato, maculis binis obsoleteis

in medio, antennarum basi thoracis elytrorumque limbo omni anguste rufo-testaceis ; elytris transversim subtilissime strigulosis."

"Var. (*b.*) thoracis limbo late ferrugineo-testaceo, vel thorace ferrugineo-testaceo cum fascia transversa nigra ; elytris in fundo obscure testaceis, lineolis undulatis transversis nigris subtilissime strigulosis, margine basali et laterali dilutionibus. Longit. $8\frac{1}{2}$ lin. Latit. $4\frac{1}{2}$ lin."

According to Crotch, "Rev. North Am. Dytis." p. 406, this is allied to *C. paykulli* of Europe (No. 961).—D. S.

1285. *Dytiscus anxius*, Mann., Bull. Mosc., 1843, II, p. 218. Sitkha.

"Oblongo-ovalis, in elytris vix dilatatus, supra nigro piceus, thoracis limbo omni, elytrorum laterali corporeque pallide flavis, coxarum posticarum laciniis acuminatis acutis. Long. 13—14 $\frac{1}{2}$ l., lat. $6\frac{2}{3}$ —7 lin.

"*D. circumcincto* Ahr., Erichson valde affinis sed ratione longitudinis nonnihil angustior elytris apice profundius punctatis, et coxarum laciniis minus acutis diversus mihi videtur.

"*Femina*, differt a mare tarsis simplicibus, colore minus nitido, thorace magis plano et elytrorum apice fortius punctato."

1286. *Dytiscus bicolor*, Fab., Ent. Syst., I. p. 195. Guinea.

"Supra ater elytris striatis, subtus ferrugineus."

"Habitat in Aquajim*Guineæ, Dom. Isert."

"Statura omnino *D. notati*, at paulo minor. Caput et thorax atra, nitida, ore rufo. Elytra striata, nigra, immaculata. Corpus cum pedibus ferrugineum."

The Munich Catalogue refers this to the genus *Copelatus*.—D. S.

1287. *Dytiscus confusus*, Motsch., Schrenck, Reise, p. 101, pl. 7, f. 5. Siberia.

"Oblongo-ovalis, supra nigro-olivaceus, ore, clypeo, fronte macula triangulari minuta, thoracis limbo, elytrorum lateribus, corpore subtus toto pedibusque testaceis ; thorace trapeziforme, angulis posticis prominulis, acutis ; coxarum posticarum laciniis acutis, medioere productis. *Fem.* elytris levibus. Long. 11—12 l. lat. 6—6 $\frac{1}{2}$ l."

"Form plus étroite que notre *D. marginalis*, dont il n'atteint pas la taille, présentant un corselet à angles postérieurs plus saillants. Il se trouve dans toute la Sibérie orientale, jusqu'au Kamtschatka, et a été aussi rapporté du fl. Amour par M. Maack."

I think this may possibly prove to be *D. circumcinctus* (No. 995).—D. S.

1288. *Dytiscus cordieri*, Aubé, spec. p. 108. North America.

The type of this species in Chevrolat's collection (now in the Brussels Museum) is very mutilated, and is a peculiar specimen of *D. fasciventris*, Say ; Aubé's description does not agree well with this individual, or with any other species, and I think it must have been made from this individual and supplemented or corrected from another species so that I do not reproduce it.

1289. *Dytiscus extenuans*, Walk., Ann. Nat. Hist. 3rd ser. II, 1858, p. 204. Ceylon.

"*Mas*, Ater nitidus, capitis margine antico et thoracis lateribus luteis, elytris vitta submarginali postice attenuata et apices non attingente. Long. 8, lin."

According to the type in the British Museum, this is a small species of *Cybister* ; it may possibly be *C. dejeani* Aubé which is unknown to me.—D. S.

1290. *Dytiscus flavo-cinctus*, Guér., Voy. Coq. II, p. 61, pl. I, f. 18. New Guinea.

“Brunneo-niger, capite transverso, ore duabus maculis rubro-flavis. Thorace laevi, marginibus lateralibus, linea transversa flavis. Elytris ovatis, margine punctisque rubro-flavis. Antennis pedibusque quatuor anticis ferrugineis, subtus brunneo-ferrugineus. L. 13 m.m., l, 8 m.”

“Dorey.”

Although the figure is very poor, it indicates one of the Hydaticini, and not a Colymbetid.—D. S.

1291. *Dytiscus frontalis*, Motsch., Schrenck Reise, p. 101, pl. 7, f. 4. Kamtschatka.

“Oblongo-ovalis, supra nigro-olivaceus, subtus late nigro-annulatus, ore, clypeo, fronte linea triangulari angulata antice ad oculos dilatata, thoracis limbo, elytrorum lateribus, sequentorum marginis subtus pedibusque testaceis: thorace trapeziforme, angulis posticis prominulis; coxarum posticarum laciniiis valde acuminatis; *fem.*, elytris lævibus. Long. 10–11 l., lat. $5\frac{1}{2}$ –6 l.”

“Corselet plus étroit que chez nos espèces d'Europe, rappelant le *D. lapponicus*, et facile à distinguer par la tache en flèche sur la front, qui n'est pas interrompue latéralement.”

1292. *Dytiscus fusco-striatus*, Motsch., Bull. Mose., 1859, III, p. 167. North America.

“Oblongo-ovatus, postice subbilatus, minus convexus, punctatus, supra fusco-olivaceus, ore thoracis limbo, elytrorum margine, corpore subtus pedibusque testaceis: capite lato, ad oculos oblique impresso, antice bifoveolato, postice subcarinato; thorace transverso, antice angustato, lateribus reflexis, angulis posticis acutis prominulis; elytris profundius sulcatis, postice deplanatis; trochanteribus posticis acutissimis. *Fem.* Long. $11\frac{1}{2}$ l., lat. $6\frac{1}{2}$ l.” Ross Colony.

“Il ressemble un peu au *Dyt. lapponicus*, mais il est un peu plus grand et plus allongé et moins convexe, les angles postérieurs du corselet sont plus aigus et plus saillants, les sillons près de la suture des élytres plus raccourcis et généralement les dessins jaunes du dessus de la tête et le corselet sont plus étroits et moins visibles. . . . &c. Le dessous du corps est entièrement testacé.”

1293. *Dytiscus ibericus*, Rosenh., Thier. Andal., p. 47. Spain.

“Oblongo-ovatus, subtus flavus, sterno nigro-piceo, abdominis segmentis anticis nigro-fasciatis; supra nigro-olivaceus, prothoracis elytrorumque margine laterali anguste flavis; coxarum posticarum laciniiis obtusis. Long. $11\frac{1}{2}$ lin., lat. 6 lin.”

“*Mas et Femina*: elytris lævibus.”

“Gehört zur zweiten abtheilung der Aubé'schen *Dytiscus*: bei denen das halsschild nur an den seiten gelb gerandet ist, und sieht, da auch das halsschild dicht punktirt ist, einem weiblichen *D. punctulatus*, bei dem die flügeldecken ungestreift wären, etwas ähnlich. Durch die gelbe unter—und schwarz-olivengrüne oberseite ist er mit demjenigen form des *D. marginalis*, bei welcher die weibchen glatte flügeldecken haben, zu vergleichen: von dieser weicht er jedoch sehr auffallend durch etwas stumpfere spitzen der hinter lufften, schwarze zeichnung der unterseite, dicht punktirtes und nur an den seiten gelb eingefasstes halsschild ab. Vergleichen wir endlich den *D. pisanus*, so zeigt die neue art etwas weniger stumpfe und schmälere spitzen der hinterlufften, glatte flügeldecken und ein nur an den seiten gelb gerandetes halsschild. Dieses ist hier ausserdem sehr wenig verflacht und die gelbe einfassung sehr schmal. Der käfer ist länglich-eiförmig, unten gelb, oben schwarz-olivengrün, glänzend. Der mund, die taster, die lefze und der vorderrand des kopfs sind gelb, ebenso die föhler, ein fleck vor den augen und eine winklige zeichnung zwischen diesen roth. Der kopf selbst ist wenig gewölbt, sparsam sehr fein punktirt glänzend. Das halsschild ist kurz, quer, $2\frac{1}{2}$ mal so breit als lang, an den seiten nach vorn verschmälert, ziemlich gerade, zart gerandet, und schmal gelb, vorn breit und flach ausgerandet, an der basis gerade, die hinterecken spitzwinklig, die vorderen vorgezogen und spitz, herabgebogen, ziemlich gewölbt, an den

seiten sehr wenig verflacht, dicht fein punktiert, matt glänzend. Das schildchen ist herzförmig, schwarzglatt. Die flügeldecken sind länglich-eiförmig, vorn so breit als die basis des halsschildes, an den seiten sehr wenig gerundet, hinter der mitte am breitesten, gegen die spitze allmählig verschmälert und hier stumpf abgerandet, mässig gewölbt, zerstreut und fein, gegen die spitze dichter und deutlicher punktiert, über die mitte laufen die gewöhnlichen punktreihen: sie sind ungefureht, glänzend, an den seiten schmal gelb gerandet. Die unterseite ist gelb, das brustbein ganz, die ersten hinterleibssegmente an ihrer basis schwarz. Die spitzen der hinterhüften sind schmal, am ende stumpf, nur wenig zugespitzt."

"Ein weibliches exemplar dieser ausgezeichneten art wurde am 14 märz bei Algeciras in einem klaren wassertümpel gefangen, in dem sich indessen noch einige solche käfer fänden, die aber nicht erbeutet werden konnten."

Nothing is at present known of this species, but Kraatz has suggested (Berl. Ent. Zeit. XVIII, p. 296) that perhaps it is only a variety of *D. pisanus*, but this appears to me not very probable.—D. S.

1294. *Dytiscus octopustulatus*, Fab., Ent. Syst. I, p. 197. Sweden.

"*D. niger fronte thoracis lateribus elytrorumque punctis marginalibus ferrugineis.*"

"Habitat in Suecia aquis Dou. Com. de Souza."

"Medius. antennae ferrugineae. Caput nigrum, fronte late ferruginea. Thorax marginatus, niger lateribus late ferrugineis margine tamen ipso nigro. Elytra laevia, nigra maculis quatuor parvis ferrugineis ad marginem. Corpus nigrum, ferrugineo-maculatum. Pedes rufi."

Although this species is in the Munich Catalogue referred to *Hydroporus*, I should think it probably should not be assigned to that genus. I think moreover Fabricius must have committed some error, and that the insect is an exotic not a Swedish one.—D. S.

1295. *Dytiscus tataricus*, Gebl., Ledeb. Reise II, p. 64. Tartary.

"Feminae *D. reselii* valde affine at specie distinctum forma angustiore, oblonga, thorace subtilius ruguloso, elytris profundius punctatis, sutura fere ad seriem primam punctorum et apice ultra medium usque levibus nitidis. Long. 14 l., lat. $7\frac{1}{2}$ l."

"Specimen unicum lac Noor Saisan."

This may perhaps prove to be a variety of *D. reselii* (No. 1169).—D. S.

1296. *Dytiscus unifasciatus*, Fab., Syst. El. I, p. 263. West Africa.

"*D. capite thoraceque rufis, elytris cinereis; fascia media repanda nigris.*"

"Habitat in Guinea. Mus. D. Lund."

"Statura et magnitudo *D. stietici*. Caput rufum, margine postico nigro. Thorax laevis, rufus, immaculatus. Elytra laevissima, fascia media, lata, atra. Corpus atrum, pedibus testaceis."

This may possibly be *Hydaticus matruelis* (No. 1030), but as Fabricius says nothing of black irrorations on the elytra it cannot be identified certainly therewith. Schaum and the Munich Catalogue have already referred the species to the genus *Hydaticus*.—D. S.

1297. *Gaurodytes angusticollis*, Sahl., Not. fem. XI, p. 408; id. XIV, p. 181. Lapland.

"Oblongo-ovalis, parum convexus, piceo-niger, supra aeneo-nitens, subtiliter reticulato-strigosus; antennis palpis, apice piceo excepto pedibusque ferrugineis; femoribus posterioribus piceis, ore late margineque prothoracis et elytrorum piceo-rufis; prothorace elytris angustiore, lateribus crasse marginatis, fortiter rotundatis, angulis posticis obtusis. Long. $3\frac{3}{4}$ lin."

“*G. hæffneri* Aubé (nec Thoms.), valde affinis, vix nisi prothorace angustiore, statura paulo minore coloreque magis piceo distinguendus.”

Very rare, taken by Maklin in Muonioiska; I have found it in stagnant water on the top of a high hill at Kihpöjarvi in Lapland (69°), d. 24 Aug., 1867.

1298. *Gaurodytes leptapsis*, Lec., Proc. Am. Phil. Soc. 1878, p. 596. North America.

“*Fem.* Elongate-oval, less obtuse than usual, black with a slight bronzed tint, opaque finely strigose with lines forming very elongate meshes; antennæ, palpi, front and middle legs tinged with piceous. Head less opaque than the prothorax, the sides of the latter are oblique, finely margined and scarcely rounded. Elytra with the usual rows of punctures indistinct. Beneath shining, finely reticulate, mesosternum acutely emarginate, hind tibiæ sparsely, coarsely punctured, margined on the inner side, but without a very distinct row of punctures. Front and middle thighs distinctly not densely punctured. Length 9·7 m.m., ·38 inch.”

“Marguette, Lake Superior: one specimen. This species is as elongate as *G. parallelus*, but less obtusely rounded, and is easily recognised by the peculiarly elongated meshes of the reticulation. The prosternum is obtusely carinate.”

1299. *Gaurodytes longulus*, Lec., Proc. Am. Phil. Soc., 1878, p. 596. North America.

“Elongate-oval, obtuse at each end, not convex, shining, smooth black, with a slight metallic gloss. Antennæ, palpi and feet tinged with piceous. Prothorax with sides oblique, finely margined; apical and basal rows of punctures strongly marked. Elytra with the rows of punctures strongly marked. Prosternum acutely carinate; mesosternum deeply; front and middle thighs punctured and rugose; hind tibiæ smooth, with a few small punctures at the inner margin and some larger ones along the outer margin. Length 9 m.m.; ·35 inch.”

“*Mas.* Smooth but not polished; claws of front tarsi long, not toothed, curved only near the tip.”

“*Fem.* Scarcely perceptibly punctulate; claws of front tarsi not so long, and regularly curved.”

“Lake Superior; the elytra vary from brown to black, with only the edge brownish. The form is exactly as in *G. parallelus*, from which it differs greatly by the other characters.”

1300. *Gaurodytes lutosus*, Crotch, Tr. Am. Ent. Soc. IV, p. 419. North America.

“Ovate, convex, black, above bronzed; legs, epipleuræ and margins of ventral segments rufescent; thorax short, sides rounded, broadly margined, posterior angles obtuse; elytra subopaque closely covered with short anastomosing striae, dorsal series visible, confused behind; posterior femora sparsely punctulate, tibiæ punctate, tarsi with the last joint elongate. *Mas.*, anterior tarsal claw obtusely dentate. Length ·40 inch.”

“Slave Lake, Kansas, Lake Superior. Posterior claws extremely small.”

According to a female individual recently received from Lecoute, this appears to be the same as *Agabus nigro-æneus* Er.; but a comparison of the males is desirable before the identification can be considered certain.—D. S.

1301. *Gaurodytes obovatus*, Sahl., Not. fem. XIV, p. 176. Russian Lapland.

“Obovato-oblongus, modice convexus, postice obtuse rotundatus, nigro-æneus, elytris lateribus, anguste indeterminatim, pedibus totis, antennis palpisque ferrugineo-testaceis, his articulo ultimo basali excepto, illis articulis exterioribus apice piceis, elytris sublaevibus, prothorace lateribus modice rotundato. Long. 3 lin.”

“*Colymbetes subquadratus*, Motsch., Schrenck, Reise II, 102, 113.?”

“*G. congeneri* var. *c* (lapponicus, Thoms.) affinis, corpore postice subdilatato, prothoracis lateribus paullo fortius rotundatis pedibusque totis testaceis distinguendus. Caput parum convexum, nigro-aneum, omnium subtilissime reticulato-punctatum, maculis duabus frontalibus labroque ferrugineis. impressionibus transversim positis; ore piceo-rufo, palpis pallide ferrugineis articulo ultimo apice ultra medium nigro-piceo. Antennae prothoracis basin superantes, ferrugineae, articulis 5–11 apice sensim latius piceis. Prothorax fortiter transversus, apicem versus fortius angustatus, lateribus minus crasse marginatis, aequaliter rotundatis, angulis anticis acutis, posticis obtusiusculis, disco modice convexus, nigro-aneus, nitidus, lateribus picescentibus, omnium subtilissime reticulato-punctatus, serie basali e punctis inordinatis impressis distincta, medio interrupta, apicali subduplicata, irregulari. Elytra prothoracis latitudine, postice levissime dilatata, apice late rotundata, supra modice convexa, nigro-anea, nitida, lateribus picescentibus, epipleuris testaceis, omnium subtilissime reticulato-strigosa et punctulata, seriebus tribus e punctis majoribus inordinatis satis fortiter impressis. Corpus subtus nigro-piceum, nitidum subleve, segmentis ventralibus apice paullo dilutioribus, processu postico prosterni convexo, lateribus subtiliter marginato, laciniis metasterni latis, triangularibus. Pedes cum coxis anterioribus toti testacei.”

“Rare, found at Ponoj in Russian Lapland (67°), 18th August, 1870.”

1302. *Gaurodytes obscuripennis*, Sahl., Not. fenn. XIV, p. 177. Russian Lapland.

“Oblongo-ovalis, lateribus subparallelis, convexus, niger, minus nitidus, omnium subtilissime reticulato-punctatus, elytris fusco-piceis, lateribus, vix dilutioribus, seriebus 4 e punctis fortiter impressis irregularibus, postice dispersis; capite convexiusculo, antennis palpisque pallide ferrugineis, apice piceis, pedibus ferrugineis, femoribus piceis. Long. 2½ lin.

“*Mas*: tarsis anticis et intermediis vix dilatatis, unguiculis anticis aequalibus, quam intermediis vix longioribus, angustis, leviter curvatis, basi haud sinuatis; segmento ultimo ventrali apice fortiter strigoso, tarsis posticis articulo primo tantum subtus ciliato.

“*G. congeneri* var. lapponico valde affinis, sed angustior, capite convexiore, colore haud aeneo, unguiculisque anticis maris basi haud sinuatis facile distinguendus. Caput latiusculum, antice distincte convexum, dense subtilissime reticulato-strigosum, nigrum, maculis frontalibus obsolete labroque ferrugineis, impressionibus anticis satis distinctis, transversalibus, extus in linea angusta continuatis et supra has foveola parva impressa, palpis ferrugineis articulo ultimo piceo. Antennae prothoracis basin superantes, ferrugineae, articulis ultimis apice piceis. Prothorax fortiter transversus, antice angustatus, lateribus leviter rotundatis, subtiliter marginatis, angulis posticis obtusiusculis, basi utrinque vix sinuato; supra modice convexus, niger, parum nitidus, subtilissime reticulato-strigosus, serie punctorum basali medio late interrupta, apicali punctis intermediis remotis. Elytra basi prothoracis latitudine, oblonga, lateribus vix rotundata, postice rotundato-angustata; supra modice convexa, fusco-picea, subnitida, lateribus vix dilutiora, dense subtilissime irregulariter reticulato-strigosa et punctulata, seriebus 4 e punctis inordinatis satis fortiter impressis, postice sine ordine dispersis, sutura postice punctis nonnullis impressis (an semper *t.*). Corpus subtus nigrum, obsolete strigulosum, segmentorum ventralium marginibus anguste piceis, processu postico prosterni convexo, lateribus subtiliter marginato; laciniis lateralibus metasterni subtriangularibus. Pedes ferruginei, femoribus apice excepto nigro-piceis, anticis in mare subtus setosis, supra ciliis nonnullis longis instructis.

“Rare, I found one example in stagnant water at Ponoj in Russian Lapland (67°), 19 Aug., 1870.”

1303. *Gaurodytes ovalis*, Sahl., Not. fenn. XIV, p. 178. Gothland.

“Ovalis, leviter convexus, niger, nitidus, aeneo-micans, minus dense reticulato-strigosus; labro, antennis palpisque, apice piceo excepto, et pedibus ferrugineis, femoribus obscurioribus; prothorace lateribus

modice rotundato, minus tenuiter marginato; elytris guttulis duabus pellucidis obsoletis. *Fem.* Long. $2\frac{3}{4}$ lin."

"*G. affini* Payk. affinis, sed paullo brevior et latior, sculptura elytrorum fere ut in *G. tarsato*, Zett. Caput latiusculum, subtilissime reticulato-strigosum, nigrum, labro maculisque duabus verticis rufis, impressionibus anticis parvis, sed satis profundis; palpis ferrugineis, maxillaribus apice anguste piceis, labialibus articulo secundo subtus obsoletissime tuberculato-prominulo. Antennae prothoracis basin attingentes, ferrugineae, articulo ultimo apice piceo. Prothorax fortiter transversus, antice angustatus, lateribus modice rotundatis, minus subtiliter marginatis, angulis anticis productis, acutiusculis, posticis subrectis, basi utrinque obsoletissime sinuato; supra modice convexus, niger, nitidus aëneo-micans, subtiliter sed minus dense reticulato-strigosus, serie punctorum basali medio late interrupta, apicali integra, ambabus e punctis minutis valde obsoletis et irregularibus constitutis. Elytra ovalia, basi prothoracis latitudine et lateribus cum illo continue arcuata, postice rotundato-angustata; supra modice convexa, nigra, nitida, aëneo-micantia, subtiliter sed minus dense reticulato-strigosa, cellulis latis, irregularibus, versus apicem minoribus, seriebus tribus e punctis inordinatis impressis postice sine ordine dispersis; guttulis duabus obsoletissimis pellucidis. Corpus subtus nigrum, laciniis lateralibus metasterni subtriangularibus. Pedes ferruginei, femoribus, praesertim posticis, obscurioribus, fuscis, tarsis posticis unguiculis inaequalibus, apice curvatis."

Rare; found at Kuopio (63°), in Gothland.

1304. *Gaurodytes suturalis*, Crotch, Tr. Am. Ent. Soc. IV, p. 423. North America.

"Regularly ovate, black, above slightly bronzed, subopaque; thorax with the sides hardly rounded, posterior angles rectangular; elytra closely reticulate, the sutural region nearly smooth, dorsal punctures evident irregular, the yellow spot beyond the middle is but little evident; body beneath strigulose, posterior femora obsoletely punctulate, tibiae with a regular subdorsal row of deep punctures. *Mas*, anterior claws unarmed. Length .35 inch."

"Nevada."

1305. *Hydaticus apicalis*, Boh., Ins. Caffr. I, page 239. Caffraria.

"Ovalis, convexiusculus, nitidus, subtus piceus; capite flavo-testaceo, postice nigro, flavo-trimaculato; prothorace subtiliter, crebre punctulato, flavo-testaceo, pone medium vitta transversa longiori, utrinque abbreviata, nigra, medio ramulum brevem, apice dilatatum anterius emittente, elytris nigris, dorso parcius, ad latera crebrius flavo-irroratis, plaga magna, communi, apicali flava, medio confertim nigro-irrorata. Long. $12\frac{1}{2}$, lat. $6\frac{3}{4}$ m.m." Caffraria interior.

[*An extended description follows this diagnosis.*]

The species is probably allied to *Hydaticus sobrinus* and *galla* (Nos. 1041 and 2.)—D. S.

1306. *Hydaticus aruspex*, Clk., Tr. Ent. Soc., 1864, p. 212. China.

"Oblongo-ovalis, parallelus, punctato-striatus, subnitidus, niger: capite flavo, ad basin late nigro (inter oculos, apud vittae nigrae marginem, flavo-bimaculato); thorace lateribus rotundatis, marginem juxta undique impresso, et antice transverse (sed obsolete et tenuiter) depresso, et punctato; quoad colorem flavo, ad basin late et transverse nigro (vitta nigra ad medium lata, latera versus tenuior, haud margines attinet); scutello transverso-triangulari, nitido nigro; elytris parallelis, crebre subtilissime punctatis, etiamque seriebus 3 punctorum (quorum externa penitus obsoleta est) ornatis, colore nigris, marginibus undique late et aequaliter a humeris penitus ad apicem flavis; corpore subtus nigro-fusco; pedibus rufis; antennis rufo-flavis. Long. corp. lin. $6\frac{1}{4}$; lat. lin. $3\frac{3}{4}$."

"Parallel in form, like *ruficollis*, Fab., though much narrower than that insect; the species before us

is remarkable also by its broadly flavous or testaceous thorax combined with the uniform blackness of the elytra, relieved only by the broad and evenly-disposed flavous margination, which extends from the humeral angles nearly to the apex."

"I obtained a single example some years ago in the Gory collection, from China."

1307. *Hydaticus baeri*, Regt, Ann. Soc. Fr., 1877, p. lxxviii. Manilla.

"Ovalis, sat latus, parum convexus; supra flavo-testaceus, capite in vertice et circum oculos et lineis duabus curvis, prothorace late antice et postice, elytris vittis duabus transversis latissimis suturaque ad apicem flavo-guttata nigro-ornatis; subtus niger vix ferrugineus; pedibus testaceis præter posticis nigro-ferrugineis. Long. 13 m.m."

[*This diagnosis is supplemented (op. cit., p. 355) by an extended description.*]

It appears probable that the species belongs to the genus *Sandracottus*, in the neighbourhood of *S. Hunteri* (No. 1073).—D. S.

1308. *Hydaticus caffer*, Boh., Ins. Caffr. I, p. 238. Caffraria.

"Ovalis, convexiusculus, nitidus, supra flavo-testaceus, subtus ferrugineus; capite postice nigro, cum maculis duabus flavo-testaceis; prothorace subtiliter punctulato, medio vitta transversa, brevi, nigra; elytris dorso confertim, confuse nigro-punctatis, lineis tribus tenuibus, fascia transversa pone medium maculaque obsoleta apicali, flavo-testaceis. Long. 13, lat. 7 m.m."

"Caffraria orientalis et interior."

[*This diagnosis is followed, i.e., by an extended description.*]

It would seem that the species is probably closely allied to *Hydaticus galla* (No. 1042).—D. S.

1309. *Hydaticus congestus*, Klug, Ins. Mad., p. 136. Madagascar.

"H. testaceus, coleopterorum disco punctis, fascia dorsali maculaque postica confluentibus nigris. Mas. long. lin. 4½."

"Statura fere Dyt. cinerei, F., at multo minor. Caput fulvum, margine postico lineaque frontali angulari nigris. Thorax fulvus, margine antico et postico nigris. Pectus fulvo-testaceum. Abdomen testaceum, segmentis basi utriusque nigris. Scutellum nigrum. Elytra testacea, punctis lineolisque arcuatis ubique confluentibus, fascia obliqua media maculaque submarginali postica nigris, margine externo testaceo immaculato. Pedes testacei."

The description being confined entirely to colour, I cannot determine whether this is allied to *Hydaticus signatipennis* (No. 1083) or not.—D. S.

1310. *Hydaticus discoidalis*, Hope, Ann. Nat. Hist. X1, 1843, p. 364. Africa occ.

"Sp. 35, *Hydaticus discoidalis*, Hope. Long., lin. 5½; lat., lin. 3. Affinis Hydat. dorsigero, Dupont, at minor. Oblongo-ovalis, thorace obscure testaceo, suturali parte elytrorum nigra, lateribus testaceis, punctis minutisque per discum aspersis, corpore infra ferrugineo, pedibus concoloribus."

It is possible this may prove to be only small *Hydaticus dorsiger* (No. 1029).—D. S.

1311. *Hydaticus fulvo-notatus*, Clk., Tr. Ent. Soc. 1864, p. 221. Africa occ.

"Ovalis, depressus, nitidus, niger, fulvo-notatus; capite rufo, ad basin late et transverse nigro; thorace antice excavato, ad basin sinuato-rotundato, lateribus vix rotundatis, apicem versus transverse leviter punctato, nigro, lateribus late flavo-ruis; scutello triangulari, lævi, nigro; elytris latis, subtilissime punctatis, etiamque punctorum seriebus 3 nigris; basi, fascia post media, et apice rufo-flavis; basis

fascia ornatur nec baseos marginem nec suturam attingenti, latiori ad latera, attenuatiori versus scutellum, fascia post-media interrupta est, latior ad marginem, deinde irregularis et angulata macula minori continuatur, macula secunda etiam minori suturam mediam approximat; apicem juxta sed haud attingens, macula latior ad marginem, attenuatior versus (sed neque pertingens) suturam; margo quoque ipse flavus est: corpore subtus fusco; pedibus rufo-fuscis, anticis flavis; antennis flavis. Long. corp. lin. $5\frac{1}{2}$; lat., lin. $3\frac{1}{2}$."

Cape Coast Castle, during the short rainy season.

1312. *Hydaticus histrio*, Clark, Tr. Ent. Soc. 1864, p. 221. Northern India.

"Ovalis, modice attenuatus, modice convexiusculus, niger, flavo-ornatus; capite flavo, ad basin late et transverse nigro; thorace nigro, ad latera late flavo; scutello triangulari, nigro; elytris subparallelis, punctorum seriibus duabus undique (punctis confertis, minutis, et inæqualiter dispositis), quoad colorem nigris, apud basin (sed baseos marginem haud omnino attingens) macula subtriangularis ante medium elytrorum inter strias primam et secundam sese dirigit, vitta etiam marginalis a humeris propemodum apicem attingit; corpore subtus nigro; pedibus flavis, posticis fuscis; antennis flavis. Long. 6 lin., lat., lin. 3."

"A distinct species from Northern India, an example of which I received some years ago in the Gory collection. It is allied to *vittatus*, Fab., but besides being of a pattern which it seems almost impossible to place as an extreme variety of that variable species, it is manifestly narrower and more constricted in form."

1313. *Hydaticus lateralis*, Cast., Et. Ent. p. 97. South America.

"Noir; bord antérieur de la tête et côtés du corselet d'un jaune ferrugineux; élytres avec un trait de même couleur, allongé et placé derrière l'angle huméral, près du bord latéral, et s'étendant jusque vers le tiers de l'élytre; un autre placé sur le bord et qui, naissant vers le milieu, va jusqu'à l'extrémité; et enfin une tache triangulaire située près du bord latéral, un peu en arrière du milieu; dessous du corps d'un noir brunâtre; antennes et deux premières paires de pattes d'un brun jaune. Long. 6 lignes, larg. $3\frac{1}{2}$ lignes." Cayenne.

This insect is also described by Aubé (Spec. p. 189).—D. S.

1314. *Hydaticus madagascariensis*, Aubé, Spec. p. 210. Madagascar.

"Ovalis, convexus, postice depressiusculus; thorace nigro, ad latera luteo; elytris nigris, cum vitta versus latera longitudinali, paulo obliqua, punctis duobus ad basin transversim dispositis, alteroque ad apicem, luteo-testaceis; corpore subtus nigro-piceo. Long. $14\frac{1}{2}$ m.m., larg. $8\frac{1}{2}$ m.m."

[*A description follows, l. c., this diagnosis.*]

1315. *Hydaticus nauzieli*, Fairm., Ann. Soc. Fr. 1859, Bull., p. 52. France.

"Long, 12 m.m. Ovalis, parum convexus, rufescens; capite prothoraceque dilutis, capite basi; prothorace vix infuscato, hoc basi angustissime nigro-marginato; elytris brunneis, rufo-vermiculatis, margine externo rufescente; subtus cum pedibus, rufo-testaceus. Trouvé à Sorrèze par M. le professeur Nauziel; distinct par sa coloration de toutes les espèces du même genre."

I suppose this to be *Dytiscus leander* (No 1032).—D. S.

1316. *Hydaticus nigro-marmoratus*, Clk., Tr. Ent. Soc., 1864, p. 220. Angola.

"Oblongo-ovalis, depressiusculus, laevis, rufo-testaceus, nigro-maculatus; capite rufo, ad basin transverse et ad interiorem oculorum marginem nigro; thorace lato, subtilissime punctulato, antice excavato

(angulis anticis prominulis et acutis) ad basin subsinuato; quoad colorem rufo-testaceo, ad basin tenuiter nigro; scutello triangulari, lævi, nigro; elytris sat latis et ad apicem sat acuminatis, undique seriebus punctorum rarorum tribus distinctis ornatis, rufo-testaceis, sutura æqualiter et seriebus macularum 3 inæqualibus nigris; hæ macule sinuate, longitudinaliter productæ, interruptæ, in vittis apud punctorum series elytra ornant, et puncta ipsa plerumque maculis minoribus circularibus cinguntur: corpore subtus fusco; pedibus flavis, tibiis posticis fuscis; antennis flavis. Long. corp. lin. 6; lat. lin. $3\frac{1}{4}$."

"H. nigro-marmoratus will take its place near H. dregii, which it generally resembles in pattern; it is, however, abundantly distinct: the sutural line is very evenly black: along the first row of punctures (which are distinct but widely separated) runs an uneven, irregular, longitudinal marking from the base to the apex (in some places broader than but for the most part about equal in breadth to the sutural marking); this is interrupted in front of the middle; the second longitudinal marking is more irregular still, it is placed rather within the second line of punctures, is narrower than the first, and confluent with it near the base and apex; the punctures themselves (being on the outer side of this marking), and also the punctures of the third row, are each surrounded by a regular and circular marking; the third line of black coloration is between the second and third rows of punctures, and consists of three markings—one near the shoulder, which is confluent with the first at the base, one medial, which is shorter and more minute, and a third post-medial, which is much broader, extending from the second row of punctures to the margination; at the medial margination there is also another fuscous marking."

"There is no other species known to me with which H. nigro-marmoratus can be confounded."

1317. *Hydaticus nigro-vittatus*, Clk., Tr. Ent. Soc., 1864, p. 222. Japan.

"Ovalis, convexiusculus, sat latus, et ad latera nonnihil rotundatus: thorace leviter punctato et ad latera apud basin reticulato, vel quasi irregulariter acuducto, quoad colorem testaceo-rufo, marginibus ad apicem et basin tenuiter nigris; scutello triangulari, lævi, nigro; elytris undique punctorum seriebus duabus (punctis raris et aliquando obsoletis), omnino subtilissime et crebre punctatis, testaceis vel rufo-testaceis; vitta suturali alteraque (vel duabus approximatis) undique nigris; inter vittas et margines elytra quasi nigro-irrorata maculis subtilissimis sparguntur; hæ macule autem non confuse aggregatæ, sed plus minus ordinibus dispositæ sunt: corpore subtus, pedibusque rufo-fuscis. Long. corp. lin. 5; lat. lin. $2\frac{1}{2}$."

"Allied to H. leander of South Europe, and, at first sight, only a variety of that species."

This is, I should think, pretty certain to prove a synonym of *Dytiscus grammicus* (No. 1028).—
D. S.

1318. *Hydaticus paganus*, Clk., Tr. Ent. Soc., 1864, p. 215. Congo.

"Oblongo-ovalis, parallelus, punctorum tri-serie ornatus, niger, nitidus: capite lævi, rufo, ad basin transverse nigro; thorace haud ad basin sinuato, antice excavato, rufo-flavo, ad medium subtiliter fusco-adumbrato, marginibusque antico et postico nigris (hoc ad medium latiori, illo transverso aequali attenuato); elytris parallelis, sat productis, punctorum seriebus 3 (puncta intervallo distantia, haud profunda, et aliquando obsoleta sunt), quoad colorem nigris, humeris (macula parva angulata) marginibusque irregulariter testaceis vel rufo-flavis: corpore subtus fusco-nigro; pedibus antennisque flavis, illorum femoribus tibiisque posticis fuscis. Long. corp. lin. $6\frac{1}{2}$; lat. lin. $3\frac{1}{2}$."

"Nearly allied to H. capicola, Aubé; but differing from it by its more parallel form and entirely rufo-flavous head and thorax; the elytra also, instead of being more or less flavous irrorated with black, are entirely black, the humeral angle being flavous, and also the line of margination, obscurely and interruptedly, but more distinctly flavous near the apex." Gold Coast, a single specimen.

1319. *Hydaticus philippensis*, Wehneke, Stet. Ent. Zeit. XXXVII, p. 197. Philippines.

“Ovalis, convexus, thorace nigro, lateribus late luteo, elytris nigris, vittis duabus fasciaque pone basin testaceis subtus nigro-ferrugineus, pedibus anticis flavis. Long. 14—15 m.m.

“Diese art steht dem *H. bowringi*, Clk. aus Japan am nächsten, durch das dunklere halsschild und die gelbe querbinde an der basis der flügeldecken unterschieden. Der Kopf ist schwarz, der vorder theil gelb, halsschild schwarz mit breitem gelben seitennande. Flügeldecken schwarz, ein querstreifen an der basis, und zwei längsstreifen auf jeder seite gelb. Der querstreifen hängt mit dem innern längsstreifen zusammen und ist an der nath unterbrochen, die längsstreifen vereinigen sich hinten an der spitze. Die unterseite mit den hinterbeinen pechschwarz, die vorderbeine ganz gelb, die schienen der mittelbeine bräunlich.”

1320. *Hydaticus riehli*, Wehneke, Stet. Ent. Zeit, XXXVII, p. 195. Cuba.

“Elongato ovalis, thorace rufo-luteo, in medio nigro-maculato; elytris rufo-testaceis crebre nigro-irroratis. Long. 15½ m.m.”

“Dem *H. capicola*, Aubé, sehr ähnlich, jedoch beträchtlich grösser, durch das kurze halsschild unterschieden, auch sind die schwarzen sprenkeln auf den flügeldecken feiner und stehen weitläufiger, wodurch das Thier eine hellere farbe bekommt. Kopf äusserst fein punktiert, schwarz, der mund und drei in dreieck stehenden flecke auf der stirn rothgelb. Halsschild sehr kurz, kaum ein fünftel so lang als die flügeldecken, auch etwas schmaler als diese, glatt, mit einer reihe grosserer punkte am vorderrande, rothgelb, ein schmaler streifen am hinterrande und ein länglicher quertleck auf der mitte schwarz. Schildchen ganz schwarz. Flügeldecken rothgelb mit feinen schwarzen sprenkeln, die den aussenrand frei lassen, ziemlich dicht besetzt. Die unterseite mit den hinterbeinen schwarz, die vorderbeine gelb, die schenkel der mittelbeine in der mitte und die schienen dunkel.”

This I believe is a species of *Rhantus*.—D. S.

1321. *Hydaticus ussheri*, Clk., Tr. Ent. Soc. 1864, p. 214, pl. 14, f. 2. Cape Coast Castle.

“Ovalis, postice depressus, obscure undique bi-punctato-striatus, niger vel rufo-niger, maculis quibusdam flavis: capite flavo, ad basin late et transverse fusco; thorace flavo, ad medium (et praesertim apud basin) fusco-umbrato, basi ipsa usque ad margines tenuiter fusco-nigra; elytris subparallelis, subtiliter, undique puncta in striis duabus ordinata disponuntur; hae striae interdum penitus obsolete sunt; ad suturam etiam rare puncta minuta serie ordinata apparent; elytra nigra, vel fusco-nigra, margo autem usque ad apicem ipsum rufo-flavus, vitta etiam transversa flava ad basin (haec, forma aequali, tenuis nec suturam nec marginem attingit); tres aliae maculae undique apparent (nec forma distinctae nec omnino flavae sed nigro-maculatae aut irroratae), prima apud marginem ante medium, haud vittam mediam attingit, nigro-mixta, sed ad marginem omnino flava, secunda pone medium vitta arenata haud suturam attingit, figura inaequalis, nigro-maculata, tertia ad apicem plaga etiam flava haud suturam attingit; antennis flavis, corpore subtus rufo-fusco; pedibus rufo-flavis, femoribus posticis fuscis. Long. corp. 7 lin.; lat. lin. 4½.”

1322. *Hydaticus verecundus*, Clk., Tr. Ent. Soc. 1864, p. 213. ?Java or South America.

“Ovalis, parallelus, punctato-striatus, nitidus, niger flavo-notatus: capite flavo, ad basin transverse nigro, inter oculos maculae duae flavae triangulares, sese attingentes, apparent: thorace brevi, lateribus rotundatis, antice transverse tenuiter depresso, flavo, marginibus antico posticoque late nigris (margo anterior, latitudine aequalis, haud latera attingit; margo basalis, ad medium anteriore latior, sensim angustior fit, et tenuis latera pertingit); scutello triangulari, nigro; elytris sat parallelis (pone medium sublatioribus), apice rotundato, haud attenuato; punctorum tres series undique apparent, puncta distantia,

minime profunda, attamen perspicua et in seriebus secunda et tertia minus obsoleta; quoad colorem elytra nigra apparent; vitta basalis a scutello ad humeros extendit, haud basin attingens, tenuis æqualis, recta (aut sub-circularis et ad marginem medium leviter sese flectens), ad vittæ terminum margini usque ad humerum late flavescit; pone medium inter seriem punctorum tertiam et marginem macula flava apparet, subquadrata aut aliquando in duas divisa; ad apicem quoque altera, major, figura et statura incerta (nunc macula insularis, ad ipsum marginem, nunc vitta transversalis, inæqualis, communis, lata, et ad apicem ipsum pertingens); corpore subtus nigro-fusco; antennis flavis; pedibus flavis, posticis fuscis et flavo-annulatis. Long. corp. lin. 4; lat. lin. $2\frac{3}{4}$."

"One of the smallest species of the genus; and to be also recognized by its more than usually distinct punctuation, as well as by the pale regular transverse band on its black elytra."

The species is probably South American, and allied to *H. rectus* (No. 1017).—D. S.

1323. *Hydaticus xanthomelas*, Brullé, Aubé, Spec., p. 181. Corrientes. South America.

"Oblongo-ovalis, convexiusculus; thorace rufo-testaceo, antice et postice nigro; elytris nigris, cum margine lato, in medio longitudinaliter divisa vittaque ad basin bi-interrupta luteis; corpore subtus nigro-piceo. Long. 10 m.m. larg. $5\frac{1}{2}$ m.m.

[Aubé, l. c., gives a description in addition to the above diagnosis.]

1324. *Hydrocanthus auritus*, Regt., Ann. Soc. Fr. 1877, p. lxxix. Manilla.

"Ovalis, sat elongatus, postice attenuato-acuminatus; omnino niger, præter macula testacea ad angulum anticum prothoracis, antennæ pedesque antici et intermedii testacei, postici nigro-ferruginei. Long. $2\frac{3}{4}$ à 3 m.m."

At p. 359, *op. cit.*, an additional description is given of this species: it should no doubt be assigned to the genus *Canthydrus*.—D. S.

1325. *Hydrocanthus fasciatus*, Steindl., Atti. Soc. Ital. Sci. Nat., XII, p. 250. South America.

"Oblongo-ovalis, obovatus, antice amplius, nitidus; capite thoraceque ferrugineis, indistincte punctulatis; elytris ad basin thoracis latitudine, nigro-piceis, fascia media margineque laterali ferrugineis; corpore subtus, ore antennis pedibusque rufo-testaceis. Long. lin. 1.1, lat. lin. 0.65."

Buenos Ayres.

I cannot form a valid opinion as to what genus this should be referred to; but it clearly does not belong to *Hydrocanthus*, *huj.*, *op.*—D. S.

1326. *Hydrocanthus lineatus*, Welmeke, Berl. Zeit. XX, p. 221. Mexico.

"Ovatus, postice attenuatus, convexus, nitidus, capite thoraceque ferrugineis, hoc postice fusco, elytris nigris, testaceo-lineatis, pedibus luteis. Long. 3 m.m.

"Durch die gelbgestreiften flügeldecken leicht kenntlich, eiförmig, nach hinten verengt, gewölbt und glänzend. Kopf und halbschild rothbraun, glatt, letzteres am hinterrande etwas dunkler und mit einzelnen feinen Punkten besetzt. Flügeldecken schwarz, der seitenrand und drei längsstreifen gelb. Die streifen beginnen an der basis und erreichen, der erste und dritte fast die spitze, während der mittlere hinter der mitte verschwindet. Der äusserestreifen theilt sich vorn gabelförmig und vereinigt sich an der schulter mit dem seitenraude. Unterseite ist rothbraun, die beine gelb."

The description agrees with *Canthydrus centralis*, (No. 49), except that the thorax is described as being only dark behind: the name cannot be used on account of the *Suphis lineatus*, Horn, which belongs to the same genus.—D. S.

1327. *Hydrocanthus nautilus*, Lec., New. spec. Col. I, 1863, p. 22. North America.

“Elongato-ovalis, postice paulo magis attenuatus, rufo-testaceus, nitidus, impunctatus, elytris paulo saturatoribus, antennis pedibusque pallidioribus. Long. .05.”

“Louisiana; Dr. Schaum. The very small size at once distinguishes this from all other species of the genus; it is more regularly oval, and less convex than the others.”

1328. *Hydrocanthus rubripes*, Boh., Eugen. Res., p. 19. Monte Video.

“Oblongo-ovalis, convexus, niger, nitidus, postice modice attenuatus; capite, antennis, prothorace ad latera confuse pedibusque rubris; elytris tribus minorum punctorum seriebus leviter impressis. Long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m.”

“Summa similitudo *H. nigrini*, semper dimidio fere minor, præsertim brevior, posterius minus attenuatus. Caput ferrugineum, nitidum læve, postice parum infuscatum, apice utrinque puncto profundo impressum. Palpi ferruginei. Oculi rotundati, modice convexi, glauci. Antennæ ferrugineæ. Prothorax longitudine duplo latior, apice late, leviter rotundato-emarginatus, basi utrinque subsinuatus, medio breviter sub-triangulariter productus, lateribus tenuiter reflexo-marginatis, pone apicem leviter rotundato-ampliat, angulis anticis antrosus prominulis, acutis, posticis fere rectis; superne convexus, niger nitidus, extrorsum plus minusve late, confuse ferrugineus, lævis, antice postice et ad latera subtiliter punctulatus. Scutellum nullum. Elytra antice subtruncata, prothorace non latiora at illo fere duplo et dimidio longiora, pone basin apicem versus sensim angustata, apice conjunctim subacuminata; nigra, nitida, extrorsum interdum confuse ferruginea, singulo seriebus tribus e punctis parvis, sat crebris notato; margine inflexo, ferrugineo. Corpus subtus nigro-piceum, nitidum, subtiliter, crebre punctulatum. Pedes rufo-ferruginei.”

This is no doubt a *Canthidrus*, and is perhaps allied to *C. brevicornis* (No. 45).—D. S.

1329. *Hydrocanthus socius*, Sahl., Act. Soc. Fenu. II, 2, 1844, p. 516. Rio Janeiro.

“Oblongo-ovatus, postice angustato-acuminatus, ferrugineo-testaceus; elytris ad basin thoracis latitudine, brunneis, testaceo-irroratis, sutura apiceque obscurioribus, capite et thorace fulvescenti testaceis. Long. $1\frac{3}{4}$ lin., lat. $1\frac{1}{2}$ lin.”

“Statura et magnitudo *H. lævigati*. Caput convexus, fulvo-testaceum, subnitidum, læviusculum. Oculi magni, grisei, medio nigri. Palpi et antennæ testaceæ. Thorax fulvo-testaceus, nitidus, glaber, antice parum infuscatus, longitudine sua plus duplo latior, antice late emarginatus, angustior, angulis subacutis, lateribus parum rotundatis, postice latior, angulis subrectis, basi sinuatis, in medio breviter sed acute productus, supra lævis, punctis paucis ad marginem anteriorem subtilissimis. Scutellum non conspicuum. Elytra elongata, antice thoracis latitudine, usque ad medium sensim rotundato-dilatata versus apicem angustato-acuminata, brunnea, testaceo-irrorata, sutura apiceque obscurioribus, margine inflexo testaceo, pilis raris versus apicem albescentibus sparsis. Corpus subtus testaceo-ferrugineum abdomine infuscato. Pedes testacei.”

This may possibly be a small species of *Hydrocanthus* near *H. debilis* (No. 78), or a *Canthidrus*.—D. S.

1330. *Hydrocanthus testaceus*, Boh., Res. Eugen., p. 19. China.

“Oblongo-ovalis, postice attenuatus, convexus nitidus, rufo-testaceus; prothorace lævi, antice posticeque tenuiter infuscato; elytris impunctatis. Long. 2, lat. $1\frac{1}{4}$ m.m.”

“Statura *H. nigrini*, multo minor, aliter coloratus. Caput modice convexus, rufo-testaceum, nitidum læve. Palpi rufo-testacei. Oculi rotundati, parum convexi nigri. Antennæ rufo-testaceæ. Prothorace longitudine duplo latior, apice late, leviter rotundato-emarginatus, basi utrinque sub-sinuatus, medio

parum productus, lateribus pone apicem magis, dein basin versus sensim ampliatus, angulis anticis antorsum prominulis, acuminatis, posticis rectis; superne convexus, rufo-testaceus, nitidus, margine apicali et basali tenuiter infuscatus. Scutellum nullum. Elytra obconica, antice subtruncata, prothorace non latiora at illo fere duplo et dimidio longiora, pone basin apicem versus sensim angustata, apice conjunctim sub-acuminato, rufo-testacea, nitida, non punctata. Corpus subtus rufo-testaceum, nitidum, obsolete punctulatum. Pedes rufo-testacei, nitidi."

This is no doubt a *Canthydrus* very similar to *Hydrocanthus flavus*, (No. 70).—D. S.

1331. *Hydrocoptus dauricus*, Motsch., Schrenck Reise, p. 100, pl. VII, f. 3. Amurland.

"Elongato-ovatus, postice attenuatus, subdepressus, subsericeo-nitidus, testaceus; capite antice, thoracis maculis, elytris lineis utrinque septem plus minusve confluentibus, antennarum annulis corporeque subtus nigro-fuscis, elytris striis punctorum distinctis tribus, alternis solum longitudinaliter undulatis, interstitiis subtilissime punctulatis fere glabris; thorace transverso, rectangulo. Long. 2 l., lat. 1 l."

"Un peu plus grand que les Hydr. griseostriatus, Dej., et Hydr. borealis, Gyll., plus acuminé postérieurement, et facile à reconnaître par les trois lignes de points, fortement imprimés qu'on voit sur chaque élytre."

Northern Amurland and the Alps of Dauria.

This is I should think, *Dytiscus alpinus* (No. 529) or a very closely allied species.—D. S.

1332. *Hydrocoptus mixtus*, Motsch., Bull. Ac. Pet., 1860, II, p. 515. Kirghiz steppes.

"Elongato-ovatus, depressus, nitidus, punctatus, supra fusco-testaceus, subtus niger, fronte, thorace antice, elytrorum basi pedibusque plus minusve testaceis; thorace valde transverso, postice dilatato; elytris ovatis, utrinque punctato-bistriatis, interstitiis fortiter punctatis, corpore subtus fere glabro. Long. 1½ lin., lat. ⅔ lin."

"Plus large que notre Hydroc., 6-pustulatus et avec les couleurs du dessus plus confondues entre elles, de sorte que souvent toute la surface des élytres devient claire. Cette espèce est très commune dans toutes les eaux douces des steppes des Kirghises."

I cannot identify this species, said to be near *Dytiscus palustris*.—D. S.

1333. *Hydrocoptus obscuripes*, Motsch., Schrenck Reise, p. 100, pl. VII, f. 2. Amurland.

"Oblongo-ovalis, depressiusculus, punctatus, subnitidus, sparsim pilosus, niger, vel nigro-piceus, elytrorum lateribus subinfuscatis, antennarum basi, capitis margine postice pedibusque piceis; elytris sutura subelevata, utrinque linea punctorum vix distincta impressa. Long. 1½ l., lat. ⅔ l."

"Il ressemble beaucoup à nos H. nigrita, piceus, nivalis et pareils, mais il est plus allongé, plus parallèle et un peu plus grand. Trouvé par M. Schrenck dans les eaux du fl. Amour, et par moi en Mongolie près de Kiachta."

This is probably a species of *Hydroporus*; the figure, *l. c.*, gives no assistance to its recognition.—D. S.

1334. *Hydrocoptus rufulus*, Motsch., Et. Ent. 1859, p. 44. Burmah.

"Une seconde espèce, très voisine par sa taille, sa forme et ses couleurs (to *Hydrocoptus subvittulus*) se trouve au Birma. Elle est proportionnellement un peu plus large et plus ovulaire que le *Hydrocoptus subvittulus*, la strie testacée sur les élytres est comme effacée par le fond brun-roussâtre des dernières; le corselet paraît plus fortement atténué vers la tête qui de son côté est un peu plus arrondi au chaperon."

This is possibly the same as *Hydroporus rubescens*, (No. 9).—D. S.

1335. *Hydroglyptus flaviculus*, Motsch., Bull. Mosc. 1861, I, p. 108. Ceylon.

“Elongato-ellipticus, subdepressus, subnitidus, densissime subtiliter punctulatus, rufo-testaceus, elytris pallidis, his basi, sutura, utrinque macula postica bifurcata abdomineque nigro-piceis, oculis nigris; thorace valde transverso, utrinque ad basin oblique impresso, lateribus angulisque posticis rectis; elytris thoracis latitudine, antice parallelis, ad suturam utrinque profundo unistriatis, stria integra. Long $\frac{1}{3}$ l., lat. $\frac{2}{3}$ l.”

Colombo.

I cannot form any decided opinion as to the place of this name; it may possibly prove a species of *Bidessus*.—D. S.

1336. *Hydroporomorpha parallela*, Bab., Tr. Ent. Soc. III, 1841, p. 15. pl. 1, f. 3. Brazil.

“Oblonga, antice obtusa, postice acuminata, lateribus parallelis, supra rufa, thorace antice et postice elytrisque (apice marginibusque exceptis) fuscis; corpore subtus, antennis pedibusque fusco-rufis. Long. 2, lat. $\frac{3}{4}$ lin.”

“Head short, transverse, rounded in front, with two longitudinal slightly impressed foveæ between the eyes. Thorax transverse, short, broadly emarginate in front; the angles acute; lateral margins rounded; posterior margin straight, very slightly produced in the middle over the scutellum; disc smooth, with a transverse row of punctures in front, and a similar one behind, the latter broadly interrupted in the middle; rufous, with the anterior and posterior margins fuscous. Scutellum small, triangular, transverse, fuscous. Elytra of the same width as the thorax, oblong, the sides parallel for three-fourths of their length, then strongly rounded to the apex, which is acute and prominent; disc coarsely punctured, with one central row of more regular punctures upon each; fuscous, with the exception of the apex and external margins, which are rufous. Body beneath, legs and antennæ, dull rufous. Hab., Rio de Janeiro.”

This is a species of *Celina* allied closely to *C. longicornis*, No. 652.—D. S.

1337. *Hydroporus aberrans*, Clk., Tr. Ent. Soc. Lond. third ser. I, p. 426. Java.

“Breviter ovatus, latus, parallelus, fortiter punctato-striatus, punctatus, testaceus, rufo-fusco notatus; capite leviter punctato, rufo-fusco; thorace antice vix emarginato, lateribus rotundatis, basi pene transverso, crebre punctato, testaceo, ad medium fusco-adumbrato; elytris sat latis, fortiter undique striis punctatis octo latis ornatis, punctatis, testaceis, lineis tribus rufo-fuscis à basi ad apicem subparallelis; corpore subtus fusco, antennis pedibusque rufo-flavis. Long. corp. lin. $\frac{1}{2}$; lat. lin. $\frac{1}{2}$.”

“The only example that I have been able to examine of this species is an imperfect one received by Mr. Bowring from Java: it presents very sufficient and striking characters; the form of the insect is short and parallel; the sides of the thorax are much rounded, compressed at the anterior and posterior angles; the elytra are marked by eight deep striæ, formed by closely arranged broad punctures; in colour the surface is testaceous, the interstices between the first and second, the third and fourth, the fifth and sixth striæ being irregularly rufo-testaceous.”

The type of this species has been destroyed, I am doubtful to what genus the insect should be referred.—D. S.

1338. *Hydroporus adumbratus*, Clk., Ann. Nat. Hist., 1862, p. 183. Mexico.

“Oblongo-ovalis, punctatus, pubescens; capite fusco, interdum antice rufo-fusco; thorace flavo, ad basin plus minus fusco; elytris subtiliter punctatis subpubescentibus, fuscis; antennis pedibusque rufo-flavis. Long. corp. $\frac{4}{5}$ lin., lat. $\frac{2}{3}$ lin.”

“This minute species varies somewhat in size and also in colour; one example before me is of a deep

black colour, the thorax being somewhat fuscous; this same example is perceptibly smaller in size. In the absence of any series of specimens, I can detect no necessarily permanent difference which would constitute it a distinct species. *H. adumbratus* is less distinctly punctured than *H. emilianus*; it is moreover easily recognized by its manifest pubescence."

This is a species of *Bidessus* closely allied to *Hydroporus pulicarius* (No. 308).—D. S.

1339. *Hydroporus amandus*, Lec., Ann. Lye. V, p. 207. North America.

"Oblongus, magis parallelus, piceus, subtiliter punctatus, nitidus, capite parce punctulato, thorace testaceo medio infusato, antrosum vix angustato, lateribus paulo rotundatis, tenuissime marginatis, angulum cum elytris formantibus, striola basali profunda; elytris fascia pone basin integra, striga subapicali hamata, striolis brevibus duabus pone medium, margineque tenui pallidis. Long. .06."

"Specimen unicum in flumine Gila. Precedenti similis, at minor, punctura subtiliore, thorace magis parallelo, angulum cum elytris magis distinctum formante, his stria suturali nulla diversus."

A specimen of this species recently communicated to me by its describer shows it to be a *Bidessus* of small size, belonging to group 5, B.; the upper surface is finely punctured, and the pale transverse markings on the wing-cases are large and conspicuous.—D. S.

1340. *Hydroporus angularis*, Klug, Symb. Phys. IV, t. 34, f. 1, 2. Nubia.

"Thorace postice utrinque impresso, punctatus, testaceus, elytris pallidis, sutura lituraque fuscis. Long. lin. $1\frac{1}{2}$."

"Lectus ad Ambukohl."

"Corpus oblongo-ovatum, pallide testaceum, subtus obscurius, immaculatum. Caput vix punctatum, cum antennis testaceum, immaculatum. Thorax distincte et confertim punctatus, testaceus, postice longitudinaliter biimpressus, macula marginali media emarginata fusca. Pedes testacei. Elytra confertim punctata, ad basin medio tenuissime longitudinaliter impressa, pallide testacea, sutura lineolisque dorsalibus duabus, interiori longiori et subhamata, exteriori brevissima, fuscis."

"Variat lineolis coleopterorum externis obsoletis, internis linea transversa brevi ad suturam oblique descendente basi conjunctis."

To be placed in *Bidessus*; it is a large species apparently unknown to me.—D. S.

1341. *Hydroporus angulipennis*, Peyron, Ann. Soc. Fr., 1858, p. 398. Syria.

"Oblongo-ovatus, depressus, punctulatus, parce pubescens; *mas* niger; *fem.* supra pallide ferruginea; capite antice, palpis, antennis, pedibusque ferrugineis; thorace lateribus valde rotundatis, angulis posticis obtusis; elytris subparallelis, apice sinuatis, rotundatim attenuatis, subcostatis (Div. Hydr. opatrini, Germ.) *Mas*, long. $4\frac{3}{4}$, lat. $2\frac{1}{5}$ mm. *Fem.*, long. $3\frac{3}{4}$, lat. $1\frac{4}{5}$ m.m."

"Ovale allongé, assez déprimé, légèrement pubescent et finement pointillé; *mas*, noir obscur, *fem.*, d'un ferrugineux pâle en dessus, noir obscur en dessous; tous deux ayant le devant de la tête, les antennes à part les derniers articles qui sont assombrés, les palpes et les pattes ferrugineux. Yeux saillants, ayant entre eux deux impressions obliques coudées en dehors antérieurement. Prothorax très court, très échancré en avant avec les angles antérieurs très saillants, déprimés, arrondis, les côtés arrondis en demi-cercle, un peu rétrécis en arrière, à peine relevés vers les angles, ne formant pas de bourrelet, avec les angles postérieurs très obtus, émoussés, la base très peu et largement prolongée en arrière dans son milieu en pointe très mousse, entièrement traversée horizontalement par une impression bien marquée. Elytres presque parallèles, un peu élargies vers les trois quarts postérieurs, assez brusquement arrondies, acuminées en arrière ou elles sont coupées subsinuellement; elles sont plus larges à la base que le prothorax dans sa plus grande largeur, et forment avec lui un angle rentrant aigu; les épaules sont saillantes, angulaires

et munies d'une très petite dent, elles sont très déprimées vers la suture, la dépression bornée sur chaque élytre par une côte élevée placée vers le tiers de la largeur à partir de la suture ; un autre vestige de côte se voit encore vers les deux tiers de la largeur, toutes deux sont accompagnées d'une ligne longitudinale de petits points placée contre chaque côte et en dedans de chacune ; ces côtes sont moins marquées chez la *fem.* Il doit être placé auprès de *P.H. ovatus*, Sturm."

"Taurus, près du Kuleg-Boghaz, dans les fontaines d'eau vive."

This should probably be placed in the genus *Deronectes*, as it is stated to belong to the "oparinus group."—D. S.

1342. *Hydroporus*, *atomus*, Regt., Ann. Soc. Fr. 1877, p. lxxx. Manilla.

"Ovalis, vix elongatus, depressus ; capite testaceo ; prothorace testaceo, antice angustissime infuscato, postice maculis duabus griseis vix conspicuis notato, subtiliter punctato, in disco fere lævi ; elytris sat fortiter punctatis, griseo-testaceis, ad scutellum et suturam obscurioribus, maculis duabus in sutura latis confusisque vix notatis, striga suturali nulla ; prothoracis elytrisque strigis curtis, ad basin fere contiguis ; subtus rufo-testaceus, pedibus concoloribus. Long. $1\frac{1}{4}$ m.m."

[*This diagnosis is supplemented, p. 361, op. cit., by a description.*]

To be placed in *Bidessus*, probably near *B. dilutus* (No. 307).—D. S.

1343. *Hydroporus* *bakewelli*, Clk., Journ. Ent. I, p. 413. Australia.

"Ovatus, latus, depressus, crebre punctatus, flavus ; elytris flavis, nigro-notatis. Long. corp. $1\frac{3}{4}$ lin., lat. $\frac{4}{5}$ -1 lin."

"Ovate, broad, somewhat depressed, attenuated towards the apex, flavous : head short, broad ; on either side within the margins of the eyes is a narrow depression ; the surface is finely punctate : thorax broad, rounded in front, the sides marginate, in front and near the base transversely subdepressed ; the surface is finely punctate, flavous, the anterior and posterior margins being narrowly and evenly fuscous black : elytra thickly and finely punctate, flavous, with two, three or four longitudinal markings of fuscous black : in one of the two examples before me the colour is rather fuscous black, with two interrupted and irregular medial bands of flavous. The great dissimilarity of pattern between these two examples plainly shows that the species is subject to much variety ; it may readily be distinguished from all others by its sectional characters, the absence of any thoracic fovea, the angle formed by the sides of the elytra and the thorax, and by its smaller size."

Moreton Bay.

This may perhaps be a species of *Chostonectes*.—D. S.

1344. *Hydroporus* *basinotatus*, Reich, Ann. Fr. 1864, p. 234. Tangiers.

"Long. $3\frac{1}{2}$ m.m., lat. 2 m.m. Breviter ovalis, leviter convexus, parce pubescens, subnitidulus, nigropiceus ; ore antennarum basi, maculis elytrorum pedibusque testaceo-rufis. Caput minutissime punctatum. Thorax capite vix duplo latior, latitudine tertia parte paulo longior, antice valde angustatus, a latere rotundatus, supra scutellum triangulariter lobatus, crebre minutissime punctatus, sulco transverso, grosse punctato antice instructus. Elytra basi thoracis basi latitudine ac proxime ampliora, medio parum latiora, apice conjunctim rotundata, densissime minutissime punctulata, basi utrinque testaceo-maculata ; scilicet litura longitudinali ad scutellum, macula oblonga in medio, altera arcuata ad humerum interdum secundum marginem descendente : his maculis ad basin interdum confluentibus ; elytrorum epipleuris basi testaceis. Subtus metathorace fortiter, mesothoraceque leviter punctatis ; abdomine minutissime punctato ; femoribus basi infuscatis."

“Cetto espèce, très voisine du *Hydrop. lituratus*, Fab., pourrait, à la vue simple, être confondue avec elle, mais, à la loupe, on voit que sa ponctuation beaucoup moins forte est aussi beaucoup plus dense et qu'elle est même presque imperceptible.”

1345. *Hydroporus bifasciatus*, Macl., Trans. N. S. W., 1871, p. 121. Australia (Gayndah).

“Length, 2 lines. Ovate, subconvex, covered with a close punctuation, and of a testaceous red colour. Head bordered in front, and with a very short, oblique, lightly-impressed line at the inner and anterior angle of the eyes. Thorax broad, short, narrowly margined on the sides, and broader behind than in front, with the anterior angles advanced, the posterior subacute, the base slightly bisinuate on each side, and a large patch of a dark brown colour on each side of the central lobe. Elytra broader than the thorax, rounded at the humeral angles and on the sides, and narrowed and rounded at the apex, with a very zigzag, black fascia about the middle, extending from the suture to near the sides, and another of the same hue, and rather broader near the apex, extending from the sides almost to the suture, the two fasciæ being joined near the suture, and nearly joined about the middle of the width. On each elytron may be traced an obsolete stria a little way from the suture, and also a number of small, round, obsolete-looking depressions. The tarsi of the males are black and much dilated, the third joint being the largest.”

This description appears quite applicable to *Hyphydrus australis* (No. 358), and I expect the name will prove a synonym thereof.—D. S.

1346. *Hydroporus bifidus*, Say, Tr. Am. Phil. Soc. IV, p. 444. Mexico (in a small river beyond Vera Cruz).

“Elytra with a subsutural, impressed, punctured stria. Body, black; head with much dilated indentations between the eyes; a longitudinal honey-yellow line, more dilated before; antennæ yellowish, dusky at tip; thorax with a submarginal honey-yellow band before having three processes, one in the middle, and one, rather more dilated, on the lateral margin, not reaching the posterior edge; elytra with a very distinct, punctured, impressed, subsutural stria, and about two other hardly obvious ones near the middle; bifid yellowish lines at base near the tip; feet, dark honey-yellow. Length less than one-fifth of an inch.”

This is perhaps near *Hydroporus æquinoctialis*, Clk. (No. 525.)—D. S.

1347. *Hydroporus boristhenicus*, Hoch., Bull. Mosc., XLIV, p. 233. Europe.

“Long. $2\frac{1}{4}$ – $2\frac{1}{2}$ lin. Diese art hat ihre nächsten Verwandten an II. 12 *pustulatus* und II. *depressus*, Fab., &c., &c. Von allen diessen unterscheidet ihn sogleich bei flüchtiger Vergleichung, die länglichere, von der Mitte nach vorn etwas, nach hinten stark verjüngte form, die hoher gewölbten Flügeldecken, und das auf den Seiten starker abgerundete Halsschild, mit breitem schwarzem Saume am Vorderrande. Die Zeichnung der Flügeldecken, zwar ähnlich den beiden Erstgenannten, ist jedoch auch wieder sehr verschieden”

“Im Mai Monat im Dneper häufig.”

I think this will prove to be a variety of *Dytiscus depressus* (No. 472).—D. S.

1348. *Hydroporus caliginosus*, Lec., Agass., Lake Sup., p. 215. North America.

“Ovalis, minus convexus, niger nitidus, minus subtiliter punctatus, sparseque pubescens, thoracæ lateribus obliquis vix rotundatis, disco obsolete punctato; elytris basi vix conspicue angustatis, apice oblique attenuatis: antennæ palpis pedibusque rufis. Long. .12.”

“More convex than the following (*H. tartaricus*), less parallel and more acute behind: the punctures of the elytra are much larger and more distant.”

According to a specimen recently sent to me by Dr. Leconte, this is closely allied to *H. occidentalis* (No. 553), but the surface is more opaque, the punctuation of the thorax is more distinct, and the front tarsi are broader.—D. S.

1349. *Hydroporus carbonarius*, Clk., Tr. Ent. Soc. 3rd ser. I, p. 423. China.

"Ovalis, penitus circularis, depressus, punctatus, carbonarius, nitidus; capite subtilissime punctato, rufulo; thorace antice emarginato, lateribus obliquis rotundatis, basi subsinuato, ad medium late angulato, punctato, punctis crebris et distinctis, nigro, ad latera sub-rufulo; elytris brevibus, haud punctato-striatis, punctatis; ad latera obscure marginatis, nigris, corpore subtus rufo-fusco; antennis pedibusque rufis."

"Var., fusco-brunneus, insulam Javam habitat. Long. corp. 1 lin.; lat. $\frac{4}{5}$ lin."

"The above diagnosis is drawn up from an example which Mr. E. Adams took in Danes Island, China, in 1848."

This is to be classed in the genus *Hydrovatus*; the variety mentioned from Java is probably not the same species.—D. S.

1350. *Hydroporus charlotti*, Clk., Ann. Nat. Hist., p. 182. Mexico.

"Ovatus, subelongatus, punctatus, flavo-ferrugineis; elytris rufo-flavis, lineis obscuris tribus aut quatuor fuscis; antennis rufo-testaceis. Long. corp. 1 lin., lat. $\frac{1}{2}$ lin."

". . . . The species very closely resembles a pale variety of *H. affinis*, Say; the species before us is larger, a trifle more parallel in form, the longitudinal markings of the elytra are less distinctly defined, and the punctures on the elytra are less distinct."

I should think this is very likely to prove the same as *Hydroporus affinis* (No. 318).—D. S.

1351. *Hydroporus cleopatrae*, Peyron, Ann. Soc. Fr. 1858, p. 397. Syria.

"Ovatus, crassus, convexus, punctulatus, nitidulus, ferrugineus, thorace antice et postice nigricante; elytris confuse nigro-vittatis; thoracis lateribus obliquis; elytris apice attenuatis, punctis nonnullis majoribus signatis. (Div. capite antice marginato.) Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ m.m."

"Ovale, épais et convexe, assez luisant, ferrugineux. Tête finement pointillée, rebordée en avant. Prothorax étroitement marqué de noir au milieu du bord antérieur, et ayant à la base une tache de même couleur échancrée en avant: il est faiblement pointillé et se prolonge assez fortement en arrière, au milieu en pointe mousse: ses côtés sont obliques. Elytres atténuées, arrondies à l'extrémité, à punctuation fine et bien marquée, formant une réticulation, avec quelques points un peu plus gros; marquées en outre, au tiers environ de leur largeur à partir de la suture, d'une strie peu sensible disparaissant avant l'extrémité. Elles ont la base, la suture et deux bandes longitudinales coudées à leur extrémité postérieure noires: la tache de la base est assez étroite et en occupe la moitié voisine de la suture; celle-ci est réunie à la basale en avant et un peu dilatée en arrière; la première tache part de l'épaule, qu'elle ne touche pas; se dirige d'abord un peu en dedans et ensuite en dehors, où elle s'arrête à peu près aux deux tiers de la longueur, en se dilatant d'une manière arrondie vers le bord externe qu'elle ne touche pas; la deuxième partant du milieu de l'élytre vers le quart antérieur descend en droite ligne jusqu'aux trois quarts de la longueur, où elle est sinuée et dilatée extérieurement en s'arrondissant juste au dessous de la dilatation de la première bande. Ces taches sont très confuses et souvent se réunissent toutes entre elles, à part la tache basale qui paraît constamment séparée des dorsales."

"Il doit être placé auprès de l'*H. reticulatus*, Fab."

This I should think a species of *Cœlambus*, near *Hydroporus musicus* (No. 390).—D. S.

1352. *Hydroporus collaris*, Hope, Proc. Ent. Soc. Lond. 1841, p. 48. Australia.

"Nigro-piceus, punctatus; thorace medio convexo, lateribus utrinque fortiter depressis; elytris subtilissime punctulatis piceis, corpore infra pedibusque concoloribus. Long. lin. $1\frac{3}{4}$, lat. lin. $\frac{3}{4}$."

I can add nothing to the information as to this species given by Clark, Journ. Ent. I, p. 412.—D. S.

1353. *Hydroporus compunctus*, Woll., Col. Atlant. App. p. 11. Canary Islands.

“Ovalis, nitidulus, alutaceus, profunde sed haud dense punctatus, parce cinereo-pubesceus, nigropiceus; capite omnino sed prothorace elytrisque ad latera indistincte rufescentioribus; prothorace parum inæquali (postice late irregulariter impresso); elytris lineis tribus (una sc. juxta suturam vix punctata, et duabus exterioribus e punctis sat magnis compositis) notatis; antennis pedibusque rufo-ferrugineis. Long. corp. lin. $1\frac{1}{2}$.”

“It is rather smaller, convexer, and more oval than the *H. xanthopus*, and very much more coarsely (and a little more sparingly) punctured; its head and sides (at any rate of the prothorax, which is also more deeply branded transversely behind) are more rufescent; and its elytra are more distinctly impressed with an obscure longitudinal line (or wide, shallow depression) parallel to the suture, and the two usual series of punctures externally.”

1354. *Hydroporus contractulus*, Mann., Bull. Mosc., 1852, II, p. 304. Sitka.

“Breviter ovatus, subdepressus, ferrugineo-testaceus, subnitidus; thorace dorso obscuriore infuscato, undique subtiliter punctulato, medio tenue canaliculato, serie punctorum majorum intra marginem apicalem notato; elytris crebre punctulatis. Longit. $1\frac{1}{2}$ lin., latit. $\frac{5}{8}$ lin.”

“Habitat in insulæ Sitkhæ aquis rarissime, D. Holmberg.”

This name is not alluded to by Crotch in his “Revision of the North American Dytiscidæ;” it perhaps represents a species of *Hydroporus* near *D. tristis* (No. 602).—D. S.

1355. *Hydroporus coquerelii*, Fairm., Ann. Soc. Fr., 1869, p. 186. Madagascar.

“Long. 3 m.m. Breviter ovatus, crassus, convexus, valde punctatus, nitidulus, rufo-testaceus, capite marginato valde impresso, prothorace medio infuscato, elytris fascia lata suturali et fasciis latis transversis, sinuatis, fuscis punctisque fuscis ad humeros, aut fusco-nigris, fascia antea sinuata maculaque subapicali testaceis.”

“En ovale très court, convexe, d'un roux testacé brillant. Tête ayant une large impression assez profonde, rebordée en avant. Corselet densément et finement ponctué, un peu plus fortement à la base; disque plus ou moins noirâtre. Elytres courtes, arrondies en arrière, très-ponctuées; tantôt ayant une large bande suturale d'un brun mat avec deux fascies transversales de même couleur, dentées, et quelques taches vers les épaules, tantôt d'un brun noir avec une tache antérieure dentée et une tache subapicale d'un roux testacé.”

“Forme et coloration de l'inæqualis, mais plus grand, plus large, et remarquable par l'impression qui occupe tout le milieu de la tête.”

This description seems quite applicable to *Hyphodrus impressus*, Klug. (No. 346), and I believe the name will prove a synonym of that species.—D. S.

1356. *Hydroporus cribratellus*, Fairm., Ann. Soc. Fr., 1880, p. 248. Algeria.

“Long. 3 m.m. Oblongus subparallelus, depressiusculus, nitidus, luteo-testaceus, elytris piceo-testaceis, margine luteo-testaceis; capite haud distincte punctato, valde biimpresso; prothorace basi, antice tantum angustato, lateribus a medio leviter arcuatis, margine postico medio obtusissime angulato, et utrinque obsolete sinuato, dorso haud sensim punctato, ante basin linea transversa leviter impresso; elytris oblongis, basi parallelis, ante apicem tantum attenuatis, apice acuminato, graciliter spinoso, dorso sat dense punctatis, utrinque linea fortius punctata signatis.” Biskra.

“Ressemble pour la coloration, à l'*H. obsoletus*, mais la forme subparallèle le rapproche du *productus*, dont il diffère notablement par la forme un peu plus courte, les élytres très ponctuées et terminées chacune par une pointe aiguë. L'unique individu de cette espèce n'a peut-être pas toute sa coloration; il serait possible que les élytres fussent brunes avec le limbe clair.”

1357. *Hydroporus cyprius*, Regt., Ann. Soc. Fr. 1877, p. 352. Cyprus.

“*H. discretus* Fairm., vicinus, sed minus convexus, multo magis elongatus, ovalis, haud parallelus, antice et postice magis attenuatus, in prothorace elytrisque plus minusve pubescens; niger, vertice obscure ferrugineo; elytrorum lateribus et basi sæpe vage fusciscentibus, epipleuris nigris; infra valde profundeque, supra dense nec tam profunde punctatus; pedibus totis rufo-ferrugineis; antennis sat crassis, ad basin testaceis, postea fusco-nigricantibus; prothorace ante basin sulco transverso obsoleto et utrinque fovea lata impresso. Long. $3\frac{1}{4}$ — $3\frac{1}{2}$ m.m.”

“Cette espèce appartient au groupe nombreux et difficile des *Hydroporus* noirs. Il est voisin de l’*H. discretus*, Fairm.; mais il est moins convexe, beaucoup plus allongé, régulièrement ovale, non parallèle et par suite bien plus atténué en avant et en arrière. Il est entièrement noir et plus ou moins pubescent sur le corselet et les élytres; le sommet de la tête est marqué d’une tache transversale d’un ferrugineux sombre, les élytres ont souvent à la base et sur les côtés une teinte vaguement brunâtre; toutes les pattes sont d’un roux ferrugineux, les antennes un peu épaisses, testacées à la base, noirâtres dans les deux derniers tiers. Tout le dessous du corps est couvert de gros points enfoncés très-marqués; tout le dessus est ponctué assez finement et densément, sur tout sur le corselet, qui est presque rugueux, et qui en outre présente, en avant de la base un sillon en forme d’accole, terminé de chaque côté par une fossette rugueuse et bien marquée; les deux lignes de points enfoncés des élytres sont bien apparentes, tandis qu’elles sont à peine indiquées chez le *discretus*.”

1358. *Hydroporus decemsignatus*, Clk., Ann. Nat. Hist. 1862, p. 176. Mexico.

“Ovalis, ad apicem attenuatus, punctato-striatus, niger; elytris flavo decemnotatis; antennis testaceis; pedibus fuscis. Long. corp. 2 lin., lat. 1 lin.”

“Broadly ovate, compressed and attenuated towards the apex, punctate-striate, of a dull black colour; head broad, impunctate, with two insulated depressions, one on either side of the inner margin of the eyes, in colour black, the basal line and also the apex being obscurely tinged with rufous: thorax broad, the lateral margin being much constricted towards the front, and in a continuous line with the lateral margin of the head; the surface (under a high power) is obsoletely rugose; parallel with the anterior margin is a line of faintly impressed punctures; in colour black, with a medial circular spot of suffused rufous (in a second example there is a distinct trace of a similar suffused rufous marking near the margin): elytra broad, attenuated towards the apex, with three lines of faintly impressed punctures—one near the suture, another medial, and a third at some distance from the lateral margin; the surface is of a dull black colour, with five markings of flavous on each elytron—one at the base, transverse and parallel to the margin (sometimes continued at the shoulders in a line parallel to the lateral margin); the four others are smaller, of equal size, in form either subcircular or somewhat quadrate; of these, two are near the lateral margin, one is situate at the apex, and a fourth medially near the suture; abdomen and underside fusco-rufous, sometimes almost black: antennæ testaceous: legs the anterior rufo-testaceous, the posterior fusco-rufous.”

I think this may prove to be a colour variety of *H. roffi*, Clk. (No. 1424).—D. S.

1359. *Hydroporus delectus*, Woll., Cat. Col. Can. 1864, p. 76. Canary Islands.

“*H. oblongus*, minute punctulatus, tenuiter pubescens, niger prothorace ad latera dilute testaceo et oblique subrecto; elytris utrinque lineis tribus latis interruptis testaceis, postice valde abbreviatis, ornatis; antennis ad basin pedibusque piceo-testaceis. Long. corp. lin 1— $1\frac{1}{3}$. Very closely allied to the European *Hydroporus flavipes*, but I think, nevertheless, really distinct. . . . Rarissimus.”

1360. *Hydroporus depressicollis*, Rosenh., Thier. Andal., p. 50. Spain.

“Ovalis, depressus, rufo-piceus, opacus, densissime punctatus, tenuissime pubescens; prothorace deplanato, lateribus parum rotundato et sub-elevato, elytris medio longitudinaliter deplanatis, sutura costisque tribus elevatis, duabus exterioribus obsoletis. Long. $1\frac{3}{4}$ lin., lat. 1 lin.”

“ Von der grösse des *H. platynotus*, aber von anderer form, farbe, punktirung. Dem *H. opatrinus* und *hispanicus* am meisten ähnlich, sehr ausgezeichnet durch flachen Körper, sehr dichte punktirung, durch welche der ganze Käfer matt erscheint, braunrothe farbe, sehr flaches halschild, welches seitlich nur sehr wenig gerundet und fast gerade ist. Auf den flügeldecken sind die äusseren rippen nur kurz, die innerste sehr stark, die naht ebenfalls kielartig erhaben, der Raum zwischen dieser und der ersten Rippe muldenartig ausgeflacht. . . .”

“ Bei Algeciras in fließendem wasser im März gesammelt ; ich besitze nur ein einziges exemplar.”

This appears to be a species of *Deronectes* allied to *Hydroporus bicostatus*, Schm.—D. S.

1361. *Hydroporus dichrous*, Melsh., Proc. Ac. Philad. II, p. 28. North America.

“ Dusky, finely punctured, slightly pubescent ; head and thorax rufous ; body beneath black.—Hardly 2 l. long, 1 l. wide. Pennsylvania.”

“ Body ovate, finely and densely punctured, and slightly pubescent : head dull rufous, with an oblique shallow indentation each side between the eyes, which are black : thorax colour of the head, with the middle of the anterior margin dusky ; much and finely punctured, particularly the posterior margin and sides ; the latter slightly rounded : elytra dark reddish-brown, paler towards the sides ; finely and densely punctured, and slightly pubescent ; apex acutely rounded : antennæ, palpi, feet, pleuræ and epipleuræ, rufous : venter and pectus black, distinctly punctured, the former with three or four lateral rufous spots.”

“ Var.—Larger ; head tinged with black ; thorax nearly the colour of the elytra.”

This is placed by Crotch between *H. modestus* (No. 627), and *H. Americanus* (No. 619), and said (“ Rev. N. Am. Dytisc.” p. 394) to be “ recognizable by its broad form, pointed behind, head and thorax often rufous, punctuation very fine.”—D. S.

1362. *Hydroporus discicollis*, Say, Tr. Am. Phil. IV, 1834, p. 446. North America.

“ Reddish brown, somewhat sericeous, minutely punctured, middle of the thorax without punctures.”

“ Inhabits North West Territory.”

“ Body entirely dark-reddish brown, with minute punctures ; head ——— ; thorax with the disc impunctured, polished, and a little more convex ; elytra darker than the thorax, more obviously sericeous ; lateral margin a little paler ; spot at the tip dull yellowish ; post pectus black picceous. Length three-twentieths of an inch.”

Found during Long's expedition to the source of St. Peter's River. The species intended has not been recognized by Leconte or Crotch.—D. S.

1363. *Hydroporus discoideus*, Lec., Proc. Ac. Phil. 1855, p. 299. North America.

“ Latior ovalis fere depressus (minus nitidus) subtus niger, antennis pedibus corporeque supra testaceus, capite lateribus et occipite infuscato ; thorace elytris angustiore macula magna basali infuscato, lateribus late rotundatis tenuiter marginatis cum elytris angulum formantibus, elytris confertissime punctulatis disco maximo communi infuscatis, sutura lineolisque anticis paucis pallidioribus, margine late testaceo relicto. Long. .15.”

“ One female found at Fort Laramie. Broader and flatter than the allied species, and (in case the male should be more shining and more coarsely punctured) distinguished by the large basal spot of the thorax. The head and thorax are moderately punctured ; the dark portion of the elytra is very well defined, and does not fade at all into the broad pale margin.”

According to Crotch (Tr. Am. Ent. Soc. IV, p. 389), this is a male of *Hydroporus patruelis*, Lec., (No. 399) but this opinion, in view of the fact that Leconte considered the individual described to be a female, requires confirmation.—D. S.

1364. *Hydroporus dorsoplagiatus*, Fairm., Ann. Soc. Fr. 1880, p. 247. Algeria.

“Long. $2\frac{3}{4}$ m.m. Oblongus, modice convexus, postice leviter attenuatus, fuscus, capite, antennis prothoracisque margine laterali rufo-testaceis, elytris flavido-testaceis, macula magna transversa, medio sita, postice longe per suturam prolongata, marginem externum haud attingente, sed postice anguste producta infuscata, pedibus rufescentibus; capite convexiusculo, ad oculos impresso; prothorace brevi, antice leviter angustato, lateribus leviter arcuatis, utrinque striola laterali parallela signato, margine postico medio obtusissime angulato, antice lineola transversa leviter impresso; elytris oblongis, postice a medio attenuatis, apice obtuse acuminatis, levigatis, utrinque lineis 2 leviter impressis et tenuiter punctulatis, apicem versus obsoletis; pectore utrinque tenuiter punctulato et vage infuscato.”

“Voisin du sexguttatus, mais bien plus grand, plus allongé un peu plus parallèle vers le milieu; les élytres ne sont pas distinctement ponctuées, leur coloration est différente, la grande tache dorsale n'est pas nettement arrêtée, ne se prolonge pas autant en avant et ne détermine pas de taches jaunes en arrière, leur surface longitudinale est aussi bien moins convexe.”

1365. *Hydroporus dubius*, Aubé, spec. 517.

“Elongato-ovalis, depressiusculus; capite testaceo; thorace ad latera rotundato, testaceo, antice nigro, maculis duabus paulo oblique transversis, confuse nigro-brunneis, notato; elytris castaneo-brunneis, cum margine exteriori angusto, sex aut septem lineolis plus minusve interruptis, confuse testaceo-ferrugineis, apice rotundatim attenuatis; abdomine nigro. Long. $5\frac{1}{3}$ m.m., larg. $2\frac{2}{3}$ m.m.”

[*A description, i.e., follows this diagnosis.*]

“Je n'ai vu qu'un seul exemplaire de cet *Hydroporus*; il fait partie de la collection du museum, ou il est indiqué comme ayant été pris en Afrique, sans autre indication plus précise.”

Notwithstanding the locality given by Aubé, I believe this will prove to be the *H. vigilans*, Woll. (No. 465).—D. S.

1366. *Hydroporus elegantulus*, Boh., Ins. Caff. I, p. 249. Caffraria.

“Ovalis, modice convexus, nigro-æneus, nitidus; antennis pedibusque flavo-testaceis; prothorace crebre, evidentè punctulato, ad basin utrinque oblique canaliculato, margine vittaque media transversa, dorso interrupta, flavo-testaceis; elytris profundius, seriatim punctatis, interstitiis vage punctulatis, disco uni-costatis, margine inæqualiter, fascia transversa intra basin maculaque parva, apicali, flavo-testaceis Long. 2, lat. 1 m.m.”

[*This diagnosis is followed, i.e., by a long description.*]

The species seems to be a *Bidessus*, near *B. insignis* (No. 252).—D. S.

1367. *Hydroporus emilianus*, Clk., Ann. Nat. Hist., 1862, p. 183. Mexico.

“Ovatus, impubescent, punctatus, rufo-ferrugineus; capite flavo, ad medium fusco-suffuso; thoracis lateribus flavo-suffusis; elytris punctatis; antennis rufo-flavis. Long. corp. $\frac{4}{5}$ lin., lat. $\frac{2}{5}$ lin.”

“Ovate, impubescent, thickly and finely punctate, rufo-ferruginous: head transverse, impunctate, glabrous, in colour flavous, the inner margins of the eyes near the base being suffused with fuscous: thorax transverse, the sides subparallel and constricted in front; the surface is glabrous and finely punctate, more distinctly near the base; on either side of the middle, connected with the line of the base, is a short, well-defined, longitudinal fovea: elytra parallel, subattenuate near the apex, thickly but obsoletely punctate; at the anterior margin (halfway between the humeral angles and the suture) is a short longitudinal fovea, corresponding in position to the thoracic fovea; the surface in colour is rufo-ferruginous or fuscous, the sides being more or less distinctly suffused with flavous; abdomen and underside dark fuscous; legs flavous; antennæ rufo-flavous.”

This is perhaps a variety of *Hydroporus affinis* (No. 318).—D. S.

1368. *Hydroporus evanescens*, Bol., Ins. Caff. I, p. 252. Caffraria.

“Subovatus, convexiusculus, flavo-testaceus, nitidus; prothorace basi utrinque striola minima sub-obliqua, in elytris continuata, impresso; elytris confertim, evidenter punctulatis, basi, sutura late, postice in disco excurrente, ante apicem abbreviata maculaque magna, laterali, ovata, nigris. Long. $\frac{3}{4}$, lat. $\frac{1}{2}$ m.m.”

“E. minoribus. H. delicatulo non latior et dimidio brevior”

Apparently a very minute species of *Bidessus*.—D. S.

1369. *Hydroporus exilis*, Bol., Ins. Caff. I, p. 257. Caffraria.

“Ovatus, convexiusculus, supra nigro-piceus, subtus-obscure ferrugineus; antennis basi, palpis pedibusque rufo-testaceis; prothorace subtiliter, sat crebre punctulato, ferrugineo-marginato; elytris obsolete, crebre punctulatis, lateribus obscure ferrugineis. Long. $1\frac{1}{2}$, lat. 1 m.m.”

A description follows the above diagnosis. I am unable to form any opinion of value, as to the position of this species.—D. S.

1370. *Hydroporus fairmairei*, Lep., Pet. Nouv. II, p. 53: and Ann. Soc. Ent. Fr. 1876, p. cxxi. Europe.

“Corselet à côtes arrondis, sans dilatation en avant, offrant sa plus grande largeur au milieu. Elytres sans échancrure en arrière de l'épaule, sans côtés caréniformes; forme ovale allongé; courbure du corselet assez régulière; angles postérieurs plus ou moins marqués, mais toujours sensibles. Lobe scutellaire du prothorax saillant et aigu.”

The above is compiled from Leprieur's analytical table, *l. c.*; we are also informed that this is Fairmaire's, *Hydroporus vestitus*, but that author's name is not adopted because of the prior *H. vestitus*, Gebl. I have little doubt however that the species is not a good one, but only a form of the variable *H. mæstus*, Fairmaire, (No. 456).—D. S.

1371. *Hydroporus fractilinea*, Solsky, Fedt. Turkestan. II, 5. p. 134. Turkestan.

“Ovatus, convexus, nitidus, punctatus, testaceus; oculis, thorace media basi elytrisque, sat crebre, profunde punctatis, limbo angusto basali, sutura lineisque longitudinalibus interruptis tribus, nigris; pectore abdomineque nigro-piceis, fortius punctatis. Long. $2\frac{1}{3}$ (elytr. vix 2), lat. $1\frac{1}{2}$ m.m.”

[*This is supplemented by a description in Russian.*]

From the diagnosis it appears that this is a species of *Celambus* similar to *Celambus interruptus* (No. 391), but the breast and the ventral segments are said to be pitchy-black.—D. S.

1372. *Hydroporus fryi*, Clk., Ann. Nat. Hist. 1862, p. 181. Mexico.

“Breviter ovatus, ad apicem subattenuatus, punctatus, niger vel ferrugineo-niger; thorace fortiter punctato, undique ad latera antice transverse flavo-notato, linea basali attenuata constricta, elongata; elytris maculis quatuor magnis, his ad humeros subcircularibus, illis apicem versus elongatulis. Long. corp. 1 lin., lat. $\frac{1}{2}$ lin.”

“ . . . in general pattern it resembles at first sight *H. decoratus*, Gyll., and *H. cuspidatus*, Kunz.: in form, size, and also in pattern, it approaches *H. pumilio*, Aubé, but is much less coarsely punctate; it is remarkable for the fine thread like character of its thoracic longitudinal striæ, which are not short, and broadly defined, but elongated and narrow, as if formed by the scratch of a pin; there are no traces of striæ on its elytra, except in the scutellary region, where there is an abbreviated row of indistinct punctures near the suture: the surface of the elytra is sparingly covered with minute punctures: legs and antennæ fuscous.”

This is a species of *Bidessus*, perhaps allied to *Hydroporus pictodes*, (No. 256).—D. S.

1373. *Hydroporus gracilis*, Wehneke, Berl. Ent. Zeit. XVI, p. 136. Spain.

"Elongato-ovalis, postice attenuatus, ferrugineus, sparsim punctulatus. Long. 2 m.m."

"Von länglicher form, rostroth, Kopf gross und ganz glatt. Halsschild kurz und breit, an den seiten etwas gerundet, ausserst sparsam und fein punktirt, am vorder- und hinterrande leicht gebräunt. Flügeldecken lang gestreckt, nach hinten verschmälert, fein und sparsam punktirt, an der basis heller gefärbt. Die ganze unterseite nebst beine gelbroth. "Dem *H. pygmaeus* Sch. am nächsten stehend, durch die gleichbreite längliche form und durch die feine sparsame punktirung unterscheiden."

Found at Malaga, by C. P. de la Brulerie.

1374. *Hydroporus gravidus*, Clk., Journ. Ent. I, p. 413. Australia, (Port Essington).

"Ovatus, latus, subdepressus, crebre punctatus, ater. Long. corp. $1\frac{1}{3}$ lin., lat. $\frac{1}{3}$ lin."

"Broad, depressed, the surface is very thickly and coarsely punctured throughout, in colour black; head broad, punctate; the surface is unmarked by any fovea or depression: thorax broad, the anterior angles rounded, the sides broadly marginate; in colour black, the marginations being obscurely tinged with rufous, more distinctly near the basal angles; elytra unmarked by any depression; longitudinal line or stria pitchy black: near the apex and also medially (at the extreme edge of the marginations) is an obscure rufous marking: antennæ fuscous, the basal joints being rufo-fuscous: legs fuscous."

This is a very distinct species of *Antiporus*, somewhat near *H. blakei*, Clk., (No. 434).—D. S.

1375. *Hydroporus habelmanni*, Wehneke, Ent. M. B. I, p. 76. Europe.

[*This description, copy of which was kindly sent to me by its author, has unfortunately been lost in transmission to the printers, and as no copy of the work from which it is extracted exists in Britain, so far as I have been able to learn, cannot now be replaced.*]

1376. *Hydroporus hansardii*, Clk., Journ., Ent. I, p. 417. Australia (Moreton Bay).

"Oblongo-ovatus, postice attenuatus, crebre punctatus, niger flavo-maculatus. Long. corp. $1\frac{1}{2}$ lin., lat. $\frac{1}{2}$ — $\frac{3}{4}$ lin."

"Oblong-ovate, parallel, somewhat attenuated at the apex, thickly and deeply punctate, black. Head with two small punctuations between the eyes, black, with a medial longitudinal line of dark rufous; thorax broad, subparallel, in front the anterior angles rounded; the surface is thickly punctate throughout, in colour rufo-flavous, the anterior and posterior margins being narrowly fuscous black; the posterior marking consists sometimes of two submedial spots; elytra subdepressed, thickly punctate, of a dull black colour, with the lateral margins and also six small longitudinal markings (three on either side of the suture) flavous; the lateral margins, narrowly flavous continuously, are more broadly marked by three longitudinal flavous maculae; legs and antennæ flavous."

This is a *Sternopriscus* allied to *S. clavatus* (No. 361).—D. S.

1377. *Hydroporus hottentottus*, Har., Mun. Cat. (*Hydroporus collaris*, Boh., Ins. Caff. I, p. 255.) Caffraria.

"*Hydroporus collaris*; oblongo-ovatus, convexiusculus, nitidus, niger; antennis basi pedibusque rufo-testaceis; prothorace rufo-testaceo, medio nigro; elytris piceis, evidenter, minus crebre punctulatis, disco antico stria tenui impressis. Long. 3, lat. $1\frac{1}{2}$ m.m."

This diagnosis is supplemented by a longer description. I am quite doubtful as to the position to be assigned to the species.—D. S.

1378. *Hydroporus humilis*, Klug, Symb. phys. IV, t. 33, f. 11. Sinai.

"Nigro-piceus, antennis pedibusque testaceis, elytris piceis, basi obsolete testaceis. Long. lin. 2. Habitat in Montes Sinai aquis."

“*H. plano*, cui simillimus et valde affinis, paulo minor. Oblongo-ovatus, subtus sparsim punctatus, obscure nigro-piceus. Caput vix punctulatum, nigro-piceum, postice obsolete ferrugineum. Antennæ rufo-testaceæ, unicolores, nec apice obscuriores. Thorax punctulatus, nigro-piceus, margine laterali tenuissime ferrugineo. Pedes rufo-testacei. Elytra subtiliter confertim punctata, picea ad basin rufo testacea.”

In the Munich Catalogue this is treated as a variety of *H. lituratus* (No. 569), but it appears to me doubtful whether it be so.—D. S.

1379. *Hydroporus ignotus*, Muls., Ann. Soc. Linn. Lyons, VII, p. 305: op. Ent. XII, p. 54. France.

“*Elongatus*, subdepressus, nitidulus, parce griseo-pubescentis, nigro-piceus, antennarum basi, pedibus, pronotique lateribus rufo-testaceis. Elytris margine exteriore, macula antica marginali, duabus posticis submarginalibus, duabus oblongis anticis dorsalibus, testaceis. Pronoto utrinque breviter unistriato Long. 0·0024, larg. 0·001.”

“Environs de Lyon; très-rare. Dans les eaux de l’Izeron et du Garon.”

“Cette espèce se distingue du l’Hydr. *varius*, Aubé, par sa forme beaucoup plus allongée et plus déprimée, par sa ponctuation un peu plus serrée, et par l’angle rentrant, formé par la rencontre des côtés du prothorax avec ceux des élytres, beaucoup plus senti.”

The above diagnosis is followed by an excessively long, minute description of colour, &c. I think the insect will prove to be a variety of *Hydroporus varius* (No. 544).—D. S.

1380. *Hydroporus inconspicuosus*, Lep., Pet. Nouv. II, p. 53. Europe.

“Corselet à côtés arrondis. Elytres sans échancrure en arrière de l’épaule, sans côtés saillantes; forme ovale allongé; courbure du corselet assez régulière, plus grande largeur de celui-ci à peu près au milieu; lobe scutellaire du prothorax saillant mais obtus ou arrondi; ponctuation du dessus grossière; taille $3\frac{1}{2}$ à 6 m.m., sur $4\frac{1}{2}$ m.m.”

This will, I have no doubt, prove to be a synonym of *H. mæstus*, Fairm. (No. 456).—D. S.

1381. *Hydroporus incrassatus*, Th. Op. Ent. IV, p. 366. Sweden.

“*Elongatus*, fusco-testaceus, capite magno antice, antennis basi pedibusque testaceis; prothorace apice quam basi parum angustiore, lateribus leviter rotundatis, margine incrassato, disco lævi, limbo elytrisque tenuissime pubescentibus obsolete punctatis. Long. 1 lin.”

“*Mas*, unguiculis anticis inæqualibus.”

“*Statura* fere *H. umbrosi*, sed minor, angustior, prothorace apice quam basi vix angustiore, margine laterali, præsertim antice incrassato mox distinctus; ab *H. pygmaeo* colore minus læto, capite majore prothoraceo discedens. Caput sat magnum, semicirculare, prothorace paulo angustius, fuscum, limbo anteriore testaceo, foveolis frontalibus sat magnis. Antennæ tenuiores, nigro-fusca, articulis primis totis, reliquis basi testaceis, tertio et quarto reliquis paulo angustioribus, haud transversis. Prothorax fortiter transversus, apice quam basi vix angustior, angulis anticis porrectis, basi medio minus late productus, angulis posticis rectis, lateribus leviter, æqualiter marginatis, margine, præsertim antice incrassato; disco leviter convexo, lævi, glabro, limbo minus crebre, subtiliter punctato. Elytra prothorace quintuplo longiora, lateribus parum rotundatis, apice subacuminata; disco leviter convexa, fere glabra, fusco-testacea, minus crebre, haud fortiter punctata. Corpus subtus fusco-testaceum, pectore obscuriore. Pedes testacei, femoribus posticis obscurioribus.”

1382. *Hydroporus inefficiens*, Walk., Ann. Nat. Hist., 1859, p. 51 (3rd Ser., Vol. III). Ceylon.

“Testaceus, thorace maculis duabus posticis transversis nigris, elytris cinereis, glabris testaceo-strigatis basi nigris. Long. $\frac{3}{4}$ lin.”

According to the type in the British Museum this is a species of *Laccophilus*.—D. S.

1383. *Hydroporus infacetus*, Clk., Ann. Nat. Hist., 1862, p. 180. Mexico.

“Parallelus, punctatus, rufo-ferrugineus; capite flavo, ad medium rufo-fusco; thorace rufo-flavo elytris rufo-ferrugineis, ad basin flavo-lineatis, sutura fusca; pedibus antennisque rufo-flavis. Long. corp. $1\frac{4}{5}$ lin., lat. $\frac{1}{2}$ lin.”

“Parallel, subovate, thickly punctate, rufo-ferruginous: head finely punctate, flavo-testaceous; near the inner margin of the eyes is a longitudinal suffused marking of rufo-fuscous; thorax transverse, finely punctate, rufo-flavous; elytra subparallel, sufficiently robust, the sides near the anterior angles forming an obtuse angle with the sides of the thorax; the surface is thickly punctate and rufo-ferruginous; the anterior margin and also the longitudinal medial lines being flavous; these lines, three or four in number, are more or less obsolete; the extreme apex is also flavous, and the sutural line narrowly fuscous; abdomen and underside black; legs and antennæ rufo-flavous.”

From my notes on the British Museum collection it appears that this is a species of *Cœlambus*, near *Hydroporus medialis* (No. 401).—D. S.

1384. *Hydroporus infaustus*, Clk., Ann. Nat. Hist., 1862, p. 179. Mexico.

“Oblongo-ovalis, subparallelus, antice sat obtusus, confertissime et obsolete punctatus, punctato-striatus, niger; capite brevi, inter oculos undique late et obsolete depresso, punctatissimo, nigro, ad medium prope basin transverse rufo-notato; thorace transverso, lato, ad latera tenuiter marginato, prope basin irregulariter transverse depresso, punctatissimo, nigro, ad medium rufo-notato; elytris sat productis, ad apicem subacuminatis, subtiliter punctatissimis, punctato-striatis, nigris, ad latera obsolete rufo vel fusco notatis; pedibus rufo-testaceis, femoribus posticis nigro-suffusis; abdomine nigro. Long. corp. 2 lin., lat. 1 lin.”

“Oval, somewhat produced, punctate-striate, black: head broad, on either side in front is an obsolete depression; the surface (under a high power) is very finely and thickly punctate, in colour black; near the line of the base a narrow transverse band of flavous is well defined; thorax broadly transverse, the anterior margin excavated; the sides subparallel and rounded in front, very narrowly and evenly marginate; the line of the base is broadly angulated at the region of the scutellum; the surface is finely and thickly punctate and medially somewhat rugose, with a row of minute punctures parallel to the anterior margin; near the base it is medially transversely depressed, in colour fuscous black, with a post-medial marking (sometimes almost obsolete, sometimes subcircular and suffused) of flavous; elytra somewhat acuminate at the apex; the shoulders are sufficiently prominent, thus forming an angle with the line of the margination of the thorax; the surface is very finely punctate, with six deep punctate striae (more obsolete near the margins and apex) of a dull black colour, three or four obsolete markings of flavous being more or less distinct near the line of margination: abdomen and underside black; legs flavous, the apical joints being fuscous.”

This is allied to *Hydroporus striatellus*, Lec. (No. 494).—D. S.

1385. *Hydroporus infirmus*, Boh., Ins. Caff. I, p. 251. Caffraria.

“Oblongo-ovatus, supra convexiusculus, subtiliter crebre punctulatus, nitidus, piceus; antennis basi, palpis pedibus prothoraceque flavo-testaceis, illo macula magna basali, antice rotundata, picea, notato, postice utrinque stria obliqua, in elytris continuata; elytris tenuiter pubescentibus, margine lineolisque, duabus brevibus pone basin, flavo-testaceis. Long. $1\frac{1}{2}$, lat. $\frac{3}{4}$ m.m.”

[*This diagnosis is followed, i.e., by a long description.*]

This is apparently a species of *Bidessus* allied to *Dytiscus geminus* (No. 269).—D. S.

1386. *Hydroporus inquinatus*, Boh., Ins. Caff. I, p. 254. Caffraria.

“Ovatus, convexiusculus, rufo-testaceus, nitidus; capite medio transversim infuscato, subremote punctulato; prothorace antice posticeque nigro, evidententer, subremote, medio subtiliter punctulato

elytris sat crebre, mediocriter punctatis, basi, sutura lineisque quatuor, 1 et 3 antice posticeque paullo, 2 antice valde, 4 brevi utrinque magis abbreviatis, lineolaque postica laterali, subobliqua, nigris. Long. 5, lat. 3 m.m."

[*This diagnosis is followed, i.e., by a long description.*]

I can form no clear opinion as to the species, it may possibly be a *Herophydrus* or *Cœlambus*.—D. S.

1387. *Hydroporus interpulsus*, Walk., Ann. Nat. Hist., 3rd ser., II, 1858, p. 304. Ceylon.

"Niger, crassus, capite, thoracis fascia latissima et elytrorum margine tenui luteo-ferrugineis. Long. 1½ lin."

According to the type in the British Museum this is allied to No. 370, *Hyphoporus aper*.—D. S.

1388. *Hydroporus kingii*, Clk., Ann. Nat. Hist., 1862, p. 178. Mexico.

"Ovatus, subdepressus, punctulatus; thorace nigro, marginibus flavis; elytris rufo-fuscis; pedibus antennisque rufo-testaceis. Long. corp. 1½ lin., lat. ¾ lin."

"Ovate, broad, subdepressed; when seen under a high power, finely and sparingly punctate; glabrous, darkly castaneous; head broadly transverse, impunctate, black; thorax broadly transverse, the sides rounded in form, the marginal line being continuous with that of the sides of the elytra and also of the head; the anterior margin is straight, the anterior angles being subprominent; parallel to the anterior margin is a row of minute punctures; the surface generally is impunctate and glabrous, with faint traces near the base of obsolete punctures; in colour black, the sides being suffused more or less broadly with flavous; elytra sufficiently robust, towards the apex subacuminated (but not so distinctly as in *H. wardii*); the surface is finely and somewhat sparingly punctate throughout, with a single medial stria of closely arranged minute punctures on each elytron; abdomen and underside black; legs and antennæ rufo-testaceous."

This is allied to *Hydroporus vilis*, Lec. (No. 611).—D. S.

1389. *Hydroporus laceophilinus*, Lec., Proc. Am. Phil. Soc. 1878, p. 595. North America.

"Ovate, depressed, pointed behind, brown, paler in front, darker behind; epistoma not margined, head finely punctulate; prothorax (*Mas*) rugose and finely punctured, narrower in front, sides oblique, finely margined. Elytra (*Mas*) strongly punctured, shining (*Fem.*) opaque, finely sparsely punctulate. metasternum channeled for the posterior half of its length; sparsely punctured in front; abdomen coarsely punctured in both sexes. Length 2·6 m. m.; ·10 inch.

"Detroit; rare. The form is exactly that of a *Laceophilus* in miniature. The head and prothorax of the *fem.* are opaque and very finely and sparsely punctulate."

1390. *Hydroporus lanceolatus*, Walk., List. Col. Lord. p. 10. Wady Ferran.

"Black, elongate, elliptical, slightly shining. Head, palpi, antennæ and legs tawny. Prothorax in front with a broad tawny band, which is much excavated on each side of its hind border. Pectus with a tawny spot on each side. Elytra smooth, each with a large testaceous basal patch which emits two lanceolate streaks, with two testaceous dots near the suture, and with a large posterior elongated testaceous patch which extends to the tip and includes a black dot. Length of the body 2¼ lines."

This is probably to be assigned to *Deronectes*.—D. S.

1391. *Hydroporus latebrosus*, Lec., Ann. Lyc. V. p. 208. California.

"Ovalis, convexiusculus, postice magis attenuatus, minus dense punctatus, piceus nitidus, thorace

lateribus vix rotundatis, tenuiter marginatis : cum elytris angulum haud formantibus, his ad medium thorace latioribus, lutescentibus, antennis pedibusque rufis. Long. .15, San Diego."

This is not alluded to by Crotch either in his check-list, or the "Revision of the N. American Dytiscidæ."—D. S.

1392. *Hydroporus lateralis*, Boh., Ins. Caff. I, p. 255. Caffraria.

"Ovatus, convexus, obsolete, crebre punctulatus, niger, nitidus; antennis, palpis pedibusque rufo-testaceis; prothorace obsolete ferrugineo-marginato; elytris margine, fasciis duabus latis, transversis, cum margine coherentibus, introrsum abbreviatis apiceque flavo-testaceis. Long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ m. m." "*H. picto* parum longior sed latior."

[*This diagnosis is followed by a long description.*]

I can form no idea as to where the species should be placed.—D. S.

1393. *Hydroporus latipes*, Brullé, Voy. d'orb. Col., p. 50. Aubé, Spec., p. 445. South America (Corrientes).

"Elongato-ovalis, postice valde acuminata, convexa. supra undique valde punctata; capite et thorace rufo-ferrugineis; elytris rufo-piceis. Long. 6, larg. $2\frac{2}{3}$ m. m."

[*Aubé, l. c., supplements the above diagnosis with an ample description, and he refers the species to the genus Celina.*]

1394. *Hydroporus longulus*, Mulst., Ann. Soc. Linn. Lyons. VII, p. 305. (op. Ent. XII, p. 52). France.

"Oblongus, leviter convexus, subnitidus, parce subtilissime griseo pubescens, vertice, antennis pedibusque rufo-testaceis. Capite parce subtiliter, pronoto dorso parce, lateribus densius, elytris sparsim fortius, punctatis; his præterea punctis majoribus seriatis, bi-impressis. Long. 0.0030., larg. 0.0014."

"Mont Dore, montagnes du Lyonnais, du Dauphiné et de la Provence. Dans les eaux vives."

"Cette espèce est bien voisine de l'Hydr. nigrita, F. : mais elle est un peu plus grande, plus allongée, plus brillante. Ses élytres sont moins courtes, moins arrondies sur les côtés, presque parallèles, surtout chez les individus de la Provence."

[*The above diagnosis is followed by an extremely long description.*]

The species is probably very closely allied to *H. nevadensis*, and *H. celatus*, (Nos. 632, and 633).—D. S.

1395. *Hydroporus lucasi*, Reiche, (confusus Lucas. Exp. Alg. Ent., p. 96. pl. 11. f. 4). Algeria.

"Long. 5 m. m., larg. 2 m. m. $\frac{1}{2}$. *H. ovalis*, convexus; capite nigro, subtilissime punctulato, piloso; elytris fulvo-ferrugineis, pilosis in medio macula atrâ irregulariter ornatis; corpore atro; pedibus ferrugineis."

"Cet Hydropore ressemble beaucoup à l'*H. lituratus*, avec lequel il ne pourra être confondu à cause de sa taille, qui est beaucoup plus grande, et des taches que présentent les élytres, qui sont différemment disposées."

Algiers, Constantine.

The figure, *l. c.*, is very inferior, but shows the elytra to be largely brown, with black marking about the suture.—D. S.

1396. *Hydroporus magensis*, Clk., Ann. Nat. Hist., 1862, p. 183. Mexico.

"Sat robustus, sub-pubescens: prothorace ad basin transverse depresso, nigro, antice flavo; elytris punctato-striatis. Long. corp. $1\frac{1}{2}$ lin. lat. $\frac{1}{2}$ lin."

"Ovate, broad, sufficiently robust, very finely and sparingly pubescent: head transverse, impunctate, glabrous; below the inner margin of the eyes on either side is a minute fovea, and parallel to the line of the base is a minute longitudinal depression; in colour black; thorax somewhat narrow, transverse; on

either side is a distinct, longitudinal, somewhat oblique fovea, extending from the middle to the line of the base; the surface is thickly punctate; when viewed obliquely, a transverse shallow depression may be discerned near the middle, and also a minute punctured fovea near to the anterior margin; in colour black, the anterior margin and sides being distinctly suffused with flavous; elytra broad, robust, very finely pubescent; beneath this pubescence are distinct punctures, and also a faintly punctate stria; at the anterior margin, halfway between the suture and the lateral angles, is a short depressed fovea, corresponding in position with the fovea on the thorax; in colour a deep brown black; abdomen and under-side black: legs rufous: antennæ rufo-fuscous."

This is a species of *Bidessus*.—D. S.

1397. *Hydroporus masculinus*, Crotch, Tr. Am. Ent. Soc. V, p. 74. North America.

"Somewhat obovate, pointed behind, pale fulvous, breast and abdomen black; head very finely punctulate; thorax short, transverse, sides straight, base margined with black; finely and rather closely punctulate; elytra thickly and finely punctulate, pale yellowish, with the suture and four narrow lines black (the first and third not quite reaching the base). *Mas*, anterior claws much elongate, deformed, subequal, the external one flattened. L. 4.75 m.m."

"Lake Labache; very distinct by the male characters; the third joint of the anterior tarsi is also feebly bilobed and the claw joint is large and hardly longer than broad."

This is a very distinct species of *Celambus*, and may be placed near *Hydroporus nubilus* (No. 403).—D. S.

1398. *Hydroporus melancholicus*, Motsch., Selrenek Reise, 1860, p. 100. (*Hydroporus lugubris*, Motsch., Bull. Mose., 1845, IV, p. 353, pl. 6, f. 1). Kamtschatka.

"Oblongo-ovatus, subdepressus, niger; thorace transversim impresso; hoc basi elytrisque dense punctatis, ultimis parce pilosis; antennarum basi, elytrorum margine reflecto pedibusque rufo-piceis. Long. $1\frac{3}{4}$ lign., larg. 1 lign."

"Il ressemble un peu au *H. planus*, mais il est plus étroit. La tête est transversale avec deux impressions arrondies entre les yeux, et une troisième moins profonde sur le front. Le corselet s'élargit vers les élytres et présente vers la base une impression ponctuée. Les élytres sont un peu plus larges que le corselet, en ovale allongé comme la base de ce dernier, la pubescence est peu épaisse; la portion réfléchie des bords latéraux, la base des antennes et les pattes sont roussâtres. Le dessous du corps est noir."

1399. *Hydroporus mæstus*, Walk., List. Col. Lord., p. 10. Waddy Ferran.

"Black, elongate-oval, slightly shining. Head with a large reddish spot in the disc. Elytra smooth; each with three testaceous spots at the base, with two indistinct streaks in the disc near the base, with a testaceous costal streak proceeding from the base and ending in a patch at nearly one-third of the length, with an elongated testaceous dot near the suture at half the length, with three posterior elongated testaceous dots, one near the suture, two subcostal and near a testaceous costal line; legs red. Length of the body $2\frac{3}{4}$ lines."

This name is in prior use for another species. I have not identified Walker's description with any species known to me; it is probably a *Deronectes*.—D. S.

1400. *Hydroporus monilicornis*, Sahl., not. fenn., XIV, p. 154. Russian Lapland.

"Breviter ovatus, depressus, nitidus, niger, palpis, antennis, pedibus apieceque elytrorum ferrugineis; capite basi rufo-piceo; antennis medio incrassatis, articulis subglobosis; prothoracæ angulis posticis acutiusculis elytrisq. parce subtilissime punctatis, subglabris. Long. $1\frac{1}{3}$ lin."

“ Vac. b. : elytris macula humerali piceo-rufa notatis.”

“ *H. brevis*, Sahl., affinis, sed paullo major, punctura multo subtiliore et remotiore, antennis medio crassioribus coloreque facile distinguendus. Caput parvum, laeve, foveolis anticis distinctis parvulis, nigrum, vertice anguste rufo-piceo; palpis pallide ferrugineis, articulo ultimo apice fusco. Antennæ breviscule, ferrugineae, articulis exterioribus infuscatis, articulo quarto tertio distincte brevior, subtransverso, quinto hoc fere duplo longiore et multo crassiore, subgloboso, 6-7 hinc aequalibus, 8-10 sensim angustioribus et brevioribus, ultimo elongato, decimo paulo longiore, apice acuminato. Prothorax longitudine duplo et dimidio latior, apicem versus fortiter angustatus, lateribus leviter rotundatis, distincte marginatis, angulis anticis acutiusculis, posticis rectis; supra leviter convexus, remote subtilissime, limbo paullo densius, punctatus, niger, subnitidus. Elytra basi prothoracis latitudine et lateribus cum illo continue arcuatis, humeris haud prominulis, postice angustato-rotundato, supra modice convexa, omnium subtilissime remote punctulata, seriebus punctorum majorum leviter impressis, nigra, nitidula, subglabra, apice late indeterminatim ferruginea vel picea. Corpus subtus nigrum, parce minus profunde punctatum, prosterno haud tuberculato-prominulo. Pedes toti rufo-ferruginei.”

“ Rare in Russian Lapland, found near Kantalaks, 26th June, and on the summit of Dschyn Hill, near Imandra (67° 30'), 6th July, 1870.”

1401. *Hydroporus multiguttatus*, Regt. Ann. Soc. Fr. (V), VII, p. 351. Syria.

“ *H. lucasi*, Reiche, forma staturaque similis, ovalis, depressus, postice parum attenuatus, ad apicem rotundatus, vix pubescens, subtus nigro-ferrugineus; capite nigricante, vertice clypeoque ferrugineis; prothorace infuscato, fere nigro, utrinque late, antice anguste rufo-marginato; elytris fuscis, late ad basin et latera testaceis, maculis et lineolis testaceis pluribus confluentibus in disco et ad apicem ornatis; pedibus testaceo-ferrugineis; antennis testaceis, articulis ultimis ad apicem paululum infuscatis. Long. $4\frac{3}{4}$ m.m.”

“ Même forme et même taille que l'*H. lucasi*, Reiche, c'est-à-dire ovale et très-peu atténué en arrière, mais un peu plus déprimé et encore plus finement ponctué-réticulé sur les élytres. Tête finement ponctué d'un brun foncé; corselet bordé de roux largement sur les côtés, étroitement en avant, couvert d'une ponctuation fine très-serrée et égale, marqué de chaque côté en avant de la base d'une fossette peu profonde mais sensible, rebordé latéralement un peu plus largement que chez le *lucasi*. Elytres d'un brun plus ou moins foncé, largement testacées à la base, sur les bords et souvent le long de la suture, marquées sur le disque de plusieurs taches et lineaments testacés plus ou moins confluent, avec l'extrémité plus ou moins de cette même couleur; elles sont couvertes d'une pubescence couchée très-rare, très-courte, et très-facile à enlever; épipleures d'un testacé pâle. Dessous du corps d'un brun noirâtre; pattes rousses; antennes testacées, avec l'extrémité des derniers articles légèrement rembruni.”

Borak.

1402. *Hydroporus mutatus*, Har. (*H. ruficeps*, Boh., Ins. Call. I., p. 253). Port Natal.

“ *Hydroporus ruficeps*: ovatus, convexus, nitidus, supra niger, subtus ferrugineus; capite, antennis pedibusque rufis, hoc medio subremote, transversim punctulato; prothorace antice posticeque evidenter, sub-remote, medio transversim, subtiliter rugoso-punctulato, lateribus indeterminate rufo-ferrugineo; elytris sat crebre, medioeriter punctatis; margine inflexo rufo. Long. $4\frac{1}{2}$, lat. 3 m.m.”

“ *H. rufifronti* latior, brevior, magis convexus.”

[*This diagnosis is followed, l. c., by a long description.*]

The position the species should occupy is quite doubtful to me.—D. S.

1403. *Hydroporus nicobaricus*, Redt., Reis. Novar. II, p. 21. Nicobar Islands.

“ Oblongo-ovatus, pallide testaceus, capite thoraceque pallidis; thorace latitudine media duplo brevior, angulis anticis productis, acutis, postice utrinque stria recta, in elytris continuata, inter strias obsolete

punctatus et anguste nigro-marginatus; elytris fortiter punctatis tenuè pubescentibus, fuscis, macula magna posthumerali obsoleta, dilatiori. Long. 9.10", lat. elytr. 2.10—3.10".

“Der Körper ist lang eiförmig, hinten zugespitzt, massig stark gewölbt, bräunlichgelb, der Kopf und das Halsschild sind blassgelb, die Flügeldecken braun, die Beine etwas dunkler als die Unterseite. Der Kopf ist halbrund, sehr flach gewölbt, nicht punktiert, der Vorderrand etwas gewulstet. Das Halsschild ist mehr als dreimal so breit als lang, nach vorne sanft verengt, der Vorderrand zwischen den weit vorspringenden, spitzigen Vorderwinkeln gerade, der Hinterrand nach rückwärts in der Mitte stumpf dreieckig erweitert, die Hinterecken rechtwinkelig die Oberfläche flach gewölbt, nur hinten punktiert und hier beiderseits mit einem kurzen, vertieften Strichel, welches sich in doppelter Länge auf der Mitte der Flügeldecken Wurzel fortsetzt, der Theil des Hinterrandes zwischen diesen Stricheln schwärzlich angelaufen, Schildchen nicht sichtbar. Flügeldecken viermal so lang als das Halsschild, aber kaum breiter, an den Schultern enge an das Halsschild anschliessend, von der Mitte angefangen allmählig zugespitzt, fein sparsam behaart, ziemlich tief und zart punktiert, die Zwischenräume der Punkte grösser als diese, die Färbung braunlich mit einer grossen etwas heller durchscheinenden, sich nach einwärts ziehenden Makel hinter der Schulter und einer zweiten, ebenso undeutlichen kleinen Makel hinter der Mitte am Seitenrande.”

This is to be assigned to the genus *Bidessus*.—D. S.

1404. *Hydroporus niger*, Say, Tr. Am. Phil. II, p. 102. North America.

“Black, villous, obscure, immaculate; head and lateral margins of the thorax and elytra obscure rufous. Length more than three-twentieths of an inch. Body black, obscure, very numerous, minute, villous punctures, hairs adpressed to the surface; head obscure rufous, paler beneath, dusky each side of the front, a slightly indented spot each side before instead of the impressed line and punctures; antennæ dusky towards the tip of each of the terminal joints; palpi, terminal joints blackish; thorax black, very obscure rufous on each side, dorsal line none, elytra black, very obscure rufous each side near the base, striæ or maculæ; epipleura rufous; pectus and post pectus black; feet rufous; venter black, segments slightly piceous at tip.”

This species name is not alluded to by Crotch in his “Revision of the North American Dytiscidæ.” In the Munich Catalogue, it and *H. punctatissimus*, Aubé, are considered identical.—D. S.

1405. *Hydroporus notabilis*, Lec., Agass., Lake Sup., p. 216. North America.

“Elongato-ovalis, antice obtusus, postice oblique attenuatus, nigro-piceus pubescens, capite punctulato antice posticeque testaceo, thorace dense punctulato, obsoletius in disco, basi obsolete depressa, lateribus valde obliquis rotundatis, elytris elongatis, confertissime subtiliter punctatis, piceis, margine pallidiore, antennis tenuibus, cum palpis pedibusque rufis. Long. .21. One specimen, Black Bay.”

A male of this species recently communicated to me by its describer is allied to *Hydroporus arcticus* (No. 628), but has the thorax broader, and the basal joint of the front and middle tarsi remarkably large.—D. S.

1406. *Hydroporus nudatus*, Say, Tr. Am. Phil. IV, p. 444. Mexico, (in a small river beyond Vera Cruz).

“Beneath black; feet yellowish; thorax and head on their discs yellowish; elytra blackish with lines, and tip yellowish.”

“Head with numerous deep punctures, honey-yellow on the disc, blackish each side and behind; antennæ pale yellowish, dusky at tip; thorax with numerous deep punctures, more dense and obvious towards the base, honey-yellow, anterior and posterior margins dusky; elytra brownish black, with numerous profound, approximate punctures, striæ not distinct, but traces of two may be discovered near

the base ; about four more or less confluent lines at base, irregular ones each side and tip dull whitish yellow ; beneath black, pectus yellow ; feet honey-yellow. Length over three-twentieths of an inch."

This is perhaps a species near *Hydroporus equinoctialis*, Clk. (No. 525).—D. S.

1407. *Hydroporus obscurus*, Bab., Tr. Ent. Soc. III, 1841, p. 14. Brazil.

"Oblongo-ovatus, opacus, minutissime punctatus, supra et subtus fuscus, thorace, antennis pedibusque flavis. L. $\frac{3}{4}$, lat. $\frac{2}{3}$ lin."

"Minute, oblong-ovate, opaque, fuscous both above and below. Head large. Antennæ yellow. Thorax yellow, transverse, short, broadly emarginate in front, sides rounded, posterior margins wavy, the disc slightly elevated transversely, and a deep abbreviated impressed line on each side behind. Elytra ovate, fuscous, the base and suture darkest, the margins and apex reddish, very minutely punctured, and slightly downy, an impressed line on each side at the base in continuity with that on the thorax. Body beneath slightly downy, fuscous, with the abdomen rather paler. Legs yellow."

"Hab., Rio de Janeiro."

The type of this species appears to be lost from the British Museum ; the name is placed in the Munich Catalogue as representing the female of *H. nitidus*, Bab. (No. 313), *H. Miersi*, Mun. Cat. but it is very doubtful whether that is correct.—D. S.

1408. *Hydroporus obtusipennis*, Sahl., Not. Fenn. XIV, p. 146. Russian Lapland.

"Oblongo-ovalis, modice convexus, tenuissime pubescens, punctulatus, piceo-niger, antennis basi pedibusque ferrugineis, femoribus, capite antice posticeque, prothoracis elytrorumque lateribus piceis ; capite magno, impressionibus distinctis, prothorace lato, angulis posticis subrectis, lateribus subparallelis, postice obtusis. Long. $2\frac{2}{3}$ lin."

"*Mas*: tarsi anticis articulis tribus basalibus fortius dilatatis, unguiculis valde elongatis, subrectis, subæqualibus, basi dente obsolete armatis."

"*H. lapponum*, Gyll., valde affinis, sed distincte major, paullo convexior, prothorace majore, angulis posticis minus obtusis, elytris postice minus angustatis, pubescentia pagine superioris tenuiore, punctura totius fortiore structuraque unguiculorum anticorum in mare distinguendus. Ab *H. rufifronte*, Duft., et arctico, Thoms., prothoracis elytrorumque forma satis differt. Caput latum, subconvexum, remote subtilissime punctatum, nigro-piceum, antice late margineque basali piceo-rufis, impressionibus anticis satis distinctis ; palpis ferrugineis, articulo ultimo piceo. Antennæ piceo-nigræ, articulis duobus basalibus, totis, 3-6 basi pallide ferrugineis, articulo quarto et tertio æqualibus, quinto distincte brevior. Prothorax longitudine plus quam duplo latior, apice quam basi parum angustior, lateribus leviter rotundatis, tenuiter marginatis, angulis anticis productis, subacutis, posticis rectiusculis ; supra leviter convexus, niger, nitidus, postice transversim fortius impressus, disco levi, limbo omni confertim punctulato, parce tenuissime pubescens, lateribus obsolete indeterminatim rufo-piceis. Elytra basi prothorace vix latiora, pone humeros leviter ampliata, deinde lateribus subparallelis, postice conjunctim late rotundata, ante apicem obsolete sinuata, supra modice convexa, subtiliter punctulata, serièbus punctorum majorum nullis, parce tenuissime griseo-pubescentia, nigro-picea, nitida, lateribus dilutioribus ; epipleuris impressis, distincte marginatis, remotius punctatis. Corpus subtus nigrum, subtiliter et distincte punctulatum, parce tenuissime pubescens. Pedes ferruginei, coxis femoribus tarsisque apice infuscatis, unguiculis albedo-testaceis."

"Very rare, found in stagnant water on a moss at Ponoj in Russian Lapland (67°) 13th August, 1870."

1409. *Hydroporus opacus*, Wehncke, Berl. Zeit. XV, p. 163. Lapland.

"Oblongo-ovalis, niger, opacus, parce punctulatus, elytris fuscis, antennis pedibusque ferrugineis. Long. $1\frac{2}{3}$ lin."

“ Von gestalt des *H. geniculatus*, aber etwas kleiner und durch die helleren flügeldecken und beine unterschieden.

“ Kopf pechbraun, sehr fein und sparsam punktirt, Fühler rothbraun. Halsschild schwarz, die seiten fein und nicht sehr dicht, auf der scheibe nur einzeln punktirt. Flügeldecken dunkelbraun, nach den seiten zu heller, fein punktirt. Beine rothbraun.”

It is doubtful whether this be a good species ; it may prove a variety of *H. morio* (No. 598) or one of the closely allied species.—D. S.

1410. *Hydroporus oppositus*, Say, Tr. Am. Phil. Soc. II, p. 102. North America.

“ Blackish ; head and base of the thorax ferruginous ; elytra with six whitish marginal spots or subsarcia. Length rather less than three-twentieths of an inch. Body with very numerous, villous, minute punctures, hairs adpressed to the surface ; head rufous or ferruginous, four or six indented, frontal, distant punctures ; thorax ferruginous, black at tip, about three indented punctures placed transversely ; elytra black, each with an irregular humeral spot, another placed upon the margin behind the middle, and a third apical one yellowish, edge yellowish ; post pectus and venter blackish or deep piceous ; pectus and feet yellowish-testaceous.”

This was rather doubtfully identified by Leconte as *H. proximus*, Aubé, (No. 513), but the description appears to me inapplicable to that species.—D. S.

1411. *Hydroporus orientalis*, Clk., Tr. Ent. Soc. Lond. 3 ser. I, p. 423. China (Danes Island).

“ Ovalis, penitus circularis, depressus, punctatus, carbonarius, nitidus ; capite subtilissime punctato, rufulo ; thorace antice emarginato, lateribus obliquis rotundatis, basi subsinuato, ad medium late angulato, punctato, punctis crebris et distinctis, nigro, ad latera subrufulo ; elytris brevibus, haud punctato-striatis, punctatis ; ad latera obscure marginatis, nigris, corpore subtus rufo-fusco : antennis pedibusque rufis. Long. corp. 1 lin. ; lat. $\frac{4}{5}$ lin.”

This is a *Hydrovatus*, near *H. tinctus* (No. 200).—D. S.

1412. *Hydroporus pectoralis*, Motsch., Bull. Ac. Pet. I, p. 294. Western Siberia.

“ Voisine du *H. nigro-lineatus* ; ressemble par ses lignes noires plus fortes et plus longues plutôt au *nigro-lineatus* qu'au *flaviventris*, mais se distingue du premier par une taille d'un tiers plus considerable. La tête et le corselet sont lisses ainsi que les élytres, les lignes noires y atteignant presque la base, surtout les seconde et quatrième. La poitrine est noire dans les deux sexes, mais l'abdomen entièrement testacé chez la femelle. Chez la *Fem.* du *nigro-lineatus* l'abdomen n'est testacé qu' à la base, le reste est noir.”

This insect, found in the salt lakes of Western Siberia, is no doubt a species of *Cœlambus*.—D. S.

1413. *Hydroporus persimilis*, Crotch, Tr. Am. Ent. Soc. IV, p. 395. North America.

“ Very close to *H. collaris*, but longer, more parallel, thorax smooth, elytra more sparingly punctate without traces of the dorsal striae, humeral angles less prominent. Length .15 inch. Canada.”

An individual of this species sent recently to me by Dr. Leconte, appears to be closely allied to *H. oblitus* and *stagnalis* (Nos. 638 and 639), but is a little more elongate and depressed, and has the upper surface rather more punctate.—D. S.

1414. *Hydroporus piceus*, Steph., Ill. Brit. Ent. II, p. 62. England.

“ Oblongo-ovatus, niger, vix pubescens, elytris piceis profunde punctatis, pedibus omnino ferrugineis. Long. corp. $2\frac{1}{4}$ lin.”

“ Oblong-ovate, depressed, black, scarcely pubescent ; head anteriorly rufo-ferruginous : thorax with

the disc convex, the anterior and posterior edges with transverse series of impressed dots, black, the lateral margins obsolete ferruginous; elytra ovate, piceous, the sides paler, deeply punctate throughout: body pitchy black beneath, punctate; legs entirely ferruginous: antennæ ferruginous at the base, dusky at the tip."

"Probably synonymous with *Hy. planus*, var. *b.* of Gyllenhal, but the colour of the elytra is different, and they appear more deeply punctate: the head is not black."

Rare, Norwich and near London.

This is usually considered to be the species I have called *Hydroporus Gyllenhalii* (No. 599), and the Stephensian name is used in place of that just mentioned, but the identification is very doubtful; at any rate the size— $2\frac{1}{4}$ lin.—given by Stephens cannot apply to No. 599.—D. S.

1415. *Hydroporus piochardi*, Regt., Ann. Soc. Fr., 1877, p. 350. Syria.

"*H. griseo-striato* de Geer affinis, sed statura major. Elongato-ovalis, depressiusculus, vix nitidus, fere glaber, infra omnino niger. Capite testaceo-ferrugineo, latissime in vertice et inter oculos nigro; prothorace rufo-testaceo, antice sat late et postice anguste nigro-marginato, maculis duabus nigris obliquis a basi separatis notato, subtilissime punctulato, utrinque fovea incurvata haud profunda impresso; elytris subtilissime reticulato-punctatis, pallido testaceis, ad scutellum nigricantibus, sutura et lineis sex nigris utrinque ornatis, prima ad suturam tenuissima, quarta et quinta ad apicem confluentibus, sexta bis interrupta et post medium cum lineola externa confluyente; antennis pedibusque omnino testaceis. Long. 5 à $5\frac{1}{4}$ m.m." Djebel-ech-cheik.

This is succeeded, *l.c.*, by a description in French, chiefly a translation of the above; it is doubtful whether this is more than a variety of *D. griseo-striatus* (No. 493).—D. S.

1416. *Hydroporus planatus*, Mann., Bull. Mosc., 1853, III, p. 162. Russian North America.

"Oblongo-ovalis, depressiusculus, dense punctulatus, griseo-pubescent, parum nitidus, niger; thoracis basi latitudine antica sesqui latiore, lateribus obliquis vix rotundis, elytris nigrobrunneis, posterius pone medium versus apicem rotundatis, stria suturali utrinque leviter impressa; antennarum basi, occipitis margine anguste pedibusque rufo-testaceis. Longit. 2 lin., latit. 1 lin."

This has not been alluded to by Crotch either in the Check-list or "Revision of North American Dytiscidae."—D. S.

1417. *Hydroporus politus*, Mael., Tr. N. S. W., p. 124. Australia (Gayndah).

"Length $\frac{3}{4}$ of a line. This may probably not belong to the present genus. It is of an elongate convex form almost acuminate at the apex of the elytra and very nitid on the entire surface. The head and thorax are of a dark red; the elytra are of a pitchy black; the last six or seven joints of the antennæ seem moniliform."

This description is of little value and I have no idea what it indicates.—D. S.

1418. *Hydroporus portmanni*, Clk., Ann. Nat. hist., 1862, p. 174. Mexico.

"Subcircularis, latus, depressus, leviter punctatus; thorace pene triangulari, flavo-ferrugineo; elytris flavis, ad suturam nigris; antennis pedibusque flavis. Long. corp. $1\frac{1}{4}$ lin., lat. $\frac{1}{2}$ —1 lin."

"Broad and depressed, glabrous, under a high power very finely punctate, in colour ferruginous or flavo-ferruginous: head broad, impunctate, black: thorax broadly transverse, much narrower laterally than medially, the sides being very short; the surface is anteriorly finely punctate, more distinctly so towards the base; in colour flavo-ferruginous, the anterior margin being more pale than the base; the form of the thorax is remarkable; it is subtriangular, by reason of its deep scutellary angle and its

narrow sides; elytra broad, depressed, finely punctate, more distinctly so than in *H. bryanstonii*; in colour, flavous, faintly clouded with fusco-flavous, the sutural line being distinctly black: abdomen and underside black: legs and antennæ pale flavous."

"Allied to *H. pustulatus*, Melsh.; it is a trifle broader, not so convex, and more glabrous."

This is perhaps to be referred to *Hydrovatus*.—D. S.

1419. *Hydroporus productus*, Fairm., Ann. Soc. Fr., 1880, p. 248. Algeria.

"Long. $3\frac{1}{4}$ m. m. Elongatus, subparallelus, antice posticeque fere æqualiter angustatus, dorso planatus fusco-niger, nitidus, ore antennis pedibusque obscure testaceis; capite lato, parum convexo; prothorace brevi, antice angustato, lateribus leviter antice arcuatis, margine postico medio obtuse angulato, ante basin linea arcuatim transversa obsolete impresso, ad angulos posticos evidentius impresso; elytris elongatis ad apicem tantum angustatis, apice ipso obtuso, subtilissime vix perspicue sat dense punctulatis, utrinque lineis 2 fortius punctatis impressis."

Batna.

"Remarquable par sa forme allongée, presque parallèle, et sa ponctuation excessivement fine, à peine distincte, mais assez serrée. Sa forme rappelle assez celle des *H. notatus* et *neglectus*, mais elle est plus allongée, plus parallèle, plus acuminée en arrière et la partie dorsale est plus déprimée; la ponctuation est aussi toute différente et n'est visible qu'avec un fort grossissement, aussi le dessus est-il plus brillant. La coloration, d'un brun noir foncé, est un peu rougeâtre sur la tête, qui est très finement et densément ponctué, avec les deux impressions bien marquées."

1420. *Hydroporus pseudo-geminus*, Regt., Ann. Soc. Fr., 1877, p. lxxix. Manilla.

"*H. gemino*, Fab., ex Europa valde affinis, sed magis elongato-oblongus; prothorace ad latera rotundato, vix postice quam antice latiore, cum elytris angulum sat fortem præbente; elytris oblongis, haud parallelis, ut in *gemino* pictis, sed magis aurato-pubescentibus; prothoracis et elytri strigis omnino ad basin contiguis et angulum inter se latissimum præbentibus; subtus omnino niger, pedibus testaceis; antennis testaceis crassiusculis. Long. 2 m. m."

[At p. 360, op. cit., *this diagnosis is supplemented by a description.*]

The species is no doubt a *Bidessus*, like *Dytiscus geminus*, to which it appears very similar.—D. S.

1421. *Hydroporus puberulus*, Lec., Agass. Lake Sup., p. 215. North America.

"Elongato-ovalis, minus convexus, niger minus dense punctatus pubescens, thorace lateribus rotundatis cum elytris angulum formantibus, disco minus punctato, elytris parallelis, apice oblique attenuatis; antennis palpis pedibusque rufis. Long. 12."

"Resembles the two next (*H. caliginosus* and *H. tartaricus*), but is narrower, a little more convex, the posterior angles of the thorax are somewhat obtuse, and the sides form an angle with the elytra."

Crotch, "Rev. N. Amer. Dytisc." p. 395, considers this is the same as *H. caliginosus* (No. 1,348).—D. S.

1422. *Hydroporus pudicus*, Clk., Tr. Ent. Soc., 1863, p. 426. Java.

"Ovalis sat latus et convexus, punctulatus, haud striato-punctatus, rufus; capite pallide rufo, oculis magnis, impunctato; thorace antice emarginato, lateribus tenue marginatis, basi ad medium late angulato, impunctato, rufo, ad basin fusco-rufo; elytris convexis, robustis, punctulatis, rufis vel fusco-rufis; pedibus antennis, corporeque subtus rufis. Long. corp. lin. 1; lat. lin. $\frac{1}{2}$."

The type in the Brit. Mus. shows this to be a *Hydrovatus*, closely allied to *H. fulvescens* (No. 192), but narrower.—D. S.

1423. *Hydroporus pulcher*, Motsch., Bull. Mosc. 1859, III, p. 163, pl. IV, f. 13. North America.

“Ovalis, postice subacutus, depressiusculus, subnitidus, ater, capitis macula frontali, ore, antennarum basi, thoracis macula trifida medio cum lateribus conjuncta, elytrorum basi, lineis abbreviatis maculisque quatuor postice testaceis; capite antice levi, postice sparsim punctato; thorace transverso, basi bisinuato, punctato, angulis posticis rectis, lateribus utrinque impressis; elytris thorace latioribus, utrinque longitudinaliter bisulcatis, punctatis, epipleuris atris; pedibus testaceo annulatis; mesopleuris grosso punctatis. Long. $1\frac{1}{2}$ l., lat. $\frac{5}{8}$ l.”

Ross Colony, New Helvetia.

This very variegated species is perhaps allied to *H. eximius*, Motsch. (No. 522). The name cannot be used on account of the prior *H. pulcher*, Lec.—D. S.

1424. *Hydroporus rolli*, Clk., Ann. Nat. Hist., 1862, p. 176. Mexico.

“Latus, robustus, impubescent, punctato-striatus, niger; elytris ad basin rufo notatis, ad apicem juxta marginem rufo-maculatis, pedibus fuscis. Long. corp. 2 lin., lat. 1 lin.”

“ . . . Head broadly transverse; when seen from the front, two distinct depressions are apparent on either side near the inner surface of the eyes; under a high power the surface is finely punctate, the apex and line of the base being more or less distinctly marked with rufous: thorax broadly transverse, the sides slightly rounded and much constricted towards the front; the surface is subglobose; parallel to the anterior and also the posterior margin is a depressed line of punctures, those at the base being more distinctly apparent: elytra broad, attenuate towards the apex, subglobose, with three distinctly impressed rows of striae, and a few single deep punctures near the line of the base between the first and second striae; the surface (when seen under a high power) is very finely granulated, in colour black, the line of the base being marked with rufous (in some examples this basal marking is almost obsolete); towards the apex, near the margins, are two or three well-defined red spots; the apex itself also is distinctly marked with red: abdomen and underside black: legs fuscous: antennae rufous, the apical joints being rufo-fuscous.”

“Var. A. The elytra in colour entirely black; in all examples, however, there is an indication, however faint, of rufous colouring at the apex. Several examples before me exhibit every shade of colouration, from the typical pattern to the almost black variety.”

This species is allied to *Hydroporus mexicanus* (No. 527).—D. S.

1425. *Hydroporus rufinasus*, Mann., Bull. Mosc., 1852, II, p. 305. Sitkha.

“Oblongo-ovatus, subdepressus, nigro-piceus, subnitidus; thorace antice et postice elytris profunde punctatis, subtus niger, fronte antrorsum triangulariter, antennarum basi pedibusque anterioribus rufis. Long. $1\frac{1}{3}$ lin., lat. $\frac{2}{3}$ lin.”

This is said to be near *Dytiscus tristis* (No. 602). It is not alluded to by Crotch in his “Revision of the North American Dytiscidæ.”—D. S.

1426. *Hydroporus sabaudus*, Fauv., Bull. Soc. Lin. Bord. IX, 1863, p. 276. Savoy.

“Ovalis, depressiusculus, nitidulus, dense subtiliter punctatus, niger, antennarum basi, geniculis late, tarsisque rufis, thorace fortiter transverso, lateribus obliquis, elytris vitta laterali basi dilatata, medio nigro-lineolata, rufescenti, apice rotundatis. Long. $3\frac{1}{4}$ m.m.”

“Taille et forme du palustris L., mais un peu plus court, plus déprime et plus large, noir; les quatre premiers articles des antennes d'un testacé rougeâtre, le dernier plus clair à la base. Tête noire, à ponctuation très fine, assez serrée; deux impressions très-nettes en avant des yeux. Prothorax fortement transversal, un peu convexe dans son milieu, fortement sinué à la base qui se prolonge obtusément sur l'écusson; côtés subdéprimés, obliques, très légèrement rebordés; angles postérieurs droits; ponctuation

plus profonde, mais moins serrée à la base et latéralement, extrêmement fine sur le disque. Elytres assez larges, régulièrement ovales, ne formant pas d'angle sensible avec les côtés du corselet, légèrement atténuées en arrière et assez largement arrondies à l'extrémité; une bande rougeâtre un peu confuse, embrassant tout le pourtour des élytres, dilatée vers la base en dedans, et marquée un peu au-delà du milieu d'un trait longitudinal noirâtre; ponctuation très fine et serrée; une ligne de points en forme de strie suturale bien marquée, un autre vers le milieu, effacée. Pattes noirâtres; genoux, base des tibias et tarses rougeâtres; chaque article de ceux-ci obscur à l'extrémité.

"Il a quelques rapports, pour la bande latérale des élytres, avec les *H. striola* et *vittula*, mais il s'en distingue sans peine par sa couleur noire, sa forme courte, large, son corps non pubescent, sa fine ponctuation, etc."

La Saulcette, Savoy, with *D. palustris*, in April.

1427. *Hydroporus sansi*, Aubé, Ic. V, p. 232, pl. 26, f. 6. Spec. p. 509. Europe.

"Oblongo-ovalis, convexiusculus, pallide testaceus, thorace ad latera late rotundato, vix postice nigromaculato, transversim ad basin depressiusculo; elytris tribus fasciis irregularibus, oblique transversis, plus minusve confluentibus nigro-ornatis, apice vix denticulatis. Long. 5, larg. $2\frac{1}{2}$ m.m."

[*This diagnosis is followed, i.e., by a long description.*]

It would seem doubtful whether this be more than a variety of *Dytiscus depressus* (No. 472); the two individuals described by Aubé were found at Barcelona.—D. S.

1428. *Hydroporus sedilloti*, Regt., Ann. Soc. Fr., 1877, p. 352. Syria.

"*H. vario* Aubé sat vicinus, sed multo magis depressus et elongatus, haud dilatatus; capite rufo, ad verticem et oculos infuscato; prothorace rufo, antice, postice et in disco late infuscato, ad latera et basin punctulato, in medio fere levi, atque striga fere marginali utrinque impresso. Elytris sparsim punctulatis depressis, elongato-ovatis, haud dilatatis nec attenuatis, nigro-fuscis, lateribus, vittis tribus longitudinalibus, macula sublaterali post medium et apice testaceis; vitta interiore brevissima, sæpe obsoleta, secunda plus minusve abbreviata et ad basin extus hamulata, tertia apicem attingente, et antice cum margine, ad medium cum macula sublaterali confluenta; epipleuris testaceis. Subtus niger, ano ferrugineo; pedibus rufo-ferrugineis; antennis ad basin testaceis, postea infuscatis. Long. $2\frac{1}{3}$ m.m. Djebel-ech-Cheik, Borak."

[*This is followed, i.e., by a description in French, in greater part a translation of the above.*]

1429. *Hydroporus sellatus*, Lec., Proc. Ac. Phil. 1866, p. 365. North America.

"Ovalis, convexus, modice elongatus, nitidus, subglaber, capite nigro-piceo subtiliter haud dense punctato, ore maculaque occipitali testaceis, thorace testaceo, apice infuscato, basi late piceo, profunde punctato, lateribus obliquis rectis, cum elytris (lateraliter visis) angulum valde obtusum formantibus; elytris pallidis, profunde sat dense punctatis, punctis majoribus versus suturam et in vitta dorsali parum distincta digestis, sutura, lineolis paucis, plagaque postica irregulari subsuturali maxima nigris; subtus niger, rufè punctatus, pedibus testaceis, antennarum apice femoribusque infuscatis. Long. 3.5 m.m."

Dacotah.

[*A comparison with *H. suturalis* follows the above diagnosis.*]

A specimen of this species recently communicated to me by its describer, indicates it as being a species of *Cœlambus* closely allied to *Hydroporus medialis*, No. 401, but distinct therefrom by a dark coloured prothorax, a dark mark on each side of the head, the antennæ infuscate towards their apex, the upper-surface rather less coarsely punctured, and very minute central line on the prothorax.—D. S.

1430. *Hydroporus semiclusus*, Walk., List. Col. Lord, p. 10. Wady Ferran.

"Black, oval, slightly shining. Head with a large tawny patch extending to the fore border, near

which it is contracted. Palpi, antennæ, four anterior tibiæ and tarsi tawney. Elytra smooth, each with the basal third part testaceous, which lue is much excavated; two posterior elongated testaceous dots, and a large elliptical, subapical, nearly complete testaceous ringlet. Length of the body $2\frac{1}{2}$ lines."

It is possible this may prove to be a species of *Deronectes*.—D. S.

1431. *Hydroporus seminulum*, Lec., Proc. Am. Phil. Soc. 1878, p. 377. North America.

"Broadly ovate, obliquely attenuate behind, rounded in front, not very convex; rufo-testaceous, shining. Prothorax scarcely perceptibly punctulate, with a fine short basal stria each side, which does not extend upon the elytra; the latter very finely though distinctly punctulate. Beneath sparsely but strongly punctulate. Length 1.3 m.m."

"Enterprise, Florida, one specimen. Of the same size as *H. granum*, but very different by the body being strongly narrowed behind the middle, and pointed at the posterior end. Differs also from all previously known small species of the United States, by the thorax having a very short basal stria not continued on the elytra."

From the above description I believe this is a *Bidessus* belonging to the second group, consisting of a few peculiar, rare species.—D. S.

1432. *Hydroporus sericatus*, Say, Tr. Am. Phil. IV, 415. Mexico. (In a small river beyond Vera-Cruz).

"Yellowish; elytra blackish with abbreviated lines and margin dull yellowish. Dull honey-yellow, somewhat sericeous above; head with a dilated, not profound, indentation each side, and numerous small punctures; antennæ also honey-yellow; thorax a little dusky on the anterior and posterior margins, with numerous, small, slightly impressed punctures; elytra dark brownish, almost black, more obviously sericeous than the thorax; striæ none; lateral margin dull-honey, dilated near the base into a band of about four abbreviated, unequal, longitudinal lines, excepting the inner one, not reaching the base, another somewhat similar band behind the middle and slight double dilatation at tip of the same colour. Length less than one-fifth of an inch."

"It is closely allied to *undulatus*, Say, but is more sericeous, the elytral lines are not so dilated or confluent, &c."

1433. *Hydroporus stearinus*, Kol., Melet. Ent. I, p. 84, pl. 2, f. 14. Caucasus.

"Elongato-ovalis, convexiusculus, attenuatus, rufo testaceus; infra niger, abdominis annulis posticis et apice obscure ferrugineis; capite, antennis pedibusque rufis; thorace ad latera vix rotundato, depressiusculo, rufo, postice anguste paululum piceo et in integra disci circumferentia pone margines obscure impresso, in medio disci punctis tribus impressis; elytris tribus costulis subtilissimis concoloribus, pone suturam stria unica obsolete punctata, apice subrotundis. Long, $2\frac{1}{3}$ lin."

This is probably an insect unknown to me; the figure given, *l. c.*, is very inferior.—D. S.

1434. *Hydroporus subalpinus*, Th., Op. Ent., IV, p. 365. Sweden.

"Oblongus, niger subconvexus, tenuiter pubescens; prothorace limbo punctato, lateribus tenuiter marginatis, fere in arcu continuo cum elytris rotundatis; his subtilis, sat crebre punctatis. Long. $1\frac{1}{2}$ lin."

"*Mas*: unguiculis anticis inæqualibus, muticis."

"Statura, magnitudine et fere punctura *H. glabelli*, sed corpore paulo angustiore, prothoracis margine tenuiore, processu basali minus lato sed magis producto: ab *H. acutangulo* punctura elytrorum subtiliore prothorace lateribus fere in arcu continuo cum elytris rotundatis discedens; ab *H. geniculato* usdem notis, corpore minore, elytris postice haud dilatatis facillime distinguendus. Caput mediocre, nigrum,

foveolis frontalibus minus profundis ; antennis nigris, articulis basi, primis fere totis ferrugineis. Prothorax fortiter transversus, niger, limbo crebre sat fortiter punctato, disco parum convexo sublaevi ; basio medio triangulariter productus, angulis posticis rectis ; lateribus tenuiter marginatis, cum capite et elytris fere in eodem arcu rotundatis. Elytra prothorace quintuplo longiora, lateribus æqualiter minus fortiter rotundata, apice parum acuminata ; disco leviter convexo, tenuissime fusco-pubescentia, nigra sat nitida, crebrius evidentiter punctata, seriebus punctorum majorum impressis sat discretis, præcipue interiore. Corpus subtus nigrum, fere glabrum, sterni lateribus et abdominis basi punctatis. Pedes picei, genibus, tarsisque dilutioribus."

It is possible this species may prove to be the same as *Dytiscus nigrita* (No. 561).—D. S.

1435. *Hydroporus submuticus*, Thoms., Op. Ent. VI, p. 537. Sweden.

"Elongatus, glabriculus, niger, pedibus piceo-rufis ; capite majusculo, foveolis obsolete ; prothorace angulis posticis subrectis, limbo elytrisque crebrius punctatis."

"*H. elongatulo* affinis sed major, magnitudine fere *H. lapponum*, foveolis frontalibus obsolete, elytris ventreque basi minus profunde punctatis discedens. Caput majusculum, nigrum, vertice et antice piceum obsolete parceque punctatum, foveolis frontalibus parvis haud determinatis. Antennæ prothoracis basin paullo superantes, nigricantes, basin versus ferrugineæ ; articulis secundo tertio longiore, hoc quam quarto haud transverso sesqui longiore. Prothorax lateribus cum elytris haud continuo rotundatis : basi coleopteris vix angustior, medio late productus, angulis posticis leniter obtusis ; margine laterali tenui, antrorsum parum angustato, haud rotundato ; glaber niger, crebrius punctatus, disco levi. Elytra lateribus pone medium vix dilatata, apice subattenuata : nigra, basi et limbo laterali dilute fusco-piceis, hoc linea nigra laterali ; supra vix pubescentia, minus crebre, subtiliter punctata, seriebus e punctis majoribus haud conspicuis. Corpus subtus nigrum, segmentis 3 primis lateribus sat crebre, minus profunde punctatis ; prosterno antice inter basin coxarum processu parvo palpos excipiente, instructo. Pedes piceo-rufi."

1436. *Hydroporus subtilis*, Lec., Ann. Lye. V, p. 206. California.

"Oblongus, postice subacutus, piceus, subtiliter punctatus, nitidus, capite parce punctulato, thorace antrorsum angustato, rufo, antice posticeque nigricante, lateribus paulo rotundatis, tenuissime marginatis, cum elytris angulum vix formantibus, striola basali profunda ; elytris macula quadrata pone humerum, alteraque marginali pone medium rufis, stria suturali distincta. Long. .06, specimen unicum ad Sta. Isabel."

According to a specimen recently communicated to me by its describer, this species is to be placed in *Bidessus*, group IV ; the elytra possess a rather obscure sutural line ; it may go near No. 261.—D. S.

1437. *Hydroporus subtonsus*, Lec., Proc. Ac. Phil., 1855, p. 297. North America.

"Longior ovalis, parum convexus, parce pubescens, niger, ore rufescente, thorace lateribus, vix marginatis rufescentibus cum elytris angulum obtusum formantibus, angulis posticis rectis, disco parce subtilius, ad basin et latera distinctius punctato, elytris sæpe testaceo-piceis, modice punctatis, pedibus rufo-testaceis. Long. .125."

"Lake Superior and Vermont. Resembles in appearance *H. varians* and *H. puberulus*, and likely to be confounded with them. *H. varians* is narrower and more oblong, the sides being almost parallel at the middle, and is entirely glabrous. *H. puberulus* has the posterior angles of the thorax obtuse and very distinctly impressed. The elytra of the female are less shining and less deeply punctured than those of the male."

This is placed by Crotch next to *D. tristis* (No. 602).—D. S.

1438. *Hydroporus subtruncatus*, Fairm., *Pet. Nouv.*, No. 151. North Africa.

"Long. $4\frac{1}{2}$ m.m. Precedenti (*H. acuminatello*) simillimus, sed elytris paulo latioribus prothorace lateribus leviter arcuato, cum elytris evidenter angulato, maculis basalibus hand impressis, elytrisque apice oblique sub-sinuatis et extus angulatis distinctus."

I should think this is probably *H. clarki*, Woll. (No. 469).—D. S.

1439. *Hydroporus tauricus*, Motsch., *Bull. Ac. Pet.*, 1860, I, p. 294. South Russia.

"Une espèce très voisine du *H. flaviventris* habite la Tauride. Elle a la même taille, les mêmes couleurs, mais les lignes noires sur les élytres sont plus avancées, et la quatrième contigue, de sorte qu'ici la suturale est la plus courte. Tête et corselet sans ponctuation distincte, le dessous du corps noir, avec l'anus testacé. *Mus.* Je l'ai nommé *Hydr. tauricus*."

Apparently this is a species of *Celambus*, near *Hydroporus flaviventris* (No. 420).—D. S.

1440. *Hydroporus tenellus*, Clk., *Tr. Ent. Soc.*, 1863, 3rd ser. I, p. 427. Java.

"Oblongo-ovalis, attenuatus, apice acuminatus, rufo-flavus, impunctatus, nitidus; capite rufo, impunctato; thorace late transverso, antice submarginato, lateribus sat rotundatis, leviter marginatis, basi (superne viso) transverso, flavo, maculis transversis ad apicem obscure rufo-flavis; elytris ad humeros thorace hand latioribus, ad apicem acuminatis, impunctatis, rufo-flavis, ad margines flavis; pedibus, antennis et corpore subtus flavis. Long. corp. lin. $\frac{3}{8}$; lat. $\frac{3}{16}$ lin."

This belongs to the genus *Notomicrus*, and is very closely allied to *N. levigatus* (No. 4).—D. S.

1441. *Hydroporus tetragrammus*, Hoch., *Chaud. En. Car.*, p. 223. Caucasus.

"Oblong-ovatus, convexiusculus, testaceus, pectore abdomineque nigris, elytris pallide testaceis, sutura lata, lineisque in singulo binis abbreviatis nigris, interiore apice orbiculato-dilatata; thoracis basi utrinque striola minuta, in elytrorum basi producta, valde impressa, stria suturali integra. Long. $\frac{3}{4}$ ligne."

"Ce joli petit insecte est à peu près de la grandeur et tout-à-fait de la forme du *H. pygmaeus*, Sturm; il est seulement plus convexe et se rapproche le plus du *H. geminus*, Fab. La ponctuation du dessus est la même, et l'on retrouve les mêmes stries à la base du corselet, qui se prolongent sur celle des élytres quoique moins que dans le *geminus*."

"Vue par devant, la base de la tête et du corselet entre les deux stries, présente une ombre-noirâtre. Le dessin des élytres est caractéristique dans cette espèce. Le fond en est d'un jaune-paille; la suture entre les stries de la base, et deux bandes longitudinales qui n'atteignent ni la base ni l'extrémité, assez larges, bien déterminées, dont l'intérieure, plus longue, se dilate en cercle postérieurement et en dehors noires. Le reste comme dans le *geminus*."

"Environs de Lenkoran."

This appears to be a species of *Bidessus* very near to *H. confusus*, (No. 270), perhaps indeed a variety thereof.—D. S.

1442. *Hydroporus thoreyi*, Clk., *Journ. Ent.* I, 1862, p. 409. Australia, (Tarangoo).

"*H. ovatus*, valde punctatus, rufo-flavus; thorace punctulato, nigro-marginato; elytris rufo-fuscis, quinque flavis striis undique ornatis, subpubescentibus. Long. corp. $1\frac{1}{2}$ lin., lat. $\frac{2}{3}$ lin."

"Ovate, broad, thickly punctate throughout, rufo-flavus: head impunctate; thorax very finely punctate; when seen through a fine lens, somewhat more distinctly punctate at the base, narrowly margined with black: elytra very finely punctate, in colour rufo-fuscous, with five parallel longitudinal flavous lines extending from the apex to the base; the surface when viewed obliquely, is seen to be finely clothed with pubescence; legs and antennæ flavous."

I do not know any species like this; it somewhat resembles our European *Dytiscus lineatus*, (No. 537).—D. S.

1443. *Hydroporus tinctus*, Clk., Ann. Nat. Hist. 1862, X, p. 326. Britain.

“*H. oblongo-ovalis*, subparallelus, sat convexus, post medium paulo latior, ad apicem modice et rotunde productus, crebre punctulatus leviter pubescens, subopacus, niger, obscure rufo-notatus; capite inter oculos undique late et distincte depresso, sparsim punctulato, ad apicem rufo tincto; thorace antice emarginato, lateribus leviter rotundatis, basi sinuata ad medium (scutelli regione) angulata, sparsim et fortiter punctato, antice juxta marginem transverse punctato-striato, ad basin plus minus transverse depresso, ad bascos angulos plus fortiter plerumque foveolato, nigro; elytris thorace lateribus, cum thoracis margine angulum obtusum formantibus, post medium latioribus, leviter punctatis, sparsim pubescentibus, nigris, fascia lata inaequali apud humeros, vitta marginali (post medium in maculam triangularem dilatata) laud apicem attingente, rufis vel rufo-fuscatis, hae maculae aliquando obsoletae sunt, aliquando omnino absunt; corpore subtus nigro; antennis fusco-nigris; pedibus fusco-nigris, tarsorum articulis anteriorum latis.”

“Magnitudine variat. Long. corp. $1\frac{3}{8}$ – $1\frac{4}{5}$, lat. $\frac{4}{5}$.”

I believe this is a variety of *Dytiscus palustris* (No. 612), but it may possibly be *H. incognitus* (No. 611).—D. S.

1444. *Hydroporus truncatus*, Mann., Bull. Mosc., 1853, III, p. 162. Russian North America.

“*Elongato-ovalis*, subellipticus, depressiusculus, subtilissime et creberrime reticulato-strigulosus, tenne grisco-pubescens; capite rufo-ferrugineo, in fronte infuscato; thorace antrorsum angustato ibique latitudine postica dimidio angustiore, lateribus laud rotundatis ferrugineis, postice aequali, supra scutellum rotundatim producto; elytris basi et lateribus obsolete, epipleuris vero laete ferrugineis, apice oblique truncatis; antennis pedibus abdomineque pallide testaceis. Longit. $2\frac{1}{2}$ lin., latit. 1 lin.”

This is not alluded to by Crotch either in his Check List, or “Revision of N. American Dytiscidae.”—D. S.

1445. *Hydroporus undecimlinellus*, Fairm., Pet. Nouv., 11, p. 141. North Africa.

“Long. 4 m.m.—*H. cerisyi* certe affinis, sed minor, glaber, antice posticeque magis attenuatus, prothorace basi minus lato, elytrorum stria suturali minus obsoleta et lineis nigris basi magis abbreviatis. Tougourt.”

This is probably a variety of *Hydroporus cerisyi* (No. 490).—D. S.

1446. *Hydroporus undecimmaculatus*, Clk., Journ. Ent., I, p. 412. Australia.

“*Ovatus*, latus, subdepressus, crebre punctatus niger vel fusco-niger, rufo-fusco maculatus. Long. corp. vix. $1\frac{1}{2}$ lin., lat. vix. $\frac{4}{5}$ lin.”

“Ovate, broad, of greatest breadth behind the middle, subattenuated towards the apex; very thickly punctate, of a reddish, dull black colour, with rufous maculations; head short, broad; near the inner margins of the eyes are two shallow depressions; thorax broad, subparallel, the anterior angles largely rounded; the surface in front of the middle is laterally subdepressed; the sides are broadly marginate, the marginations being defined by a sharp, deeply-cut fovea extending from the front to the line of the base; at the basal line are three suffused circular markings of fusco-rufous, one on either side, and a third medial; elytra broad, with four lateral subcircular fusco-rufous markings, three lateral at the emargination, and a fourth opposite the one nearest the base; legs and antennae rufo-fuscous.”

This is a very distinct species, the sides of the thorax are elevated so as to give it some resemblance to our European *H. moestus* (No. 456).—D. S.

1447. *Hydroporus (Caelambus) unguicularis*, Crotch, Tr. Am. Ent. Soc. V, p. 73. North America.

“Elongate ovate, fulvous, breast and abdomen black; head finely punctulate with smooth spaces; thorax transverse, sides slightly rounded, punctulate, disc nearly smooth, with a small black central mark and a linear fovea, base and apex faintly black; elytra regularly elongate-ovate, closely and finely punctate

throughout, each with the suture (very narrowly) and three lines black, almost entire, a fourth line is broadly interrupted in the middle and at the apex. *Mas*, anterior tarsi short, broad, third joint deeply bilobed, external claw thickened, internal reduced to half the ordinary size, so as to appear rudimentary. Length 5.5 m. m."

"British Columbia, one male. Resembles *H. parallelogrammus* of Europe."

This is a *Cœlambus* resembling *D. parallelogrammus*, but much more finely and evenly punctured; it may be placed near *Hydroporus nubilus* (No. 403).—D. S.

1448. *Hydroporus vestitus*, Gebl., Bull. Mosc., 1848, III, p. 76. Siberia.

"Oblongo-ovatus nigrescens, subtilissime coriaceus, griseo-subtomentosus, nitidulus, ore, antennis pedibusque luteis, thorace lateribus rotundato, late reflexo, linea transversa impressa, elytris linea longitudinali impressa. Long. 2 lin., lat. 1 lin."

"Parum nitidus, tomento brevissimo, griseo adpersus; statura *H. opatrinii*, III."

"Er steht der *H. opatrinus* am nächsten ist aber flacher, feiner punktirt, glänzender und anders gefärbt das halsschild anders gebildet."

Leprieur has made known that this is a distinct species allied to *Hydroporus moestus* (No. 456).—D. S.

1449. *Hydroporus vitticollis*, Boh., Ins. Caff. I, p. 256. Caffraria.

"Oblongus, parum convexus, nitidus niger; capite antice, palpis, antennis pedibusque rufo-testaceis; prothorace flavo-testaceo, postice late infuscato; elytris obsolete, crebre punctulatis, maculis duabus lateralibus, tertiarque apicali, flavo-testaceis. Long. $1\frac{1}{2}$, lat. $\frac{3}{4}$ m. m."

[*This diagnosis is followed by a long description.*]

I have no idea what position the species should occupy.—D. S.

1450. *Hydrovatus (Oxynoptilus) ferrugatus*, Regt., Ann. Soc. Fr. 1877, p. lxxix. Manilla.

"Ovalis, fere rotundatus, vix postice attenuatus, sed fortiter acuminatus, creberrime punctatus, fortius in elytris, supra ferrugineus, ad latera vix dilutior, ad basin et suturam elytrorum vix obscurior; subtus ferrugineo-testaceus, pedibus concoloribus. Long. $2\frac{1}{2}$ à $2\frac{3}{4}$ m. m."

[*At p. 360, op. cit., this diagnosis is supplemented by a description.*]

1451. *Hydrovatus hornii*, Crotch, Tr. Am. Ent. Soc. IV, p. 387. North America.

"Extremely like *H. cuspidatus*, but twice as large, similarly coloured; head shining, with a few punctures on the vertex; thorax visibly but sparsely punctate; elytra at the base (especially externally) very coarsely and closely punctate, with a deep submarginal groove: metasternum very coarsely punctate. Length .13 inch."

According to a type recently communicated to me by Dr. Horn, this species is closely allied to *Hydrovatus major* (No. 221), but is smaller, and has the upper surface rather more densely and less coarsely punctured, and the pale portion of the upper surface is more extended.—D. S.

1452. *Hydrovatus maculatus*, Motsch., Et. Ent. 1859, p. 42. India.

"De la forme raccourcie du *Hydrov. subrotundatus*, mais deux fois plus petit et d'une couleur rousse sur la tête et le corselet, presque noire sur les élytres, ou les côtés sont de teinte testacée avec trois larges sinuosités et un point de cette même teinte vers le milieu près de la suture; le bord postérieur de la tête et du corselet, ainsi que le metathorax, sont brunâtres; antennes et pattes roussâtres. Ponctuation sur les élytres très fine et peu apparente, nulle sur la tête et le corselet qui sont très luisants comme les premières. Egalement du continent Indien."

1453 *Hydrovatus obscurus*, Motsch., Et. Ent. 1859 p. 43. Ceylon.

“Voisin du *Hydro. seminarius*, mais un peu plus grand, plus large, plus convexe et de couleur brun-noirâtre en dessus. La ponctuation sur les élytres et le corselet est bien marquée, les côtés du corselet sont plus obliques, ce qui rend les angles postérieurs plus saillants.”

There is in the British Museum a specimen, probably from Motschoulsky, of this species; it appears closely allied to *Hydrovatus fuscus* (No. 193) but is narrower and less punctured.—D. S.

1454. *Hydrovatus punctipennis*, Motsch., Et. Ent. 1859 p. 41, India.

“Forme et couleurs du *Hydr. obtusus*, m. mais d’un tiers plus grand, et surtout plus large. Les élytres sont plus grossièrement ponctués que le corselet et fortement appendiculées à l’extrémité. Du Continent de l’Inde.”

1455. *Hydrovatus rufescens*, Motsch., Et. Ent. 1859, p. 41. India.

“Très voisin de *H. picipennis*, mais qui se distingue par une forme moins élargie au milieu des élytres, plus obtuse, en avant, une ponctuation plus fine sur le corselet et presque nulle sur les élytres, où l’on distingue une strie pointillée vers le milieu de chacune. La couleur générale est un testacé-roussâtre, avec une rangée de points foncés le long du bord antérieur du corselet, et une autre de chaque côté de la suture, qui est aussi de cette dernière couleur. L’extrémité des élytres est assez sensiblement atténuée en pointe. Elle vient du continent oriental de l’Inde.”

According to a specimen, probably named by Motschoulsky, in the British Museum, this is a large narrow, pale, very smooth, yellow species.—D. S.

1456. *Hydrovatus seminarius*, Motsch., Et. Ent. 1859, p. 42. India.

“Très voisin du *Hydr. subrotundatus*, dont il a la couleur rufescente, mais un peu plus petit et d’un tiers plus étroit, ce qui lui donne un aspect oblong, assez semblable à celui du *Hydr. obtusus*, à l’exception cependant de l’extrémité des élytres, qui paraît plus atténuée. Il est très luisant sur le dessus du corps, et la ponctuation est plus éparsée que chez l’*obtusus*, les angles postérieurs du corselet sont aussi moins saillants. Du continent Indien.”

1457. *Hydrovatus subrotundatus*, Motsch., Et. Ent. 1859, p. 41. India.

“L’espèce la plus courte et la plus arrondie que je possède de l’Inde, ayant la taille et les couleurs du *Hydr. obtusus*, mais très luisante et généralement plus large et plus convexe. La tête paraît un peu moins obtuse en avant, le chaperon plus marginé sur le bord; le corselet plus fortement rétréci en avant, les élytres plus convexes, à ponctuation moins distincte et avec l’extrémité encore moins saillante.”

1458. *Hygrotus impressifrons*, Motsch., Bull. Mosc. 1859, III, p. 165. California.

“(Hydroporus) *elongato-ovatus*, *convexiusculus*, *utrinque æqualiter attenuatus*, *punctatissimus*, *nitidus*, *piceus*, *capite macula media*, *thoracis margine latissime*, *elytrorum limbo*, *maculis ad basin*, *epipleuris*, *ore*, *antennis pedibusque testaceis*; *corpore subtus nigro*, *grosso punctato*; *capite antice bifoveolato*, *epistoma marginatum*, *thorace transverso*, *basi medio producto*, *lateribus subarcuatis*, *angulis anticis prominulis*, *posticis obtusis*, *subrotundatis*; *elytris thoracis latitudine*, *in medio regulariter subdilatis*, *striis minus distinctis*. Long. $\frac{1}{4}$ l., lat. $\frac{2}{3}$ l.”

In the remarks which follow this diagnosis, this species is said by its form to approach “*Hygrotus lineatus*” and even “*Hygrotus confluens*.” It is from San Francisco. I do not think this description is intended to apply to any species I have seen.—D. S.

1459. *Hyphydrus austro-caledonicus*, Perroud, Ann. Soc. Linn. Lyon XI, 1864, p. 74. New Caledonia.
 "Ovatus, crassus, supra convexiusculus, rubro-brunneus, capite leve, ferrugineo-rufo. Prothorace brunneo, lateribus rufis, supra ruguloso. Elytris coriaceis, lineis punctatis, plus minusve distinctis subtiliter impressis. Subtus corpore pedibusque rufis. Long 0^m, 0035; larg. 0^m, 002."

I am doubtful whether this will prove to really be a *Hyphydrus*.—D. S.

1460. *Hyphydrus catër*, Boh., Ins. Caff. I, p. 247. Caffraria.
 "Ovatus, brevis, crassus, supra vix convexus, dense, evidenter punctulatus, rufo-testaceus, nitidus; prothorace nigro, antice utrinque rufo-testaceo-marginato; elytris dorso sub-planis, singulo fasciis duabus, transversis, undulatis, rufo-testaceis, una mox pone basin communi, altera mox infra medium, intus abbreviata. Long. 6, lat. 4 m.m." Eastern Caffraria.

The description seems to indicate a large species unknown to me.—D. S.

1461. *Hyphydrus cayennensis*, Cast., Et. Ent., p. 107. South America.
 "Long. 1½ ligne, larg. 1 ligne. Fortement ponctué; tête et corselet d'un brun rouge; élytres très noires, un peu luisantes; dessous du corps d'un brun noir; pattes un peu claires; antennes jaunâtres."

This is no doubt a *Pachydrus*. Aubé has also given a description (Spec. p. 456) of what he considers to be Castlenau's species, from a specimen (or specimens) in Buquet's collection, but his description of the sculpture does not accord with Castlenau's.—D. S.

1462. *Hyphydrus circumflexus*, Klug, Monatsber. Berl. Acad. 1853, p. 250.
 "H. rufo-testaceus, supra convexiusculus, confertim punctatus, thorace antice posticeque nigro, elytris basi, sutura, vittis duabus, maculisque nigris. Long. lin. 2"

"Dieser noch unbeschriebene *Hyphydrus* ist, wenn gleich anderen africanischen arten, zunächst dem *H. scriptus*, Aubé, sehr nahe verwandt, von letzterem schon dadurch leicht zu unterscheiden dass die ganze obere seite mit kleinen eingedruckten Punkten gleichmassig bedeckt ist, irgend grossere punktere eingestreut sind und von den abgekürzten Punktstreifen in der mitte der Deckschilde sich kaum eine andeutung findet. Die grundfarbe ist ubrigen dieselbe wie bei dem *H. scriptus* und den ahnlichen arten, namlich ziemlich lebhaft braungelb. Kopf, beine, und untere seite sind ebenfalls wie bei dem *H. scriptus*. Das halsschild ist vor seinem vorderem und hinteren rande in nur geringer ausdehnung schwarz. An den Deckschildchen sind die basis mit ausnahme der schultern, von dort bis zur spitze hin die naht zu beiden seiten in Gestalt vollständiger Binden, hierauf eine mit der naht binde gleich laufende, ihr anfänglich sehr genäherte, aber weder basis noch spitze erreichende zweite Binde, in der mitte zwischen dieser und dem aussenrande eine voru nach den Schultern umgebogene, nach hinten noch mehr abgekürzte dritte Binde, ein fast dreieckiger Fleck unter dieser und noch ausserdem zwei längliche Flecke dicht am Rande schwarz. In einem einzelhem Exemplare von Tette."

I should suppose this may be a species allied to *Hyphydrus madagascariensis*.—D. S.

1463. *Hyphydrus globosus*, Aubé, Spec. p. 457. Antilles.
 "Ovatus, brevis, crassus, convexus, sparsim punctis oblongis impressis, supra nigro-piceus, infra rufo-ferrugineus; thoracis lateribus obliquis; elytris apice rotundatis. Long. 4 m.m., larg. 2½ m.m."
 "Les mâles et les femelles sont semblables."

[A description follows l. c. the above diagnosis.]

This species no doubt should be referred to the genus *Pachydrus*, and is probably near *P. brevis*, which is from the same locality; Aubé's species however would appear to be rather larger and to have some of the punctures on the elytra and thorax elongate, not round. The French author describes the species from a single individual in Guerin's collection from Porto Rico.—D. S.

1464. *Hyphydrus hyperboreus*, Gyll., Ins. Suec. IV, p. 388. Lapland.

“Oblongo-ovatus, tenue pubescens, thorace depresso ferrugineo, lateribus rectis obliquis, dorso maculis duabus nigris, liberis, elytris nigris, ferrugineo marginatis et lineatis.

“H. depresso plus duplo minor, forma et pictura thoracis abunde distinctus.”

[*A long description, l. c., follows the above.*]

From the unique female I have examined, I think this will prove to be a local variety of *Dytiscus assimilis*, Payk. (No. 471).—D. S.

1465. *Hyphydrus illigeri*, Perroud, Ann. Soc. Linn. Lyon. XI, 1864, p. 75. New Caledonia.

“Ovatus, crassus, supra convexiusculus, dense irregulariterque punctatus, rufo-testaceus. Prothorace ad marginem anteriorem vitta transversali nigra (interdum deficiente) et ad marginem posteriorem macula gemina nigra, notato; lateribus obliquis tenue reflexis. Elytris medio longitudinaliter subcostatis singulatim vitta longitudinali laciniato-sinuata valde irregulari, nigro-picea ornatis; sutura etiam nigropicea. Long. 0^m, 005; larg. 0^m, 003.” Pris à Kanala.

“Cette espèce a de très grands rapports avec l'*Hyph. variegatus*, mais elle est plus ovale moins épaisse sa ponctuation quoique très serrée est moins forte, elle manque de strie suturale, et ses taches sont autrement faites. Les exemplaires que j'ai reçu de M. Montrouzier sont des males et par consequents brillants.”

I think this may perhaps prove to be *Hyphydrus australis*, Clk. (No. 358).—D. S.

1466. *Hyphydrus johnsonii*, Clk., Journ. Ent. I, 1862, p. 405. Australia.

“Ovatus, brevis, punctatus, testaceus; thorace ad medium nigro-fusco, ad latera testaceo; elytris quatuor aut quinque lineis inæqualibus fuscis a medio ad apicem, pedibus antennisque flavis. Long. corp. 2 lin., lat. 1 lin.”

“Broadly ovate, somewhat depressed, thickly punctate, of a testaceous or flavo-testaceous colour: head with two oblique medial foveæ, in colour testaceous: thorax broad, transverse, in colour dark fuscous, the margins being testaceous: elytra broad, thickly and finely punctate; near the shoulders are traces of pubescence; in colour pale flavous, with four or five longitudinal lines of fuscous extending from the middle to the apex; these lines are frequently interrupted and irregularly suffused: abdomen and under side thickly punctate, rufo-fuscous: legs and antennæ flavous.” Victoria.

This is, I believe, a species of *Chostonectes*, allied to No. 425.—D. S.

1467. *Hyphydrus lugubris*, de Borre, Ann. Soc. belg., XIV, p. 10. Sinai.

“Ovatus, brevis, crassus, convexiusculus, thorace fortiter, elytris leviter punctatis. *Fem.*, nigro-piceus, obsolete sanguineo-maculatus.” Long. 4½, lat. 3 m.m.

“Ovale, court, ayant la même épaisseur et la même convexité assez mediocre que *H. ovatus*. Entièrement d'un noir très foncé et un peu luisant, avec une vague tache humérale rouge sombre sur chaque élytre; quelques teintes de la même nuance se montrent au sommet de l'élytre en dehors. Devant de la tête très-aplati, plus long et moins large que chez notre *H. ovatus*, rebordé circulairement en avant d'un œil à l'autre, finement, mais irrégulièrement ponctué, avec une petite fossette de chaque côté. Antennes et palpes un peu rougeâtres. Corselet environ 2½ fois aussi large que long, échancré en avant, rebordé sur les côtés; sa base s'avancant au milieu entre les élytres en formant un angle obtus. Les angles antérieurs assez saillants, les postérieurs droit. Il est fortement et rugueusement ponctué sur toute sa surface: la ponctuation est un peu moins grossière sur le disque, des deux côtés quelques stries longitudinales parallèles assez apparentes au milieu de la base. Elytres à ponctuation faible et inégale (*Fem.*); une ligne longitudinale formée de points plus forts, sur le disque, n'atteignant pas tout-à-fait la base et cessant postérieurement aux ¾ de chaque élytre. Une autre ligne semblable, mais beaucoup moins marquée, longeant la suture de chaque côté. Dessous du corps et pattes aussi d'un noir de poix faiblement

brillant. Poitrine et abdomen à ponctuation fine et inégale. Les tibias postérieurs terminés par un longue épine rougeâtre, ainsi que l'extrémité des poils que forment la frange des tarses natatoires de la même paire."

This insect, described from an unique female in the collection of Crotch at Cambridge, appears to be unknown to me.—D. S.

1468. *Hyphydrus maculatus*, Bab., Tr. Ent. Soc. Lond., III, p. 12. South America.

"Ovatus, brevis, gibbus, fuscus, capite, thoracis lateribus elytrorumque maculis testaceis, subtus fuscus antennis testaceis, pedibus fuscis. L. 2, lat. $1\frac{1}{4}$ lin."

"Short, ovate, gibbous, the whole upper surface coarsely punctate. Head testaceous; in one specimen fuscous. Antennæ testaceous. Thorax transverse, similar to *H. ovatus*, fuscous. Elytra ovate, much dilated near the middle, the apex rounded, fuscous, except a bilobed spot at the base; the humeral angle, the anterior half of the lateral margin, a longitudinal abbreviated line near the centre of the suture, one on the middle of the disk connected with a triangular transverse spot on the margin, and two small triangular spots connected with this last, and with each other within the apex, which are testaceous. Body beneath fuscous, coarsely punctured, very gibbous. Legs fuscous."

"This pretty little insect was obtained at St. Jago."

The specimen of this species in the collection of the British Museum, appears to be a species unknown to me, belonging to the genus *Hyphydrus*; as, however, the other species of *Hyphydrus* are confined to the Old World, I suspect there is some error in the locality given by Babington.—D. S.

1469. *Hyphydrus rufus*, Clk., Trans. Ent. Soc. Lond. 1863, p. 423. China.

"Ovatus, brevis, crassus, corpore supra convexiusculo, valdè punctato, rufo, nigro-lineato; capite anticè marginato, punctato, thorace anticè emarginato, ad latera obliquato (subrotundato) tenuè marginato, ad basin sinuato, et ad medium latè angulato, punctato, rufo ad basin plus minus fuscò-adumbrato; elytris latis, brevibus, dense et fortiter punctatis, suturà et quatuor lineis nigris, parallelis, aliquando obscuris, interdum post medium breviter interruptis; corpore subtus valdè punctato, rufo; antennis pedibusque rufis. Long. corp. 2 lin.; lat. $1\frac{1}{2}$ lin."

The type of this species in the collection of the British Museum is apparently a species unknown to me, allied to *Hydroporus solieri* (No. 371) of the genus *Hyphoporus*.—D. S.

1470. *Ilybius badeni*, Wehncke, Berl. Zeit. XV, p. 164. Hamburg.

"Oblongo-ovatus, convexus, supra piceo-æneus, margine brunneo. Long. 5 lin."

"Zur gruppe mit bogenförmigen vorderrande der hinterhüften, ziemlich breiten, fast dreieckigen seitenflügeln des metasternums gehörend und dem *I. subæneus* am ähulichsten, doch durch eine gewölbtere form und die färbe unterschieden. Die oberseite ist dunkel erzfarben mit deutlichen fensterflecken, der seitenrand des halsschildes der flügeldecken sowie die ganze unterseite mit den beinen rothbraun."

I doubt whether this be distinct from *I. subæneus* (No. 783).—D. S.

1471. *Ilybius kiesenwetteri*, Wehncke, Berl. Ent. Zeit. XVI, p. 136. Germany.

"Oblongo-ovalis, convexiusculus, ater, elytris guttulis duabus pellucidis. Long. 9 m.m."

"Dem *I. guttiger* sehr ähulich und auch von derselben farbe, doch ist die gestalt etwas kürzer und gewölbter."

"An den hinterfüßen der männchen ist die äussere Klaue am ende hakig gebogen wie bei *I. ater*, während dieselbe bei *I. guttiger* (wie bei *obscurus*) doppelt so breit als die innere mit abgerundeter spitze geformt ist."

"Bei Harburg sehr selten."

1472. *Ilybins ovatus*, Hoch., Bull. Mosc. XLIV, p. 237. Russia.

"Perfecte ovalis, leviter convexus, niger, supra vix aeneo-micans, elytris apicem versus oblique subtruncatis, lineis duabus rufo-ferrugineis fenestratis. Long. 5 l."

"Am nächsten steht diese art dem *I. subaeneus*, Er., ist aber schwarz, mit viel schwächeren grünlichen schimmer als jener. Seine umriss unterscheidet sie von allen mir bisher bekannten arten; diese ist ein vollkommenes ovale, dessen breiteste stelle etwas hinter der mitte der Flügeldecken fällt."

1473. *Ilybius suffusus*, Crotch, Tr. Am. Ent. Soc. IV, p. 411. North America.

"Closely resembling the two preceding (*i.e.*, *C. angularis*, Lec., *I. pleuriticus*, Lec.), but more allied to *I. pleuriticus* by the less coarsely punctate tibiae; colour brassy, sculpture very fine, the whole margin of the elytra broadly and irregularly ferruginous, hiding the usual pale spots. L. .44 inch. Indian Territory."

A female individual recently sent me by Dr. Horn indicates this as a very distinct species, whose position is, probably but not certainly, near *D. fuliginosus* (No. 792), and *I. meridionalis*.—D. S.

1474. *Laccophilus adpersus*, Boh., Ins. Caff. I, p. 246. Caffraria.

"Oblongo-ovalis, convexiusculus, postice angustior, apice oblique rotundatus, testaceus, nitidus; prothorace immaculato, basi breviter acute producto; elytris subtiliter, crebre nigro-reticulatis, lateribus anguste pallidis. Long. 4, lat. $2\frac{1}{4}$ m.m." Caffraria interior.

[*This diagnosis is followed, l. c., by a long description.*]

I can form no opinion as to the species, except that it is unknown to me.—D. S.

1475. *Laccophilus baeri*, Regt., Ann. Soc. Fr. 1877, p. lxxviii. Manilla.

"Ovalis, postice vix attenuatus; capite testaceo, lineis duabus transversis et incurvatis griseo-notato; prothorace testaceo, antice nigro-infusato, postice linea transversa et leviter incurvata nigro-notato; elytris fusco-nigris, margine, lata ad basin transversa vitta, latissime apice magnam maculam inclaudente et saepe suturali linea flavo-ornatis; subtus fusco-niger, pedibus testaceis, posticis ad tarsum infuscatis. Long. $3\frac{1}{2}$ m.m."

This species and *L. transversalis* are, it would appear, remarkable on account of the dark marks on the head.—D. S.

1476. *Laccophilus cayennensis*, Aubé, Spec. p. 434. Cayenne, Guadeloupe.

"Ovatus, apice rotundatus, depressiusculus, rufo-testaceus; thorace postice in medio breviter acute producto; elytris creberrime nigro-irroratis, vitta irregulari transversa ad basin, maculis irregularibus ad latera et apicem lineolisque brevibus in disco, pallido-ornatis. Long. $3\frac{1}{2}$, larg. $2\frac{1}{4}$ m.m."

[*A description, l. c., follows this diagnosis.*]

1477. *Laccophilus decoratus*, Boh., Eug. Res., p. 20. Manilla.

"Oblongo-ovalis, postice attenuatus, leviter convexus, subtus ferrugineus, nitidus; antennis capite palpis, pedibusque flavo-testaceis; prothorace dilute flavescente, antice posticeque medio leviter infuscato, elytris piceis, luteo-irroratis, fascia lata basali, altera inaequali infra medium introrsum abbreviata apiceque dilute flavescitibus. Long. $3\frac{1}{2}$, lat. $1\frac{3}{4}$ m.m."

"Caput parum convexus, sub-læve, flavo-testaceum, nitidum. Palpi et antennæ flavo-testacea. Oculi convexi glauci. Prothorax longitudine triplo latior, apice medio subtruncatus, utrinque leviter sinuatus, basi utrinque suboblique truncatus, medio vix triangulariter productus, angulis anticis antrorsum modice prominulis, sub-acuminatis, posticis fere rectis; superne leviter convexus, vix punctatus, dilute flavescens, basi apiceque linea transversa, utrinque valde abbreviata, dilute fusca ornatus. Scutellum nullum.

Elytra antice subtruncata, prothorace parum latiora, quam lata duplo et dimidio longiora, ad medium laud ampliata, dein apicem versus attenuata, apice subrotundata, superne leviter convexa, vix punctata, picea, nitida, lateo-irrorata, basi fascia lata transversa fere ad suturam continuata, postice medio triangulariter nonnihil ampliata, altera pone mediana, inaequali, extrorsum latiore apiceque, dilute flavescens. Corpus subtus ferrugineum, nitidum, obsolete coriaceum. Pedes flavo-testacei, nitidi, vix punctati."

1478. *Laccophilus flavescens*, Motsch., Etud. ent., 1859, p. 45. Ceylon.

"De la forme allongée et de la taille du *Lacc. basalis* mais d'une couleur testacée roussâtre, uniforme, à l'exception des yeux qui sont noirs : les élytres sont très finement pointillées, avec deux stries peu visibles et formées de points très petits, l'extrémité est arrondie. La taille est un peu plus petite que celle du notre *L. minutus*, mais moitié plus étroite."

1479. *Laccophilus hydaticoides*, Regt., Ann. Soc. Fr., 1877, p. lxxix. Manilla.

"Ovalis, vix elongatus, minime postice attenuatus, sat convexus; capite flavo; prothorace flavo latissime antice et postice nigro-limbato; elytris nigris, angusto margine, vitta transversa irregulari ad basin, duabus maculis latis in disco, alteraque lata ad apicem flavis ornatis; subtus nigro-ferrugineus, pedibus testaceis, posticis infuscatis. Long. 3 m.m."

[*At p. 359, op. cit., this diagnosis is supplemented by a description.*]

1480. *Laccophilus lineatus*, Aubé, Spec., p. 426. Mauritius.

"Ovalis, apice paulo oblique rotundatus, depressiusculus, testaceus; capite in vertice infuscato; thorace antice et postice nigro-maculato, in medio brevissime acute producto; elytris nigris, vitta transversa ad basin, lineolis plurimis longitudinalibus maculaque irregulari paulo ultra medium ad latera et altera ad apicem, rufo-luteo-ornatis. Long. 4, larg. 2¼ m.m."

[*A description, l. c., follows the above diagnosis.*]

1481. *Laccophilus mexicanus*, Aubé, Spec., p. 420. Mexico.

"Ovalis, apice vix oblique rotundatus, depressiusculus, supra testaceus, infra nigro-piceus; thorace postice in medio breviter acute producto; elytris pellucidis, creberrime brunneo-irroratis lateribus irregulariter testaceis. Long. 5 m.m., larg. 2¾ m.m."

[*This diagnosis is followed, l. c., by a description.*]

The species is probably the same as *Laccophilus atristernalis* (No. 104).—D. S.

1482. *Laccophilus orientalis*, Aubé, Spec. p. 431. Java.

"Oblongo-ovalis, postice paulo angustior, apice oblique rotundatus, depressiusculus, supra testaceus, infra obscurior; thorace immaculato, postice in medio breviter acute producto; elytris pallido-testaceis, vitta lata transversa fere in medio maculaque communi ad apicem brunneis, crebre testaceo-irroratis ornatis. Long. 3½ m.m., larg. 2⅓ m.m."

[*This diagnosis is followed, l. c., by a description.*]

The species is perhaps allied to *L. dispersus*, (No. 161).—D. S.

1483. *Laccophilus ornatus*, Aubé, Spec. p. 432. Cayenne.

"Oblongo-ovalis, apice paulo oblique rotundatus, depressiusculus, pallido-testaceus; thorace postice in medio breviter acute producto; elytris creberrime nigro-irroratis, vitta irregulari transversa ad basin, maculis irregularibus ad latera et apicem lineolisque brevibus in disco, pallido-ornatis. Long. 4, lat. 2¼ m.m."

[*A description follows, l. c., the above diagnosis.*]

The species is perhaps near *L. fumatus* (No. 118).—D. S.

1484. *Laccophilus pœcilus*, Klug, *Symb. phys.* IV, t. 33, f. 8. Egypt.

“Testaceus, elytris fusco-irroratis, fasciis duabus macularibus abbreviatis pallidis. Long. lin. 2. Habitat in Egypto.”

“*L.* minuto cui affinis minor. Corpus subtus testaceum, immaculatum. Caput et thorax rufo-testacea, immaculata nitida, antennæ testaceæ. Pedes testacei posteriorum tibiis tarsorumque articulis apice obscurioribus. Elytra testacea, dorso fusco-irrorata, maculis lateralibus sparsis fascisque duabus macularibus transversis, prima utrinque abbreviata baseos ab angulo humerali versus suturam oblique descendente, altera paulo intra medium subtriangulari ad suturam angustissima et fere obsoleta, pallidis.”

1485. *Laccophilus proteus*, Regt., *Ann. Soc. Fr.* 1877, p. lxxix. Manilla.

“Elongato-ovalis, postice attenuatus. Capite testaceo; prothorace testaceo, postice linea transversali nigra ornato; elytris nigro-fuscis, ad marginem testaceis, permultis lineolis undulatis, ad basin et apicem plus minusve confluentibus, testaceis ornatis; subtus fusco-niger, pedibus testaceis, posticis infuscatis. Long. $2\frac{3}{4}$ à $3\frac{1}{2}$ m.m.”

[*At p.* 358, op. cit., *this diagnosis is supplemented by a description.*]

1486. *Laccophilus pumilio*, Lec., *Proc. Am. Phil. Soc.*, 1878, p. 596. North America.

“Ovate, pointed behind, not convex, unpunctured, rufo-testaceous, meso and metasternum darker; elytra piceous, slightly iridescent, regularly narrowed behind, and not obliquely truncate at tip; abdomen without the distant fine oblique lines seen in the other species. Length 1·9 m.m.; ·075 inch.”

“Enterprise, Florida; one specimen. Very careful examination shows in certain lights traces of two or three lines on the second ventral segment towards the sides, but these are the only evidences of the characteristic ventral sculpture of the other species.”

1487. *Laccophilus quadrisignatus* (Lap.), Aubé, *Spec.* p. 436. Cayenne.

“Ovalis, apice rotundatus, depressiusculus, rufo-testaceus; thorace postice in medio leviter infuscato et breviter acute producto; elytris brunneis, vitta irregulari transversa ad basin alteraque ultra medium, macula minima ad marginem, altera in apice luteo-ornatis. Long. $3\frac{3}{4}$, lat. $2\frac{1}{4}$ m.m.”

[*Aubé, l. c., supplements the above diagnosis with a description.*]

1488. *Laccophilus rivulosus* (Klug), Aubé, *Spec.* p. 425. Madagascar.

“Ovalis, apice vix oblique rotundatus, depressiusculus, testaceus; capite in vertice nigro; thorace antice et postice nigro-maculato, in medio breviter acute producto; elytris nigris, maculis irregularibus ad marginem lineolisque plurimis in disco testaceo-ornatis. Long. 5, lat. 3 m.m.”

[*This diagnosis, l. c., is followed by a description.*]

This species is probably allied to *L. lateralis* (No. 148).—D. S.

1489. *Laccophilus strœhmi*, Th., *Op. Ent.* VI, p. 535. Helsingfors.

“Ovalis, sat convexus, pallide testaceus, antennis palpisque apice nigris; coleopteris medio dilatatis, subtilissime subrugoso-punctatis, fuscis, basi et lateribus dilutioribus.”

“*L.* minuto fere major, antennarum palporumque colore, elytris magis convexas, punctura evidentiore, fuscis maculis pallidis nullis determinatis bene distinctus. Caput pallide testaceum, clypeo ante apicem linea subcurvata impressa; palpis utrisque apice nigris. Antennæ pallide testaceæ, articulis 5–6 ultimis apice sensim magis nigris, quarto tertio brevior. Prothorax basi coleopteris fere angustior, latitudine sua triplo brevior, apice truncatus, angulis anticis sat magnis productis; lateribus oblique antrorsum angustatis; basi medio late subproductus, testaceus, laevis. Elytra prothorace saltem quadruplo longiora, lateribus paulo ante medium subdilatata, sat convexa, fusca, basi et limbo laterali pallidiora; punctis,

presertim postice, subtilissime crebre impressis, seriebus ordinariis subindicatis. Corpus subtus pedesque pallide testacea; tarsis anterioribus maris leviter dilatatis."

I think this may possibly be a variety of *Dytiscus interruptus* (No. 128).—D. S.

1490. *Laccophilus transversalis*, Regt., Ann. Soc. Fr. 1877, p. lxxix. Manilla.

"Ovalis, elongatulus, vix postice attenuatus, capite et prothorace ut in præcedente (*L. baeri*); elytris nigris vel fusco-nigris, epipleuris, vitta angusta transversa post basin, altera irregulari paulo ante apicem atque apice flavo ornatis; subtus nigro-ferrugineus, pedibus testaceis, posticis ad tarsum infuscatis. Long. $3\frac{1}{4}$ à $3\frac{1}{2}$ m.m."

[At p. 357, op. cit., the above diagnosis is supplemented with a description.]

1491. *Laccophilus transversus*, Motsch., Etud. Ent. 1859, p. 45. Burmah.

"Taille et forme du précédent (*L. undulifer*) mais au lieu des ondulations foncées sur les élytres il y'a des grandes taches transversales pointillées de teinte testacée; la base est obscure, puis on voit une bande testacée, interrompue sur la suture, enfin l'extrémité même et tout le bord des élytres est de teinte claire, ainsi que le corselet, la tête et les pattes; le dessous du corps un peu obscure."

1492. *Laccophilus umbrinus*, Motsch., Etud. Ent. 1855, p. 83. Egypt.

"Presque deux fois plus grand que le *L. interruptus*, et de forme plus ovale et plus déprimée. Couleur d'un brun un peu verdâtre avec les bords du corselet et ceux des élytres plus clairs."

1493. *Laccophilus uniformis*, Motsch., Etud. Ent. 1859, p. 46. India.

"Tout-à-fait comme le précédent (*L. flavescens*) mais avec les élytres plus larges et fortement atténuées postérieurement, presque comme chez notre *minutus*, ponctuation des élytres indistincte. Du continent Indien."

1494. *Laccophilus vermiculosus*, Gerst., Beitr. Ins. Zanz. 1866, p. 25. East Africa.

"Oblongo-ovatus ferrugineus, prothoracis margine basali plagaque disci transversa nigris, elytris fusco conspersis, margine laterali, (basi et ante medium maculatim dilatato) testaceo. Long. $4\frac{1}{2}$ m.m."

"Dem *L. rivulosus*, Klug, nicht unahnlich, aber etwas kleiner und von abweichender Zeichung des prothorax."

Mombas.

1495. *Laccophilus yvictæ*, Le Guil., Rev. Zool. 1844, p. 220. Chili.

"Tête et corselet jaunes, celui ci ayant le bord postérieur et un tache transverse au milieu du bord antérieur noirs. Elytres noires, très finement chagrinées avec une bande transversale maculaire près de la base, une autre bande formée de petites stries très rapprochées près de l'angle apical et le bord externe jaune. Dessous noir, antennes et pattes jaunes. Long. $3\frac{1}{2}$ lat. $1\frac{3}{4}$ m. m. Hab. le Chili."

1496. *Necterosoma flavicollis*, Macl., Tr. N.S.W., p. 125. Australia (Gaydah).

"Length $1\frac{3}{4}$ lines. This species differs from the last (*N. vittipenne*) in having the frontal depression more round and very shallow, in having the thorax entirely yellow, with a depression at the base equidistant from the centre and the posterior angles, in which there are three or four small but distinct striolæ, and in having the elytra without striolæ on the scutellum region, and of a yellow colour, with a series of six vittæ, and some lateral spots, brown, the second vitta from the suture being abbreviated towards the base and apex. The elytra also are quite acuminate at the apex, much more so than in *N. vittipenne*."

Wehncke, on the authority of an authenticated specimen, considers this to be *Hydroporus wollastoni*, Clk. (No. 441).—D. S.

1497. *Necterosoma vittipenne*, Mael., Tr. N.S.W., p. 125, Australia (Gayndah).

"Length 2 lines. Ovate, broad, subconvex and of a yellow colour. Head with a shallow slightly elongated fovea on each side in front. Thorax broad, short, and bisinuate at the base, with the basal lobe rounded, the posterior angles acute, the anterior angles advanced, the apical border brown, the basal border also brown and enlarged into two spots about midway between the centre and the posterior angles, and with a small striola at the base on the outer side of these brown spots, and a series of smaller striolæ along the whole basal border. Elytra dark-brown, with five yellow vittæ on each side of the suture, extending from the base to the apex, with large spots of the same colour on the sides, and with one or two oblique striolæ on the scutellar region, giving the appearance of a large scutellum."

Wehncke on the authority of an authenticated specimen considers this to be the same as *Hydroporus penicillatus*, Clk. (No. 436).—D. S.

1498. *Noterus imbricatus*, Klug, Monats. Berl. Ac. 1853, p. 249. East Africa.

"*N. pallide testaceus*, elytris bruno-testaceis, transversim undato-exasperatis. *Mas, Fem.* Long. lin. $2\frac{1}{2}$."

"Ganz ebenso gestaltet und fast ebenso gefarbt, wie der hier gewöhnliche *N. crassicornis*. Die untere seite nebst den Beinen, so wie Kopf und halsschild sind einfarbig hell röthlich gelb, Kopf und halsschild ganz glatt, die Augen schwarz. Die Deckschilde sind besonders bei dem Weibchen mit dicht an einander gereihten, in querlinien geordneten, beinahe wie Dachziegel aufliegenden erhöhten punkten durchzogen, wie sich dies bei keiner andern hier bekannten art der gattung findet."

"Mänchen and Weibchen von Tette."

This is evidently to be placed in *Synchortus*, and is near if not identical with either *Hydrocanthus asperatus*, or *H. rugoso-punctatus* (Nos. 18 and 19).—D. S.

1499. *Pachytes elegans*, Montr., Ann. Soc. Fr. 1860, p. 245. New Caledonia.

"Long 5, larg. 3 m.m. La tête est lisse, jaune foncé, le chaperon rebordé en avant. Les yeux grands, les antennes et les palpes jaunâtres, le corselet transversal, finement pointillé, est de la même couleur. Les élytres ovales, légèrement convexes, arrondies au bout, couvertes de petits points enfoncés sont noires avec la bordure, une tache en crochet à la base près de la suture, une autre allongée vers l'extrémité et une troisième entre elles, vers le milieu du limbe, jaunes. Une tache noire dans la bordure près de l'angle huméral. Dessous du corps et pattes fauves, avec l'extrémité rembrunie. Dans les mares—Ile d'Art, rare. N.B. Les couleurs disparaissent pour la plupart après la mort."

The description of the generic characters is, p. 244, as follows. "Caractères généraux des *Hydroporides*. Antennes à peine sétacées, presque aussi épaisses à l'extrémité qu' à la base; dernier article des palpes à peu près de même longueur que le précédent; prosternum aigu postérieurement, écusson caché; tarsi antérieurs terminés par un très petit article; jambes postérieures ayant à l'extrémité deux crochets inégaux; corps épais. Diffère des *Hyphidres* d'Illiger par le dernier article des palpes et des *Hydropores* par les crochets des jambes."

So far as I can judge from the descriptions of the genus and species, this may be an insect of a genus unknown to me, but I think more probably it will prove to be a *Hyphidrus*.—D. S.

1500. "*Rhantus (!) consimilis*," Motsch., Bull. Mosc. 1859. III, p. 168. California.

"Elongato-ovatus, depressiusculus, subnitidus supra subtilissime rugulosus, nigro-piceus, ore, palpis, antennis, thoracis elytrorumque margine dilutioribus; capite subtriangulare, antice oblique biimpresso; thorace transverso, antice angustato, basi arcuato, lateribus marginatis, subreflexis, angulis anticis prominulis, posticis, acutis, subsinuatis; scutello fere leve; elytris elongato-ovatis, postice subdilatis, serie una punctorum distincta, lateribus latissime reticulatis, subopacis, (*Fem.*); tronchanteribus obtusis. Long. $4\frac{1}{2}$ l., lat. $2\frac{1}{2}$ l." San Francisco.

“Par sa forme allongée il ressemble un peu au *R. divisus*, Esch., mais il est plus grand et présente une couleur plus foncée. La tête est assez large, avec deux impressions en avant et une ligne longitudinale peu marquée au milieu. Le corselet est fortement transversal dilaté en arrière avec les angles postérieurs et antérieurs aigus et saillants; vers la base il y a une impression transversale peu profonde et au milieu une ligne longitudinale qui n'atteint ni la base ni le bord antérieur. Les élytres ne sont presque pas plus larges que le corselet, un peu dilatées postérieurement et peu acuminées à l'extrémité, sur chacune on voit un peu au delà du milieu une strie formée par de petites fovéoles éparses, dans le fond desquelles il y a 3 ou 4 points imprimés; le bord latéral est antérieurement sur une largeur d'un tiers de toute l'élytre plus fortement réticulé et plus opaque que la partie vers la suture, qui paraît aussi obscure que la couleur générale; vu de côté on aperçoit sur les élytres des ondulations roussâtres et noirâtres, propres aux espèces du genre *Rhantus*. Le dessous du corps et les épipleures sont plus noirâtres que le dessus.”

This is possibly allied to *Colymbetes sinuatus*, Lec. (No. 944).—D. S.

1501. *Rhantus flavogriseus*, Crotch, Tr. Am. Ent. Soc. IV, p. 409. North America.

“Allied to *C. binotatus* but more elongate, narrower, the discal spots on the thorax transversely quadrate, beneath black, prosternal carina pale, femora black. *Mas*, anterior claws elongate sub-equal, sinuate, intermediate internal claw rudimentary.”

1502. *Rantus luteicollis*, Gebl., Bull. Mosc. 1848, III, p. 72. Siberia.

“Elongato-obovatus, totus flavescens, elytris subtiliter nigro-irroratis, trilineatis, capite lineola transversa sinuata punctoque verticis nigris. Long. 5 lin., lat. 3 lin.”

“Nähert sich durch seine flächere, breite gestalt dem *R. adspersus*, F., ist aber etwas langlicher und hat ein verhältnismässig breiteres, flacheres halsschild.”

Loktemsk.

1503. *Rhantus nigriventris*, Motsch., Schrenck, reise, p. 101, pl. 7, f. 6. Kamtschatka.

“Ovatus, subconvexus, nitidus, testaceus, macula transversa frontali capite postice, oculis, macula in medio thoracis corporeque subtus nigris; elytris nigro-irroratis, punetorum triplici serie subconfluentibus. Long. 4 l., lat. $2\frac{1}{3}$ l.”

“Très voisin de notre *Rh. conspersus*, mais de forme plus large et plus convexe, ayant le dessous du corps, à l'exception des côtés du corselet, noir.”

1504. *Rhantus nigro-punctatus*, Motsch., Bull. Ac. Pet. I, 1860, p. 293. Songoria.

“Ovatus, subconvexus, subnitidus, fulvo-testaceus, in fronte maculis duabus, capitis basi, elytrorum punctis triplici serie marginæque segmentorum abdominis interdum nigris; elytris fusco-irroratis. Long. $3\frac{3}{4}$ l., lat. $2\frac{1}{3}$ l.”

“Il ressemble beaucoup à notre *Rh. adspersus*, F., mais sa forme paraît un peu plus allongée, sa couleur toujours plus claire, son corselet sans tache noire au milieu de la base, les trois rangées de points noirs sur les élytres très distinctes, tandis que les teintes noires sur les segments du dessous du corps souvent presqu'entièrement effacées.”

1505. *Scutopterus imbricatus*, Woll., Tr. Ent. Soc. 1871, p. 220. Madeira.

“Oblongo-ovatus, elongatus, subopacus, nigro-piceus, capitis parte antica maculisque duabus frontalibus et prothoracis lateribus piceo-ferrugineis; capite prothoraceque rugose coriaceis, hoc antice angustato; elytris elongato-ovatis basi truncatis, paululum nitidioribus, grosse subimbricato rugulosis et obsolete substestacco commixtis, singulis longitudinaliter triseriatim notatis; antennis palpisque rufo-ferrugineis, pedibus rufo-piceis. Long. corp. 10 lin.”

“Species *S. lanioni* affinis, sed corpore magis ovato (antice, et in elytris et in prothorace, angustiore), elytris obscurioribus, minus nitidis, et rugose imbricato-asperatis, pedibus (ciliisque in posterioribus) picescentioribus. A *S. coriaceo* (Europæo et Canariensi) differt corpore minus obtuse oblongo (*i.e.*, antice angustiore) omnino minus nigro, capite distinctius maculato et prothorace ad latera ferrugineo, necnon etiam in elytris obscure pallido-irroratis, prothorace paulo minus transverso, postice minus sinuato (angulis basalibus rectoribus) scutello sensim minus triangulari, et elytrorum impressionibus (in seriebus tribus dispositis) magis rotundatis, punctiformibus.”

[*A further description and comparison follows, i.e., the preceding.*]

From which it appears that the single female—all that is known of the species—“appears to be in many respects exactly intermediate between *S. coriaceus* (of Southern Europe and the Canaries), and the Madeiran *S. lanio*.”—D. S.

1506. *Suphis puncticollis*, Crotch, Tr. Am. Ent. Soc., 1873, p. 397. North America.

“Ovate, convex, testaceous, shining; elytra piceous: thorax and elytra coarsely and tolerably closely punctate. L. .12 inch.”

According to a specimen recently communicated to me by Dr. Leconte, this is a very distinct species of *Canthydrus*, perhaps best placed near *Suphis lineatus*, Horn (No. 48); the thorax has an infuscate area on the front of the middle, and the elytra are marked with a transverse irregular yellow mark, starting from the side in front of the middle but not reaching the suture; the punctuation of the prothorax is only conspicuous on the basal portion, but that of the elytra is very conspicuous.—D. S.

1507. *Suphis semipunctatus*, Lec., Proc. Am. Phil. Soc., 1878, p. 595. North America.

“Elongate-oval, not pointed behind, moderately convex, yellow-brown, shining, smooth; elytra darker, covered from the middle to the tip with scattered coarse punctures; of which one series extends to the base half way between the margin and suture. Prosternum not punctured, less dilated behind than in the other species, but with two short posterior striae; metasternum with a deep impressed median line, smooth, with only a few scattered punctures behind. Length 2.6 m.m.; .10 inch.”

“Monroe, Michigan; one specimen; very different from the other species by the regularly oval form, scarcely narrower behind than before, by the peculiar punctuation of the elytra and by the impunctured sterna. The last joint of the maxillary palpi is nearly acute at tip, and does not appear emarginate from any point of view.”

This is probably a species of *Canthydrus*, not of *Suphis*.—D. S.

1508. *Thermonectes intermedius*, Crotch, (*basilaris* var.), Tr. Am. Ent. Soc. IV, p. 402. California.

“Thorax without the medial line (of *Dytiscus basilaris*), elytra with a humeral vitta and a mere trace of the basal fascia; undersurface rufo-testaceous.”

This is cited as a distinct species in the check list of North American Coleoptera; but according to a specimen recently communicated to me by Dr. Horn, it is considered by me a variety of *Dytiscus basilaris* (No. 1071).—D. S.

1509. *Trochalus rugulosus*, Redt., Hug. Kasch. IV, 2, p. 502. India.

“Ovatus, olivaceus, subtus niger, thoracis elytrorumque margine laterali, ore, antennis, palpis pedibusque anterioribus flavo-ferrugineis; elytris subtilissime rugulosis. Long. 10½^l”. Caschmir.”

“Den kleinsten Individuen des *Troch. africanus*, kaum an grösse gleichkömmand und nebst bei nach hinten bedeutend erweitert, so dass sein umriss der vollkommenen Eiform beinahe entspricht. Die.

unterseite ist schwarz, die vier vordersten Beine, eine Makel an den Seiten der Brust, und eine kleinere beiderseits an jedem der vier letzten Bauchringe, rostgelb,"

"Weibchen unbekannt."

This perhaps may prove to be near *Dytiscus rugosus* (No. 1167).—D. S.

1510. *Trogus natalensis*, Wehnke, Stett. Zeit., 1876, p. 358. S. Africa.

"Ovalis, depressiusculus, supra nigro-olivaceus, subtus testaceus, labro, thoracis limbo, elytrorum margine, pedibusque luteis, femoribus posterioribus basi, tibiisque fusciscentibus. Long. 22 m.m. *Fem.* elytrorum margine laterali subtilissime irregulariter striolato."

"Von *T. scutellaris*, Germ., dem diese art am nächsten verwandt ist, durch eine viel kürzere und breitere form unterschieden. Eiförmig, hinter der mitte am breitesten, dunkel-olivengrün, die seiten des halsschildes und der flügeldecken gelb gesäumt unterseite mit den beinen gelb, an den hinter beinen die würzel der schenkel sowie die schienen bräunlich. Die flügeldecken der männchen sind glatt, die der weibchen an den seiten gestrichelt. Port Natal."

It is possible this may prove to be allied to *Cybister reichei* (No. 1148).—D. S.

1511. *Vatellus grandis*, Buq., Ann. Soc. Ent. Fr. 1840, p. 294. Cayenne.

"Long. $7\frac{1}{2}$ m.m., larg. $3\frac{3}{4}$ m.m.—Cette espèce, voisine du *Vat. tarsatus*, en diffère par sa taille, du double plus grande, par la forme du corselet, qui relativement, est plus carrée, et parce qu'au lieu d'être entièrement ponctué, il n'a çà et là que quelques gros points enfoncés en dessus, et une bande lisse, transversale au milieu. Elle en diffère encore par la forme des élytres, qui sont proportionnellement plus allongées, plus planes, et couvertes de points enfoncés bien distincts, tandis que dans le *Vat. tarsatus* ces points sont beaucoup plus rapprochés, et disposés de manière à faire paraître les élytres comme sillonnées transversalement : du reste elle est d'un noir plus prononcé que le *Vat. tarsatus*, et assez brillant."

"Cet insecte a été trouvé par M. Leprieur, en décembre 1837, dans les parties latérales du lit du haut-Oyapok, dans des flaques d'eau, et sous les détritns."

It appears probable from the above description that this is a species unknown to me of *Macrovatellus*, perhaps near *M. rudis* (No. 84).—D. S.

IV.—SYNTHESIS, OR CLASSIFICATION.

FIRST SYNTHESIS (GENERAL).

I. 1.—Genus *PELOBIUS*. (*Vide* p. 259.)

This aggregate is formed by three species; their individuals are of moderate size (about 10 m.m. in length), the form is short and broad, very convex beneath, the surface very densely punctured, without pubescence.

The head is exerted from, and little clasped by the angles of the thorax; the eyes are convex, prominent, and not touched by the thoracic angles; the labrum is quite exposed in front of the clypeus, and perfectly continuous in plane with it; the suture separating the clypeus, or epistoma, from the forehead, is angulated in the middle (and is very distinct in the European, nearly obliterated in the Australian species); the buccal and gular sutures are fine but distinct in *Dytiscus tardus*, nearly obliterated in *Pelobius niger*; the antenna is inserted in a small cavity situated at the upper part of a rather large, subtriangular glabrous space, and is 11-jointed; the basal joint is much larger than any of the others and more or less punctate, the other joints are without punctuation, but each bears on the upper surface quite at the extremity, a minute round cavity; none of the joints has any pubescence, or elongate setæ; but by very minute examination it can be seen that there are, at any rate on the three or four basal joints, the rudiments of a few setæ.

The mentum is very short, its lateral lobes extremely short; the palpi are rather short and stout; the outer lobe of the maxilla is rather obscurely biarticulate.

The prothorax has the sides of the upper surface distinctly, and the anterior margins both of the pronotum and prosternum densely ciliate; the prosternum along the middle, assumes directly at the front margin a vertical direction, and shortly thereafter is turned backwards and continued so as to form a thick, prominent, prosternal process; this process is not broad but is elongate, and is nearly acuminate at the apex, it is margined at the sides, and the margins are continued forwards between the front legs, till they attain the anterior vertical portion of the prosternum; the prosternal sutures are indistinct as are also those of the side pieces; the form of the prothorax is such as to give it a great extension in the vertical direction; thus the depth from the hind margin of the pronotum to the apex of the prosternal process is 4 m.m., this measurement being distinctly greater than the width of the prosternum; this considerable depth enables the front coxæ to be conical and elongate; their cavities are closed behind by a large corneous process, connecting the inner faces of the two epimera.

The mesosternum is rather short, and although placed at an evident angle with the plane of the metasternum, is very distinctly displayed between it and the prosternum. The episternum is very large in comparison with the epimeron, this latter being sub-linear, that is but little broader at its upper angle (or point of junction with the angle of the metathoracic episternum), which is very broad and rounded and very indistinct, its inferior portion penetrates to the middle coxal cavity; the lower portion of the metasternum is prominent, and forms a rather narrow moderately deep fork for the accommodation of the prosternal process.

The metasternum is short, the middle portion of it is produced in front so as to form an inter-coxal process which is much depressed in front, for the reception of the prosternal process; the inter-coxal process, although elongate, does not attain the fork of the mesosternum, and the middle coxæ (when the prosternum is taken off) are absolutely contiguous, and their cavities largely confluent; the posterior edge of the metasternum in the middle is connected with the internal laminae of the hind coxæ by a transverse suture, and in front of this is marked by another transverse suture which connects at the outer border of the pyxal process with the one just mentioned, so that a conspicuous supplementary piece exists at the front of the internal coxal laminae; the episternum is large, and although broad at its anterior part, does not penetrate to the middle coxal cavity, its apex in fact is widely separated therefrom; the posterior portion of the episternum is narrow, the upper edge of it is covered by the wing-case, and is smooth and shining so as to be greatly differentiated from the main part; the epimeron is entirely membranous.

The hind coxæ are of very peculiar shape; each is longest at the internal lamina, the outer portion being but short; the greatest anterior extension of the coxa is near the mesial line of the body, in fact close to the outer border of the interior lamina, and external to this point the suture between coxa and metasternum proceeds outwards in very nearly a direct transverse line, which however slightly inclines backwards, till near its outer termination where it curves distinctly forwards to join the apex of the episternum: the internal laminae are closely and accurately conjoined with one another for their whole length by a perfectly straight, very distinct suture; outwardly they are abruptly defined and limited by a fine raised coxal border which extends their whole length, at the extremity each is marked by an elongate deep notch, in which the articular process of the trochanter moves, and which in fact forms the limit of its motion towards the middle line of the body, so that the coxal cavities are conspicuously and rather widely separated.

The visible ventral segments are six in number; the basal one is greatly interrupted in the middle for the accommodation of the pyxal processes, the suture between the second and third is peculiar,* it is quite distinct at the side, and curves

*Schiodte (Danmarks Eleutherata, p. 414) has proposed to separate *Pelobius* from all other *Dytiscidæ* on account of this point of structure; but this is quite impossible, for in the *Hydroporides* the character reappears to a greater or less extent (*vide* *Dytiscus duodecimpustulatus*, Fab., in the genus *Deronectes*).

forward as it proceeds to the middle, and on the middle is very nearly obliterated, thus the second segment is extremely short in the middle, while the third is nearly twice as long in the middle as it is at the side, the three apical segments are short and freely flexible on one another.

The wing-case has a conspicuous epipleura accurately adapted to the mesosternum and metasternum ; at the side of the first ventral segment it becomes much narrower, and extends as far as the hind border of the fourth segment, where it has very nearly become attenuate to an edge : the extremity of the elytron is sinuate and its sutural angle rather acutely rectangular ; the inner face shows two peculiar structures ; first, near the outer edge about the middle is a raised process, a short irregular elevated plica or fold placed so as to form a cavity, in which the raised edge of the first and second ventral segments is received ; second, at the extremity near the suture is a raised longitudinal band marked by transverse striæ.

The dorsal segments of the hind body are provided with small round stigmata, the one on the apical segment being quite minute ; the ventral segments bear at their upper edge a narrow longitudinal band covered by the epipleura, and the basal one is provided at its posterior margin, at the junction with the second segment, with a raised prominence which fits into the cavity on the inner face of the elytron as already described ; and the apical ventral segment is bordered by a sharp thin lamina.

The legs are slender, they are not modified for swimming by any flattening, incrassation or dilatation ; on the other hand they are provided with a very elongate conspicuous ciliation ; the front tibiæ bear two elongate stout spurs, apparently very near to one another, but really inserted on the posterior aspect of the tibia, the inner one above, the outer one below the articular cavity ; both the outer and the inner edges of the tibia are ciliate, and the outer one besides is armed with fine spines. The middle legs are rather elongate, and are not very dissimilar to the anterior ones. The hind legs are elongate and slender, each side of the tibia is furnished with long ciliæ, and the upper and under borders of the slender tarsus are likewise greatly ciliate ; the tarsus is twice as long as the tibia, and when the ciliæ are carefully spread out it can be seen that the lower face of the tarsus is not an edge, but a narrow distinct sole ; the two terminal claws are moderately long and nearly equal.

The male anterior and middle tarsi are elongate and slender, but still distinctly dilated and incrassate ; the elongate basal joint becomes broader at the extremity, and underneath is furnished at the apex with a dense glandular pubescence ; the 2nd and 3rd joints bear a similar pubescence, the 4th joint is quite visible, but small, the 5th elongate, about as long as the basal one.

The individuals of this genus possess the faculty of stridulating, and the sound produced is I believe more powerful than what is made by any other beetle : it is

called forth by the scraping of the sharp upturned edge of the last ventral segment against the two raised file-like bands which I have already described as existing on the inner face of the wing-cases. This apparatus is not of itself however sufficient to produce a sound of such power as that given forth by this creature, and there is little doubt that it is rendered much more effective by the peculiar method of locking the elytra to the sides of the hind body. At the spot where the ventral segments are strongest (viz., the part of the side where a horny raised process traversing the internal face of the first ventral segment abuts) a prominence fits into a large narrow cavity formed by the peculiar process previously described; on the inner face of the wing-case the coadaptation of these parts is of the most perfect nature, and a locking together of the wing-cases and the ventral segments of a very remarkable character is the result; when sound is to be produced it is necessary that the insect should greatly bend forward the terminal ventral segment, otherwise it could not reach the file; by this pressure a great strain or tension is produced at the base of the ventral segments, and by means of the lock just described this is transmitted to the elytra, which are thus thrown into a state of tension perfectly comparable with that of a stretched violin string, and when the file on the stretched elytra is scratched a very powerful sound is produced; this structure is of the most perfect character; the very act of commencing to make a noise tunes the instrument that is to produce the noise.

The geographical distribution of *Pelobius* is interesting; three species are known, one occurring in Europe, but not known beyond its limits (except at such points as Tangiers) the other two peculiar to Australia. The Australian species are structurally, and in appearance, excessively similar to the European one, but are distinguished by a slight structural peculiarity, inasmuch as the scutellum is largely exposed in the European species, nearly concealed in those of Australia.

I do not think any more instructive animals exist than these *Pelobii*, and when entomology receives from able men the full amount of attention it deserves, I doubt not that highly important results will be obtained from their study.

I think it would be natural that *Pelobius* should be classed with the *Carabidæ* rather than the *Dytiscidæ*; it is in fact purely a Carabideous insect with modifications to enable it to live in water: I do not mean to say that this phrase would be inapplicable to true *Dytiscidæ*; but what I intend is this—if we look upon all *Dytiscidæ* as modified *Carabidæ*, then we may say that in true *Dytiscidæ* the modifications for aquatic existence are predominant in the whole external organization, whereas in *Pelobius* the Carabideous structure is still predominant. I believe investigation will show that the ancestors of *Pelobius* were formerly *Carabidæ* not very different to the *Carabidæ* around it, and only became dwellers in water after the species had reached a comparatively mature stage of adaptation for existence on land: whereas true *Dytiscidæ* became dwellers in water at a much earlier period of their ancestral

record, when they were in a stage of evolution more primitive than that of any Carabidæ now remaining to us. Embryological studies may here give us important assistance.

The following brief recapitulation will show the justice of this assertion. It has already been shown by Schaum and others that Pelobius has the head of Carabidæ, besides this its antennæ approach more nearly to those of the Carabidæ than to those of any Dytiscidæ, except the spurious Dytiscid, Amphizoa: the prothorax is quite that of Carabidæ, except that the prosternal process connects with the metasternum and even this character is not foreign to Carabidæ. (Compare Cyclosomus).

The mesosternum is absolutely that of one division of Carabidæ.

The metasternum is that of Carabidæ, and possesses behind the transverse suture that exists in the majority of Carabidæ, but in no Dytiscidæ, except the spurious Dytiscid, Amphizoa.

The hind coxæ are those of Carabidæ, with some slight modifications, viz., that they are a little increased in size, that their internal laminae are accurately co-adapted (instead of touching only at one point), and that they are marked by an elongate excision for the play of the swimming leg, permitting of a greater movement of the trochanter in one direction.

The legs are those of Carabidæ except that they bear ciliae.

The general form is foreign to Dytiscidæ, for it is tub-like and does not show that evenness of outline conspicuous in the water beetles; the sculpture too is that of Carabidæ rather than that of Dytiscidæ.

It seems clear then that Pelobius cannot be satisfactorily classed with the Dytiscidæ; and it is equally clear that it is a Carabideous insect having considerable modifications to adapt it to move in water.

It is therefore only included provisionally in my classification of Dytiscidæ.

Although I think Pelobius may be admitted among the Carabidæ, it will be there an absolutely isolated form. In the present state of knowledge of organic nature no animal having any affinity whatever to these three species can be pointed out.

The isolation of Pelobius and the geographical distribution of its component three species are in themselves facts of much interest, for it is almost impossible to suppose that there can have been developed both in Europe and Australia absolutely *ab initio* animals which, notwithstanding their widely different environment have evolved into a similar form which is absolutely isolated from all other known forms. It is almost impossible to suppose this, and we cannot but believe that the European species and the Australian species lived during the greater part of their ancestral record side by side, and only became separated from one another when their present structure was comparatively nearly established. It being then quite probable that the Australian species and the European species formerly had a common habitat, it will be an interesting question to consider at what period of the world's history this could have been the case. Huxley has already suggested an answer to this question

by stating the probability that in the Triassic or an earlier epoch the land of the Australian continent was continuous with that of the Arctogæal continent. If that be the case and if the Pelobii have remained almost without evolution since that period, it is clear that we must go back in the world's history to a period of enormous antiquity in order to find a time when Pelobii shall have been little different in their structure from their nearest allies. In actual fact the study of *Pelobius* does not suggest any belief in the theory of descent from ancestors common to it and other beetles, but rather tends to convince us of its absolute isolation.

If, however, we decline to imagine that the European and Australian Pelobii have remained nearly the same in structure since their separation from one another in the Triassic epoch, and prefer to believe that they have evolved much since their separation, we must in that case admit that extensive processes of organic evolution may be carried on in the most distant parts of the world and may extend over a large portion of the world's history and yet result in the production of almost identical structures; an admission which would render nearly worthless all that has been written on the subject of geographical distribution, based on the theory of descent from common ancestors.

I myself consider that on the whole this second alternative is perhaps the more probable; I can see no sufficient reason for supposing that the process of evolution in these creatures has been entirely checked since the Triassic epoch, but I can well suppose that it has gone on, though probably very slowly, since that period, and that the Australian and European forms have not diverged much from one another because the laws of growth or evolution are radically the same in all organisms, and because the environment limiting and regulating those laws has been practically nearly the same in both, notwithstanding their wide geographical separation.

In order to derive full advantage from the study of *Pelobius* it is not at all necessary to believe in the theory of the descent of distinct species from a common ancestor; the only hypothesis necessary to an understanding of all the facts are first that the laws of growth (evolution being a form of growth) are fundamentally the same in all organisms, and second that similarity of environment limits and regulates these laws so as to produce conformably similar results on similar organizations.

Whatever we may think on these points one thing is quite clear, viz., that though *Pelobius* shows differences from Dytiscidæ of such a nature that those who support the theory of descent would point to it as a proof of the correctness of their theory, yet there is not the least reason for believing it to stand in an ancestral position to any known Dytiscidæ. The only relation of this kind that could be suggested with the least approach to credibility is between it and *Colpius*; but an examination shows that though in certain highly important points the approximation is very great between the two, in other points they are as distinct and widely separated as are any two Dytiscidæ: and the more I have become acquainted with the

structures of the two, just in that proportion has the theory of genetic relationship between them become incredible. Now as *Pelobius* stands in relation to *Carabidæ* and *Dytiscidæ* as *Archæopteryx* does (or did) to birds and lizards, it is quite clear that most interesting fossil does not any more prove that birds are descended from lizards, than *Pelobius* proves that *Dytiscidæ* are descended from *Carabidæ*, or *Carabidæ* from *Dytiscidæ*.

I. 2.—Genus *NOTOMICRUS*. (*Vide* p. 260.)

The four species forming this aggregate, are the most minute of the *Dytiscidæ* and among the smallest *Coleoptera*, the length attained being only about 1 m.m. The form is rather depressed, the surface extremely polished and shining, without punctuation or pubescence. The antennæ have no thickening of the middle joints, and are short and simple. The anterior coxæ are minute and placed at a considerable distance from the front of the thorax; the prosternal process is quite small and is rounded behind. The anterior tibiæ and tarsi are simple, the former with scarcely developed spur, the latter with the basal joint not notably elongate. The breast is excessively polished so that no trace of the suture between the hind coxa and metasternum can be detected. The coxal processes are slightly prolonged towards their outer hinder angle, the coxal cavities are slightly separated, with the coxal notch very minute and narrow. The swimming legs are excessively feeble, and the hind tarsi are very slender, longer than the tibiæ.

The genus is readily distinguished by the simple anterior legs, by the obliterated suture between the coxa and metasternum, and by the very feeble swimming legs. I have not been able to see the palpi, nor to ascertain well the details of the structure of the tarsi.

As it stands at present the genus is divided between Australia and South America; but possibly one of the two species from the latter locality may be found to be sufficiently different from the others to justify a new generic name being formed for it; it has the swimming legs much less elongate and slender; other species will no doubt be discovered, and this may admit of the characters being correctly formulated. At present I cannot pronounce an opinion on the relations of this genus to the other genera of *Noterini* and I shall therefore leave it isolated in the second synthesis; I think it probable that this course will prove to be the natural one, even after the structure has been more completely ascertained, for I very much doubt whether it has any close approximation to *Hydrocoptus*, or any other form yet brought to light.

I. 3.—Genus *HYDROCOPTUS*. (Vide p. 261.)

This aggregate is formed by five species; the individuals are of quite small size, (only 2 m.m. long), oblong-elliptic, and transversely convex in form, without pubescence and of a yellowish colour, with the elytra a little darker, and subject to being marked with very indefinite large yellow patches, or vittæ. Their antennæ are short and rather stout and very nearly simple, the middle joints being just visibly broader than the others. The labial palpi are not dilated, although their apical joint is just visibly thicker than the others. The prosternum in front of the coxæ is rather large, and along the middle is in one plane from the front to the termination of the prosternal process; this latter is small and narrow, its extremity obtusely acuminate. The front tibiæ are moderately stout and bear a few long spines or setæ on the outer edge, and are armed at the apex with two distinct spurs one of which is longer than the other and very slightly curved; the front tarsi are simple and slender, and I believe without sexual difference: the hind coxæ at their insertions are very distinctly separated. The swimming legs are slender, the hind margin of the femora furnished with a few distant short setæ, which scarcely extend to the apex; the tibiæ are slender; the tarsi slender, about as long as the tibiæ, terminated by the two small equal, curved claws.

The species assembled under these characters may perhaps prove to form more than one genus; Nos. 8 to 10, have the hind coxal processes but little developed, their outer apices being neither produced nor acute; the other two species I have only been able to examine very imperfectly; *H. bivittis* has the coxal processes more developed, so that their produced outer apices are very acute; while *H. seriatus* appears to be intermediate between this latter species and the others in this respect.

As it stands, the genus is represented in Australia, the Indo-Malay region, and Madagascar.

The genus is interesting from the analogy it displays with *Hydrovatus*: an analogy which evidently arises from the two being in an approximately similar stage of evolution. We have in *Hydrocoptus*, the characteristics of the higher genus *Noterus* displayed in a far lower stage of evolution; I have not however associated the genus with *Noterus* in the second synthesis, but have at present left it isolated; it seems to me probable however that it is really connected with the *Noterini*, by *Pronoterus* as an intermediate form, and if so the genus will be correctly placed in the *Noterini*: as however I have been unable to find any trace of a curved spur on the front tibia, and as this character is so prominent a feature of the other *Noterini*, I have not associated *Hydrocoptus* with them at present.

The name *Hydrocoptus* has never hitherto received any definition, although it was proposed in 1855, by Motschoulsky: in his Catalogue of *Hydrocanthares de la Russie*, he included under *Hydrocoptus*, the greater part of the European *Hydroperi*; but in 1859, he described three species of the aggregate I am at present treating under the generic name of *Hydrocoptus* (*Études Ent.* 1859, p. 43, 44); and I have

thought it justifiable under these circumstances to use the name for the aggregate in which the species just referred are included, but as Motschoulsky never attempted any definition of *Hydrocoptus*, and included under it both *Hydroporides* and *Noterides*, his name had better not be cited in connection with it.

I. 4.—Genus *PRONOTERUS*. (*Vide* p. 263.)

The unique species is of small size ; its individuals only attain 2 m.m. of length, and their appearance is that of a small parallel *Noterus*. The anterior tibiæ are short and broad, and their outer angle is distinctly spinose ; at the inner angle they have a minute spur, and a second more elongate one, this latter is curved : the basal joint of the front tarsus is a good deal incrassate, and elongate. The last joint of the labial palpus is dilated ; the prosternum is straight from the front margin to the end of the prosternal process ; this is of moderate size, with its terminal angles rounded, but is truncate at the extremity : the interior laminæ of the hind coxæ approach very close to the middle coxæ, and the wings of the metasternum are quite small ; the suture separating them from the hind coxæ is quite distinct. The coxal processes are almost truncate, their outer angle being scarcely at all produced ; the coxal cavities are almost contiguous, and no evidence of their not being absolutely so can be seen without dissection. The swimming legs are moderately well developed, the tibiæ being very distinctly flattened and incrassate, so as to be much broader than the tarsi, these latter are a little longer than the tibiæ, their basal joint elongate, considerably longer than the three following ones together ; the two claws are short, and rather stout, equal, curved.

This is an interesting form, apparently intermediate between *Hydrocoptus* and *Noterus* : it has quite the appearance of the *Hydrocopti*.

I. 5.—Genus *SYNCHORTUS*. (*Vide* p. 264.)

This aggregate consists of six species, whose individuals have the appearance of small *Noteri*, but when a punctuation is present on the wing-cases it is of a very peculiar kind, and gives rise to an appearance of asperities, rather than of round depressions. The antennæ are slender with the terminal joints more elongate than the basal ones. The anterior tibiæ are rather slender, with the outer margin densely set with very short thick ciliæ, the outer apical angle has almost disappeared, the inner one is furnished with a slender elongate curved spur, or hook : the basal joint of the front tarsus is very largely developed. The prosternal process is short, broad, very rounded behind, and is as it were continued forwards between the coxæ to near the front margin of the thorax, and becomes quite gradually and gently obsolete there. The suture between the hind coxa and metasternum nearly touches the middle coxa ; the coxal processes are much developed, and produced at their outer angles ; the hind coxal cavities are contiguous ; the swimming legs are

highly developed, the femora and tibiæ being broad ; their tarsi are moderately stout, quite as long as the tibiæ, the basal joint as long as the three following ones together ; the femora on their lower face are marked with a series of punctures, very distant from the hind margin, and not setigerous. The middle legs also are broad.

So far as yet known the genus is confined to Madagascar and tropical Africa.

I have only been able to study it in a very imperfect manner, but it appears to me very distinct from *Noterus*, by the simple slender antennæ, the broader swimming legs, the less developed anterior tibiæ, which, however, have a greater development of the apical spur, as well as by details of less importance.

I. 6.—Genus *NOTERUS*. (*Vide* p. 265.)

The six species composing this aggregate have a peculiar facies, being transversely convex above, flat beneath, and much narrower behind than in front ; they have an extremely polished surface, with a greater or less development of isolated punctures towards the posterior part of the elytra. The antennæ are liable to extreme and extraordinary sexual developments ; in the female they are moderately stout, with one or more of the middle joints slightly broader than the others, while in the male they are more or less incrassate, and one or more of the middle joints become extremely developed and of strange form. The last joint of the labial palpus is dilated and notched. The prosternal process is moderately broad, with its apex obtuse ; the front coxæ are placed at a considerable distance from the front of the prosternum. The front legs show great sexual differences ; in the females the anterior femora have a slight curved emargination on the front of the lower margin of the femur ; in the male this notch is much larger. The tibia has its outer margin densely set with short ciliæ, and its outer apical angle completely rounded off ; in the male the tibia is broader than in the female, and its inner margin bears a large angular prominence near the extremity ; the tarsus is inserted in a large cavity on the posterior face of the tibia, and from this spring two spurs, one placed near the inner margin scarcely projects beyond the apex of the tibia and easily escapes observation, the other one is much longer, and is gently curved, and it is directed somewhat towards the outer margin and projects much beyond the tibia, being usually closely applied to the inner edge of the basal joint of the tarsus. In the female the basal joint of the tarsus is stout, and as long as the three following joints together : in the male it is extremely large and incrassate. The suture between the hind coxæ and the metasternum is quite distinct, and nearly attains the middle coxal cavity.

The coxal processes are largely developed, and a good deal prolonged at the outer angles : the coxal cavities almost quite contiguous. The swimming legs are rather stout, the femora traversed by a series of punctures placed parallel with the hind margin,

and bearing each a fine seta which does not project beyond the margin, these setæ are in some species more numerous and crowded together at the extremity and there collected into a kind of depression on the face of the femur, but do not project beyond its margin. The tarsus is a little longer than the tibia and is terminated by two equal claws, the basal joint is about as long as the three following ones together.

The species of this genus as yet known are peculiar to the European and Mediterranean region with one in Japan. *Noterus lævis* is the highest, *Dytiscus clavicornis* the lowest species of the genus; there is a very great difference between the development of the swimming legs in these two forms: the former species shows also the greatest development of the sexual characters, and is remarkable also for the accumulation of setæ at the extremity of the hind femora; in this latter respect *N. japonicus* is intermediate between it and the other species.

The genus presents a very interesting peculiarity, consisting in the development of patches of dark colour, on the undersurface of the body and legs in the male sex only.

I. 7.—Genus *COLPIUS*. (*Vide* p. 267.)

This is an isolated insect, of subhemispherical form, but nevertheless acuminate behind: the surface is dull, the upper face covered with a dense fine sculpture, the lower with an extremely coarse irregular sculpture. The antennæ are rather slender and subserrate internally.

The apical joint of the labial palpus is dilated and notched: the prosternal process is large, and broad, not truncate behind, but only very obtusely acuminate, it is bordered by a raised margin, and is continued forwards quite on one plane, till at the anterior margin of the prosternum it presents a vertical face: the anterior transverse band of the prosternum is small, the rather large coxæ being placed near the front margin. The middle coxæ are small and globose; the metasternum seems to be separated from the hind coxa by a nearly straight transverse suture, which however is rendered extremely obscure by the coarse sculpture; the coxal processes are very broad, and become broader behind, but their outer angles are very little produced backwards, the coxal cavities are separated by a rather broad space. The epipleuræ of the elytra are very broad at their basal portion, and continue distinct, although narrow, till near the extremity of the body. The front legs are extremely modified, and most peculiar: the femora are subcylindric and a little curved: the tibiæ are articulated and shaped in such a manner that what should be the outer edge is the lower one, and the inner edge is the upper one, the natural front face looking outwards; the upper edge is rounded and polished and terminates in an elongate, stout, acuminate hook, this appears to be continuous with the tibia and the tarsus has the appearance of being inserted at a distance from the extremity. The basal joint of the tarsus is about as long as all the other joints together, and is in the male much incrassate. The intermediate legs are feeble. The swimming legs are

very little developed, and quite feeble, the hind margin of their femur bears some very elongate setæ at the apex, the tarsi are rather shorter than the tibiæ, and their basal joint is longer than the three following ones together.

This insect is peculiar to North America.

It is an interesting example of very different stages of evolution of portions of one organism; the very feeble and low organization of its swimming legs contrast very forcibly with the extremely high differentiation of the anterior legs. It is probably a very inactive creature: and apparently rare, as I have not been able to obtain a specimen for dissection.

I. 8.—Genus *SUPHIS*. (*Vide* p. 268.)

Three species is all that at present is known to constitute this aggregate; their individuals are of very peculiar form, being extremely convex above, and of very short oval form, attenuate and acuminate behind; the general colour is obscure yellowish, with the elytra darker and obscurely spotted; the upper surface is closely punctured, and on the undersurface the breast is coarsely sculptured. The antennæ are rather long and slender, the apical joints subserrate internally. The prosternal process is broad, truncate, or very nearly so, behind, and is continued forwards between the coxæ, but is somewhat gradually flexed towards the front, so that it only presents in front a very small vertical face; the large anterior coxæ are globose, and extend nearly to the front of the thorax, which presents only an extremely small band in front of them; the metasternum is separated from the hind coxa by a suture which departs but little from a straight transverse line: the coxal processes are very broad, nearly parallel sided, and are nearly truncate behind, the coxal cavities are separated by a rather broad space, which is marked off on each side by a broad, rather distinct, coxal notch. The front legs, and the other characters are much the same as in *Colpius*.

The genus is restricted to the tropical parts of the New World.

I. 9.—Genus *CANTHYDRUS*. (*Vide* p. 269.)

This aggregate consists of about forty species; they are small insects attaining only about 3 m.m in length, they are short in form, very convex above, much acuminate behind, frequently variegated in the colour of the upper surface, and this may be either very polished and free from sculpture, or on the contrary coarsely punctured. The antennæ are very short, slender, frequently with one or more of the intermediate joints a little larger than the others. The last joint of the labial palpus is greatly dilated and obscurely notched or emarginate; the prosternal process is rather large and a little longer than broad, it is nearly truncate behind, the angles being nearly rectangular, the front coxæ are not greatly separated from one another, and there is a moderately long anterior band of the prosternum; the

middle of the prosternum shows no perpendicular face in front in the middle; the pectoral prominence is very coarsely sculptured while the adjacent lateral parts are smooth; the suture between the hind coxa and metasternum approaches near to the middle coxa; the coxal processes are highly developed and greatly prolonged behind, the prolonged angles being rendered sharply acuminate by bearing some rigid ciliæ; the swimming legs are rather slender, the femora and tibiæ but little flattened or laminate: the former bear a well developed group of ciliæ at the extremity of their hind margin; the tarsi are about as long as the tibiæ, their basal joint as long as, or longer than, the three following ones together.

This genus has been mixed with *Hydrocanthus*, but was separated by Crotch so far as regards the North American species; he suggested for it the name of *Suphisellus*, but not in a formal manner—only as it were hypothetically, and I have thought it on the whole better to use a new name.

It is very distinct from *Hydrocanthus*, by the small size, the greatly narrower prosternal process, and the feeble swimming legs.

The species seem to be found in the warmer parts of both hemispheres, but so far as yet known are absent from Australia.

I. 10.—Genus *HYDROCANTHUS*. (*Vide* p. 279.)

This aggregate consists of about twelve species; they are the most highly organised of the Noterides, the size varies between 4 and 8 m.m. of length, the form is somewhat elongate, very acuminate behind, very convex transversely above, the surface is extremely polished, and is never variegate by spots or stripes. The antennæ are slender, and are rather short, the middle joints of the antennæ often distinctly a little longer than the others, but scarcely broader. The terminal joint of the labial palpus is excessively dilated, but a notch or emargination can scarcely be detected on it. The front coxæ are rather broadly separated, and the prosternal process behind then becomes extremely broad, so that it is frequently much broader than long, it is nearly truncate behind, and its angles are either rectangular or acute; the front band of the prosternum is rather large, and does not present any perpendicular face in the middle; the pectoral prominence is very highly developed, so that there is formed as it were a continuous prominent platform extending along the middle of the body from the front coxæ to the hind legs, and becoming broader as it extends backwards; this prominence is more or less punctate, while the adjacent parts are smooth; the suture between the metasternum and hind coxa, does not approach very near to the middle coxa; the coxal processes are highly developed, and greatly prolonged behind, the prolonged angles being rendered acute by a group of rigid ciliæ: the swimming legs are highly developed, the femora and tibiæ being much incrassate and flattened, the former are traversed along the middle of their lower face with a series of punctures parallel with the hind margin, and are furnished at the extremity of their hind margin with an extremely highly developed

group of prominent ciliæ; the tarsi are as long as but much more slender than the tibiæ; the middle legs also are a good deal incrassate and laminate.

These insects are distributed over a broad zone of the tropics extending from Northern Australia, through the Indo-Malay region, Madagascar and tropical Africa, to America, and in this latter part spread northwards to the United States, where a species is found even so far north as Massachusetts. The Australian species is decidedly a lower, or less evolved form than any of the others.

I. 11.—Genus *MACROVATELLUS*. (*Vide* p. 282.)

This aggregate consists at present of seven species. They are insects of rather elongate form, and equal in size the largest Hydroporini, attaining 7 or 8 m.m. of length; the outline of thorax and elytra is very discontinuous, the colour is obscure and scarcely variegated, the upper surface is very densely punctured. The prosternal process is broad and very abruptly bent, and terminates in a point which is concealed between the front of the middle coxæ; these latter are perfectly contiguous, and the mesosternal fork cannot be perceived. The mesosternum is placed at a very obtuse angle with the metasternum, so that it is extremely exposed, between the prothorax and metasternum; the posterior coxæ are large; the coxal lines are divergent and widely separate in front, but approximate behind, they do not extend quite to the apices of the coxal processes, and their indistinct terminal portion is quite evidently turned outwards, and the coxal borders are much prolonged in the transverse direction; the posterior trochanters and ventral sutures are nearly normal: the suture between the second and third segments is not quite obliterated in the middle.

The sexual differences seem to be very slight.

The species are found only in the warm parts of the New World, and are extremely rare in collections.

I. 12.—Genus *VATELLUS*. (*Vide* p. 285.)

This is an autogenus; the insect is of Hydroporoid form, but with very discontinuous outline, and very elongate anterior tarsi, it is of obscure colour, with very densely punctate upper surface. The prosternal process is rather elongate, and is abruptly bent, and terminates in a point concealed between the fronts of the middle coxæ; these are quite contiguous and exposed; the mesosternum is placed at a very obtuse angle with the metasternum, and in consequence is largely visible between the prothorax and metasternum; the hind coxæ are large, the coxal lines are rather strongly elevated, a good deal divergent in front, approximate behind, and extending quite to the extremity of the coxal processes, and not turned outwards; the coxal border has a large extension in the transverse direction, though very short longitudinally. The posterior trochanters are thick and globular at their extremity.

The ventral sutures are very deep, that between the second and third abdominal segments very deep even in the middle.

The sexual distinctions are very slight. The only species known has been found in Cayenne.

I. 13.—Genus *DEROVATELLUS*. (*Vide* p. 286.)

This is an autogenus; the insect is of the size of an average *Hydroporus*, and has much the appearance of the species of that genus; the upper surface is densely and rather finely punctured. The prosternal process is short and broad, rhomboidal in form, with its extremity received between the middle coxæ; these are exposed, and contiguous. The mesosternum is placed at a slightly obtuse angle with the metasternum, and is not much exposed: the coxal lines are a little divergent in front, but not much separated, and are indeed approximate through their whole length, they are however distinctly turned outwards in their terminal portion; the coxal border has very little extension in the transverse direction. The posterior trochanters are normal, as are also the ventral sutures, that between the second and third segments being quite obliterated in the middle: the claws of the front tarsi are excessively minute. The sexual distinctions are very slight.

The insect inhabits tropical America.

I. 14.—Genus *LACCOPHILLUS*. (*Vide* p. 287.)

About eighty species compose this aggregate. They are insects of small size, the largest attaining only 6 m.m. of length; the upper surface is frequently more or less variegate, though generally in an indefinite manner, and its sculpture is either slight, or wanting, giving place to a very polished surface, the underside is free from sculpture except that there are elongate, oblique scratches on the ventral segments; the form varies from nearly elliptical to an oval, and is never very convex, the outline is very continuous.

The head is very short and broad, the portion in front of the eyes being extremely short, the eyes of moderate size have their circular inner outline only very obscurely infringed on at the insertion of the antennæ: the head in front shows no trace of a raised margin, its emarginate-truncate front edge being very thin and closely applied to the exposed labrum. The antennæ are slender and quite symmetrical, showing no peculiar forms or sexual differences; the parts of the mouth are small and the palpi simple. The thorax is without any lateral margin, and almost without any punctures along the margins. The scutellum is quite concealed. The prosternum is very small, the small, conical, front coxæ being placed very near the front, so that there is only a very short transverse band in front of them; the prosternal process is remarkably small, very acuminate, much compressed, and frequently its apex is prolonged so as to form a very slender, elongate, excessively

acuminate spine; the front coxæ are very approximate, and the prosternum in front continues the plane of direction of the prosternal process; the mesosternum is placed almost completely at right angles to the metasternum; its epimeron is large, and very broad at the metathoracic-episternal angle: its fork is small and inconspicuous. The metasternum is elongate in the middle, but excessively reduced at the side; it approaches very near to the middle coxa, and is afterwards deflexed outside the anterior border of the hind coxa, forming a slender very curved band; the inter-coxal process is very narrow owing to the great approximation of the middle coxæ, and is curved up in front to form a minute but perfect articulation with the mesosternal fork, it is marked by a very fine groove (of variable length) for the reception of the extremity of the prosternal process. The hind coxæ are of enormous size, and extend greatly forwards so as to possess an extremely arched anterior border; the coxal lines are of peculiar form, they are very distinct, and commence in front at the apex of the metasternum being there much approximate to one another, they extend backwards, diverging from one another till each reaches the outer hind angle of the process; the two processes are completely soldered quite to the hind margin, which thus presents a truncate edge; the coxal border is very distinct and definite, it is broad in front but terminates in a point behind: the coxal cavities are completely contiguous and very much concealed and protected by the processes; no coxal notch can be detected, unless a slight sinuation of the hind margin of the process be considered to represent it. The anterior and middle legs are feeble, their tarsi conspicuously 5-jointed and without any trace of lobing of the third joint. The swimming legs are highly developed and powerful, their femora are broad and are laminate at their hinder outer angle, which is nearly a rectangle and well marked; the tibiæ are short and stout, much shorter than the femora, and terminated by two sublinear highly developed spurs, which are not acuminate, but are minutely emarginate at the extremity; the tarsi are of peculiar and characteristic form; when their outer or upper face is observed it is seen that the hind margin of each joint deviates greatly from a straight line, the outer portion of the joint being produced backwards, so as to form a kind of lobe projecting over the following joint; the basal joint is about as long as the two following ones together, the terminal one is broad, and bears a single short stout claw.

The abdominal stigmata are all small and circular.

The male tarsi are but little developed, sometimes it is not easy to distinguish any difference between their structure and those of the female; they show very little dilatation and when they are thickened the incrassation is quite as great in the vertical as it is in the horizontal direction; no sexual sculpture has been detected in the female.

An interesting feature in certain species of this genus is the existence of a stridulating structure consisting of a curved series of grooves on the hind coxa; these are played on by a single, very obscure elevation situated on the anterior edge of

the upper surface of the hind femur ; this structure is more developed in the male than in the female, and is indeed entirely wanting in the latter sex of certain species in whose male individuals it is conspicuous. It exists in various states of delicateness, and certainly the sound produced must be at the best very feeble, probably inaudible to the human ear, while in certain species where the apparatus is extremely fine it seems to me impossible that any sonorous vibration could be produced capable of affecting a nerve, unless this be assisted by a highly developed apparatus equal even to that of the human ear

The species of *Laccophilus* are distributed over all the warmer and temperate parts of the world, except the Pacific Islands and New Zealand ; the stridulating species are confined to the New World with the solitary exception of the European *Dytiscus interruptus*, and it is quite probable that this species ultimately may be found to be also a North American one.

I. 15.—Genus *NEPTOSTERNUS*. (*Vide* p. 317.)

Under this name I have isolated a single species, in many points closely allied to *Laccophilus* but in others singularly different therefrom ; it is an insect of polished surface, of the size, and with much of the appearance, of a *Laccophilus*, of a yellowish colour, with the elytra dark, marked with large yellow marks : the thorax has an obscure marginal series of punctures in front, the ventral segments are destitute of scratches.

The broad head is moderately elongate, and the eyes are placed so that a considerable space separates their hind margin from the front margin of the prothorax. The outline of the thorax and elytra is perfectly continuous, and the hind angles of the thorax are much prolonged backwards so that they are extremely acute, in fact they form a long slender spine ; the hind margin of the thorax in the middle is straight not acuminate as in *Laccophilus* ; the prosternum in front of the coxæ is not quite so short as in *Laccophilus*, and the coxæ are not so approximate, while the prosternum behind them expands into a trispinose process, the middle spine of which is longer than the two lateral ones ; the front coxæ are very small. The wings of the metasternum are excessively slender, the hind coxa being in fact very little separated from the middle coxa ; these are more widely separated by the inter-coxal process than they are in *Laccophilus*. The hind coxæ though large are not so enormous as in *Laccophilus*, and their front border forms a very much flatter arch. The coxal lines are strongly elevated and remarkably distinct ; the swimming legs are more slender than in *Laccophilus* ; the spurs of their tibiæ are slender and very acuminate, and the lobing of the joints of the comparatively slender tarsi is much less distinct than it is in *Laccophilus*.

This, at present isolated creature, is found in Madagascar and Zanzibar.

I. 16.—Genus *AMPHIZOA*. (*Vide* p. 318.)

Three closely allied species form this aggregate. They are insects of somewhat elongate, moderately convex form, the outline much interrupted at the junction of the thorax and elytra; the colour is an uniform dull black, and the surface is sculptured with a coarse, indefinite, but close punctuation.

The head is rather broad and short; when in position in the thorax its breadth is about one-fourth greater than its length from the front of the thorax to the front of the clypeus, and when extracted the breadth is still a little greater than the length: the eyes are rather small in proportion to the size of the head, they are slightly convex and prominent, and occupy chiefly a lateral position, their encroachment on the area of the upper and undersurfaces being but small. The clypeus is separated from the posterior part of the head by a fine suture, distinct across the whole width of the head, the clypeus has about twice the area of the exposed portion of the labrum, and is quite continuous with the plane of that part; the anterior angle of the clypeus is not folded under in front of the antennal cavity. On the under surface the transverse sutures on the lateral portions of the head are very difficult to trace. The mentum is united with the base of the head by a very fine nearly obliterated suture, and is extremely large, and extends forwards quite as far as the front of the labrum, the mandibles and maxillæ being completely covered by its large lateral wings; the outer lobe of the maxilla is curved and palpiform, but is not divided by any articulation.

The antennæ are short and stout, and of simple construction, their basal joints are punctate or porous; this punctuation becomes more indistinct on the terminal joints so that the outer ones are nearly smooth and shining; there is no pubescence to be seen on any of the joints.

The prothorax has the pronotum flat, the sides coarsely and irregularly crenulate so that it would be incorrect to say that there either is or is not a lateral margin. The prosternum is rather large, the length of the band in front of the coxa being equal to that of the coxal cavity, along the middle in the longitudinal direction it is flat, and shows no trace of any thickening along the middle, it is prolonged backwards between the rather widely separated coxæ, so as to form a flat, short, broad, prosternal process, the extremity of which is truncate-rounded: the side pieces are large, the suture between the anterior and posterior of them is in some individuals difficult to detect, but when seen it is found that the posterior piece is of large area, probably more than half that of the anterior piece. The coxæ are suborbicular and rather small.

The mesosternum is rather small, and its plane of extension is almost a continuation of that of the metasternum, so that in the natural condition the mesosternum is quite visible between the meta- and pro-sterna, its epimera are triangular: thus the general form and relative size and disposition of its parts are singularly similar

to the higher Dytiscidæ (such as *Cybister*), with the exception that the fork by which it terminates below is but little developed.

The sternal pieces of the metathorax are rather large and have more than twice the area of the corresponding pieces of the mesothorax. The metasternum projects in the middle in front between the middle coxæ to form a broad inter-coxal process; this meets the apex of the prosternal process but is not impressed with any groove, nor does the apex of the prosternal process extend on to it. At the hind border in the middle there is a short transverse suture. The episterna are narrow behind, but in front are prolonged inwards so as to touch the middle coxæ. The epimeron is quite covered by the elytron, but on dissection is found to be quite the same as regards its articulations and nearly the same in form as it is in the higher Dytiscidæ (*Cybister*).

The hind coxæ are rather large, and have fully one-half of the area of the metasternal pieces; they are separated in front from the metasternum by an approximately straight, or directly transverse, suture; this suture is however slightly undulated and its nearest approximation to the middle coxa is at a point which is considerably nearer to the mesial line of the body than it is to the epipleura; the internal laminae of these coxæ are large and are closely applied to one another along the mesial line, externally each is separated in an abrupt manner from the outer or femoral lamina, and the line of separation is in front much directed outwards, and does not reach the metasternum, it is not marked by any definite impressed line so that there is no true coxal border, the articular cavities are widely separated, and terminate internally in such a manner as to form a short broad notch.

Hind-body with six visible horny, ventral segments; the first one interrupted in the middle by the hind coxæ, the second scarcely at all infringed on by the coxæ, but with its middle part distinctly prolonged forwards, so as to form an obtuse triangle adapted to the apex of the articular portions of the hind coxæ: the ventral sutures are all distinct.

The scutellum is large, and exposed at the base of the elytra.

The wing-case has a well developed epipleura, which is very broad at the base but becomes greatly narrower at the side of the first ventral segment, and continues rather narrow till the commencement of the last segment, where it disappears; this epipleura is very much inflexed, and very closely embraces (or is coadapted with) the flanks of the undersurface of the body: at the base of the wing-case, on its inner face, there is a free scutellar membrane.

The ventral segments have a lateral border, which is clearly divided into two portions, each of which is horny, the upper portion on each segment is about equal in width to the lower, and the pieces on the successive segments from base to extremity continue of about one width, except that on the terminal segment the lateral pieces disappear from the posterior half of the side of the segment.

All the legs are elongate and slender, and peculiarly free from ciliæ and setæ, there exists however a slender band of elongate ciliæ placed in a groove on the outer

edge of the middle tibia: none of the legs are in the least incrassate or modified for swimming: and the tibia of each is terminated by two short, subequal spurs.

The sexual distinctions are unknown to me, as also are the position and condition of the stigmata.

The above characters are drawn from a specimen of *Amphizoa insolens*, Lec.

Amphizoa is peculiar to California, it is a completely isolated creature and yet at the same time a so-called synthetic type.

It has been much discussed whether the genus should be classified in the Carabidæ, or in the Dytiscidæ, or should form a distinct family: and some of the ablest of modern Coleopterists have treated the question. Leconte, the original describer of *Amphizoa*, considered it the type of a family distinct both from the Carabidæ and the Dytiscidæ; Lacordaire classified it among the Dytiscidæ, while Schaum described it as a Heteromeroïd form of Carabidæ, and another entomologist actually described the insect as a member of the Heteromera. I am with Horn unable to detect the least approach to the Heteromera, and think Schaum's opinion quite incorrect. For each of the opposing views of Leconte and Lacordaire much may be said, and I have decided to give *Amphizoa* a place, but a quite isolated one, amongst the Dytiscidæ, for the following reasons:—

The peculiarities of the Dytiscidæ have been produced in accordance with two main facts of their existence, first that they live in the midst of water, and second that they locomote through and in that medium: while the Carabidæ live on the surface of the earth, or do so approximately; the structural peculiarities of the two families are correlative with this difference of the conditions of existence. The antennæ of the Dytiscidæ are different as regards their sensitive structure from those of the Carabidæ because the medium through which the origin of the sensations is conveyed is different;* so the locomotive organs in the two families act under profoundly different conditions, the legs of a Carabus walking on dry ground have to overcome the influence of gravity and both lift and support and move forward the being at each step; the Dytiscidæ are of nearly the same specific gravity as the fluid in which they live, but are a little lighter than it, and their legs have to act so as to slightly drive down their bearer at they same time as they move it forwards; the legs of a Carabus find the medium which directs their action only beneath their body, and only a small portion of the limb can come in contact with this medium, while the Dytiscidæ have the whole body and leg surrounded by the medium; hence the leg as a lever acts in a different direction, so that it may be quite correctly said the differences in structure of the legs of the Carabidæ and Dytiscidæ are perfectly in accordance with differences in their environment.

* The special reason may be either, that the physical impulses acting on the antennæ are not transmitted through water; or that water in contiguity with the apparatus of sensation is incompatible with its functional activity.

Amphizoa shares the conditions of existence of Dytiscidæ completely as regards the medium in which it lives, but only incompletely as regards its locomotion ; it lives in water constantly but does not move through the water, but clings to stones and moves about on them ; (the structure of its tibiæ and tarsi are of themselves sufficient to show that it is not a swimmer or diver) its legs however have not to overcome the influence of gravity, and they become forward propellers, not lifters, and they propel by pushing not against water, but against the surface of the stones beneath or behind them ; the structure of these propellers is therefore a singular *mélange* of the structures of these parts in Dytiscidæ and Carabidæ, the coxæ are modified absolutely in the Dytiscidæ direction ; while the other parts of the leg remain absolutely as in the lower Carabidæ. Strictly speaking therefore Amphizoa is neither Dytiscid nor Carabid. Nevertheless after this has been granted there presses itself on us this incontrovertible fact, viz., that in most of the points in which Amphizoa departs from Carabidæ it becomes Dytiscid, to which we must add the important fact that in the structure of its middle coxal cavities it possesses peculiarities found in no other beetles except itself and the Dytiscidæ. Amphizoa is therefore for me a member of the Dytiscidæ, that differs from all other members of the family by its want of means of swimming through the water, and occupies a completely isolated position in the family aggregate.

Viewing the matter as a point of synthetical classification I assert boldly and without fear of contradiction this: that Amphizoa should be united with the Dytiscidæ in a synthesis prior to the synthesis that unites together Dytiscidæ, Amphizoa, Carabidæ, Haliplidæ, and Cicindelidæ as one aggregate.

Dr. Horn has reviewed the opinions of Leconte, Lacordaire and Schaum, and stated (Tr. Am. Ent. Soc. 1867, p. 158), "with the Dytiscidæ, Amphizoa has but little in common excepting the large size of the posterior coxæ. The parts of the mouth have but little analogy to those of Dytiscidæ." He gives however no further reason for its separation from Dytiscidæ ; and I cannot myself consider that the parts of the mouth separate the insect from Dytiscidæ ; the large size of the mentum is a fact of great interest but evidently of comparatively little importance ; the only other point of difference in the trophi from Dytiscidæ is the absence of a division in the external lobe of the maxilla ; but this point is merely a question of development, for I have no doubt it will be shown that all the primitive Dytiscidæ (and Carabidæ) had an inarticulate external lobe to the maxilla ; and moreover in the neighbouring family Carabidæ we find that although the lobe is biarticulate in nearly the whole of its enormous number of species there are yet one or two exceptions in which it is only unarticulate as in Amphizoa. Further, the parts of the mouth have not been examined in many Dytiscidæ, and it is quite possible that some true Dytiscidæ may be found to have a simple external lobe on the maxilla.

I come to the conclusion then, that Amphizoa cannot be considered a distinct family of Coleoptera from the Dytiscidæ and Carabidæ, in the same sense as Dytiscidæ

and Carabidæ are themselves distinct families, and that as its departures from the Carabidæ are in the Dytiscidæ direction it may be placed with the latter. It is a creature which may be considered to have retained a more primitive condition in certain portions of the organization, (antennæ, maxillary lobe, and legs, coxæ excepted) than have other members of the Dytiscidæ or Carabidæ, while its hind coxæ and thoracic segments have been the subjects of an evolution similar to that of the same parts in Dytiscidæ. It is Dytiscid inasmuch as it lives in water, it is Carabid inasmuch as it moves on a solid surface in that water; now as there are no Carabidæ having the middle coxal cavities formed as they are in Amphizoa and as in this respect it agrees with the majority of Dytiscidæ, these reasons entitle us to place it with the latter in a natural classification.

Note.—I consider that the punctate antennæ of Amphizoa may be justly considered a more primitive condition of those organs than the pubescent antennæ of Carabidæ or the glabrous antennæ of Dytiscidæ, for the following reasons; the antennæ of Carabidæ are complex organs of sensation, perfection being obtained by means of punctuation (?), setæ, and delicate pubescence,* the simply punctate antennæ of Amphizoa are therefore clearly more primitive than the punctate-setose-pubescent antennæ of Carabidæ. As regards the comparative primitiveness of the glabrous antennæ of Dytiscidæ and the punctate antennæ of Amphizoa, the facts are not so clear, and it would at first appear that the glabrous antennæ of Dytiscidæ should be treated as more primitive than the punctate Amphizoa antennæ; but there is reason to believe that the antennæ of Dytiscidæ have been more or less punctate before becoming glabrous; thus in *Pelobius* (the most imperfect Dytiscid or Carabo-Dytiscid), the basal joint of the antennæ is a good deal punctured, in *Scutopterus* (*S. horni*, Crotch) a higher form, a slight punctuation of the basal joint exists, and traces of such punctuation may be perceived even in *Dytiscus*, while in the highest Dytiscidæ (*Cybister* for example) the antennæ are completely polished and free from punctuation. In writing of these insects I consider therefore I am entitled to treat antennæ with a punctuation on the basal joints as more primitive than polished, or highly pubescent, antennæ.

I. 17.—Genus *HYDROVATUS*. (*Vide* p. 321.)

This aggregate is formed by the union of about forty species. The individuals are of small size, and of broad, convex, short, sometimes quite rotund form; the elytra are more or less acuminate behind, and there is frequently a small spine projecting from the termination of the body; the swimming legs are very slender and little developed. The clypeus is large, and overhangs the labrum; this, however, is seen to be exerted and visible when the undersurface of the head is

* I say this without considering at all what relation this punctuation may bear to the pits described by Erichson and others as forming part of the sensitive apparatus of the antennæ of the Coleoptera.

examined. The prosternal process is broad and short, in fact subtriangular, with the base of the triangle placed behind; the point of junction with the prosternum is marked by a slight tubercular projection. The middle coxæ are rather broadly separated. The hind coxæ are about twice as great in area as the metasternum, their upper border subparallel with the lower one, but still, near its outer termination, distinctly arched in front; the hind coxal cavities are not contiguous, and possess a very distinct opening or coxal notch, and external to this there is a projecting portion (extra-rimal portion) of about equal width to that of the intra-rimal portion; this extra-rimal portion conceals and protects the outer part of the articular cavity. The coxal lines are very fine, but a good deal divergent in their anterior part. The swimming legs are slender; their femora are slender, and are rounded at the extremity, their tibiæ and tarsi are very slender and very little ciliate, the latter are not compressed laterally, and are terminated by two small, slender, equal, curved claws. The front and middle tarsi are very short, four-jointed, the third joint imperfectly bilobed. The elytra have on their inner face a raised ridge, which is somewhat waved near the apex, but is not provided with any articular tongue; they have a genicular fossa at the shoulder, (or base of the epipleura).

The sexual differences are found chiefly in the antennæ and in the sculpture; they are remarkable in a few species, but in the majority are inconspicuous; it is probable that in some species dimorphism of sculpture occurs in the females, but I am not able to announce this with certainty.

The aggregate is very widely distributed on the surface of the earth, but does not occur in the northern regions, and is unknown in New Zealand and the Pacific Islands.

The species are very difficult to distinguish *inter se*, and moreover it is certain that only a small portion of those existing are known to me. Under these circumstances it would be useless to attempt any tabular discrimination of them: comparison of fresh individuals with those already named and described will be, in the present imperfect condition of our knowledge, the only trustworthy mode of determination. Anyone attempting to discriminate the species should note the nature of the margin of the front of the head, and examine carefully the structure of the antennæ and tarsi.

I. 18.—Genus *QUEDA*. (*Vide* p. 336.)

A single species is isolated under this generic name. It is an insect somewhat similar in form to the *Hydrovati*, but exceeds them in size. The characters are to a large extent similar to those of *Hydrovatus*; but the head is completely rounded in front, and has a very evenly raised margin, and the labrum is so extremely concealed that on the most careful examination only the long fringes by which it is terminated, and its outer angles, can be detected. The coxal lines are subparallel, the coxal opening is broader and shorter, and the extra-rimal portion is broader and completely

conceals the articular cavity : the ridge on the inner face of the wing-case is broader near the apex and distinctly bisinuate. (So far as I can see there is only one very short claw terminating the hind tarsus, but this requires confirmation.)

When fully known I think it probable the departure from *Hydrovatus* will be found very decided ; it is worthy of note that this interesting form approaches considerably in appearance and in some of its characters to its geographical consort, *Pachydrus*.

This autogeneric species is found in tropical America.

I. 19.—Genus *HETERHYDRUS*. (*Vide* p. 337.)

This autogenus is formed by a species whose individuals have the size and form of an elongate *Hyphydrus*, and this resemblance is rendered still greater by a similarity in the head and swimming legs to those of *Hyphydrus*. The head is quite rounded and evenly margined in front, and the labrum is exerted on the under-surface; the prosternal process behind the coxæ is very broad and short, and its hind margin forms in the middle so very obtuse an angle that it may be called sub-truncate. The hind coxæ are extremely large, and the suture between them and the metasternum is very obliterated; their articular cavities are widely separated, and quite exposed, being placed external to the broad adpressed coxal process, and not protected by any portion of it. The swimming legs are apparently similar to those of *Hyphydrus*, even as regards the tarsi and claws. As I have only a single (badly preserved) individual of this creature at my disposal I am unable to ascertain more completely its characters. It appears however to be allied to the South American *Pachydrus*, from which it differs by the exerted labrum, and by the fact that its hind coxæ have their anterior border less arched, and less approximate to the middle coxæ. Whether the coxæ be soldered with the ventral segments is not ascertained, but in my classification I have taken it for granted that such is the case.

This interesting autogenus is found in Madagascar and tropical Africa; I have little doubt that other species will be discovered.

I. 20.—Genus *PACHYDRUS*. (*Vide* p. 338.)

Five species form this aggregate ; they are insects of broad and short, rounded form, excessively convex beneath, and without colour variegation on the surface.

The head is broad and short, and is rounded and margined in front, the labrum is not visible from the front, but when the undersurface of the head is looked at it is found to be slightly exerted. The prosternum is very small, and has a short, broad—broader than long—process ; this prosternal process is carried forwards between the coxæ as a raised narrower process, till it terminates very abruptly, more than half way towards the front of the coxæ, as an abrupt acute projection.

Middle coxæ rather widely separated; the intercoxal process of the metasternum is slightly emarginate in front, in adaptation to the prosternal process; the metasternum is elongate in the middle, and its side wings are extremely slender; the hind coxæ are extremely large, their articular cavities are very widely separated, and are quite exposed and unprotected, being placed quite outside of the broad coxal processes which are adpressed to the level of the ventral segments; the hind border of the coxæ is completely soldered to, and amalgamated with the basal ventral segment. The hind legs are rather slender, their tibiæ and tarsi not much ciliate, the latter terminated by a stout short claw, (there exists a second claw, but it is so short that it can only be detected by a most careful examination). On the inner face of the wing-case the raised ridge has a very strong double wave near the extremity. The anterior and middle tarsi are small, four-jointed, the third joint bilobed, the fourth joint exserted, and of about the same length as each of the other joints.

Although these insects have hitherto been classed with the old world Hyphydri, and not in any way distinguished therefrom, they are really widely different. The soldered ventral segment is of great importance as a distinguishing character, but besides that, the genus has the hind articular cavities more widely separate, and the upper border of the coxæ different in form; the prosternum is still more reduced, while its process is broader and larger, and the inter-coxal band is prominent; the anterior tarsi are formed as in *Hydrovatus*, and very different from those of *Hyphydrus*. External marks of the sexes are scarcely to be found, and the colour of the upper surface is without the variegation existing in *Hyphydrus*.

The Pachydri are peculiar to tropical America and the West Indian Islands.

I. 21.—Genus *DESMOPACHRIA*. (*Vide* p. 340).

About twelve species form this aggregate; they are minute or small insects, of short, broad form, convex beneath. Front of head margined, the clypeus overhanging the labrum, but when viewed from beneath the latter is seen to be distinctly exserted. Prosternum extremely minute, forming in fact merely a slender frame for the coxæ: prosternal process minute, rhomboidal, acuminate behind. Middle coxæ distinctly separated. Metasternum very long in the middle, with its curved side wing excessively slender, so as to be a mere line, the suture between it and the coxa is however excessively obliterated so that this character is not easily appreciated. Hind coxæ enormous, their processes quite adpressed to the ventral segment, moderately broad, and leaving quite exposed the coxal cavities: hind border soldered to first ventral segment. Hind legs moderately stout; their rather stout short tibiæ of even thickness throughout. Front and middle tarsi small, four-jointed, third joint but little lobed. Elytra on inner face at extremity with a single prominent ligula.

These small insects are readily distinguished from *Pachyhydrus*, by the minute prosternal process, by the different shape of the metasternum, (its middle part being more parallel sided owing to the greater development of the hind coxæ), and by the less widely separated hind coxal cavities. The species are either unicolorous, or are yellow, with a few thick black marks on the elytra (*H. minimus*, Wehneke, *Hydroporus dispersus*, and *H. latissimus*, Crotch); it is probable however that the latter group will prove to be a distinct genus, somewhat approximating to the Old World *Hyphyrus*, to which the species are similar not only by their colour, but also by the structure of their front and middle tarsi. External distinctions between the sexes appear to be extremely slight; but I find that in one or two species the prosternal process is of two forms, and this is probably a sexual character. One of the features of the Dytiscidæ, viz., the tendency to reduction in size of the pieces of the prosternum is in *Desmopachria* carried to the most extreme point it has reached in the family.

The genus is peculiar to the New World, but is probably represented by numerous species there.

I. 22.—Genus *BIDESSUS*. (*Vide* p. 344.)

This is a large aggregate comprising fully eighty species. They are insects of small or minute size, the largest attaining only about 3 m.m. of length, they are oblong, or oblong-oval, in form, (a few species however are of broad, short, form, convex beneath); with a sort of plica or longitudinal fold or impression on the basal portion of the thorax, a little nearer to the outside than to the middle, this fold very often is continued on the basal portion of the elytra. Head not, or only indistinctly margined. Prosternum small, front coxæ very small, prosternal process, moderately long, rather narrow, and acuminate, its length quite as great as the intercoxal portion of the prosternum. Middle coxæ nearly contiguous; when the prothorax is taken away, it is seen that the apex of the intercoxal portion of the metasternum does not reach to, or connect with, the middle furcate portion of the mesosternum, but a space intervenes between them, and in this space the middle coxæ are seen to be absolutely contiguous. Metasternum elongate in middle, excessively short at sides; hind coxæ very large; posterior cavities not contiguous, but not widely separated, the coxal processes being rather narrow, these are adpressed to the level of the ventral segments, the articular cavities quite unprotected, the coxal lines nearly straight and parallel, slightly convergent towards the apex; first ventral segment soldered to the hind coxæ: hind legs slender, their tibiæ with a slender basal portion, but from the middle to the apex gradually and distinctly thickened: front and middle tarsi 4-jointed, the third joint scarcely bilobed, the fourth joint exserted, quite as long as the third: no tongue on the inner face of elytra near the apex.

The genus as here limited seems to extend its variations of structure in the direction of several other aggregates from which however it is really distant. The

species of the widely separated *Sternopriscus*, for instance, resemble greatly *Bidessi* in appearance, and possess similar swimming legs and even the peculiar plicæ of the pronotum.

The natural arrangement of the species I am unable at present to accomplish owing to the minute size of the creatures and the consequent fact that they have not been sufficiently collected, so that material for dissection of many of the more peculiar species cannot yet be obtained. It is probable that the aggregate as here defined will prove to consist of more than one distinct primary aggregate or genus. The best indications I can give at present on this point are the following remarks :—

Nos. 242 and 243 are distinguished from all others by the fact that their head is truly and evenly margined; an approximation to *Desmopachria* is thus suggested and appears to be supported by some other details. The rest of the species have not the front of the head margined, although many of them have a kind of waved transverse thickening near the front, giving the appearance at first sight of a real margin.

Nos. 244, 245, and 246 no doubt form a distinct genus; although I am not able to examine them thoroughly owing to having only a single individual of each. The form approximates to *Hydrovatus* being very acuminate behind, the size is very minute the head is not margined in front, the coxæ and coxal cavities are formed much as in *Desmopachria*, while the prosternal process, depressed in the middle and carinate on each side, is like that of *Dytiscus geminus*; hind tibiæ as in *Bidessus*. A comparison with 242 and 243, as well as with *Hydroporus granarius*, is highly desirable. The thoracic basal impression is smaller than in *Bidessus* and there is none on the elytra.

Nos. 247 to 254 are insects of short broad form, without pubescence, with the punctures on the undersurface peculiarly large, and the sculpture on the upper surface also coarse, and the plica on the elytra remarkably developed, so that it assumes the form of an elongate carina extending for more than half the length of the wing-cases. It is in these species that the thickening across the front of the head above alluded to is most conspicuous. For one of them (*Bidessus maculatus*) Babington proposed the generic name *Anodocheilus*, which may ultimately prove of service, but at present the insect Babington had in view cannot be separated with advantage from the Old World *Hydroporus porcatus*, Klug. and *Hydroporus bicarinatus*, Clairv.

Nos. 255 to 260, by their posterior coxæ, which have a less extension in the longitudinal direction, are separated from the bulk of the aggregate, and by this, and the coarser, more evenly distributed punctuation of their undersurface, as well as by the form of their front and middle tarsi, an approximation is made to some *Hydropori*; these species however are approached more or less closely by *Dytiscus unistriatus* and others that I have placed in the same group of the genus.

The genus has a large distribution in both hemispheres.

I. 23.—Genus *HUXELHYDRUS*. (*Vide* p. 369.)

Under this name I have separated a species that has in some respects the appearance of the members of *Bidessus*, and likewise is similar to that aggregate in much of its structure, it however departs from them by some very interesting characters; the prosternal process is much more largely developed and elongate, it is flat and only faintly margined at the sides; the mesosternum is joined to the metasternum at a very obtuse angle; the hind coxal cavities are more widely separated from one another: the coxal lines are extremely rudimentary, being very fine and short, and visible only in the immediate vicinity of the cavities. To these peculiarities may be added, as of minor importance, that the prothorax is straight at the sides or rather slightly narrowed towards the base, that the undersurface is densely, finely, and evenly punctured, and the elytra are truncate at the apices; and that the terminal joint of the front and middle tarsi is much more elongate than in any of the *Bidessi*. Many of the peculiarities of this insect are repeated to a greater or less extent in some of the *Bidessi*, and in the isolated *Sternopriscus*, and even in some of the *Hydroporini*.

The *Huxelhydrus syntheticus* occurs either in Australia or New Zealand, and possibly in each of those regions.

I have made this generic name, as well as *Tyndallhydrus*, *Darwinhydrus*, and *Spencerhydrus*, in reference to some men whose clear thinking and able writing have placed us under a load of obligation, my recognition of which I am glad to express.

 I. 24.—Genus *TYNDALLIHYDRUS*. (*Vide* p. 370.)

A small species, of which only an unique individual is known to exist, is isolated to form this genus. At first sight one might fancy it to be an ally of *Dytiscus duodecimpustulatus* (*Hydroporini*), but it is much smaller, and presents the remarkable character of having its prothorax narrowed behind, so that the outline is interrupted as in the *Carabidæ*: and behind the front coxæ the prosternal process is bent upwards, its apex is therefore concealed and is quite separated from the metasternum. The surface is densely punctate, and almost destitute of pubescence: the middle coxæ are quite contiguous; the hind coxæ are large, their front border having a great extension in the anterior direction; the coxal lines are not turned outwards at the tip, and the coxal border is excessively minute; the coxal cavities are rather widely separated, but a considerable approximation of their trochanters is possible inasmuch as the cavities have a distinct prolongation inwards, between the coxal process and the ventral segment; the hind legs are slender, and are formed much as in *Bidessus*.

Taking all these characters into consideration this little insect would seem to be one of the most anomalous of the *Dytiscidæ*; the prosternal process failing to connect

with the metasternum is known only in it, in the South American *Vatellini*, and in the South African *Andex*. I have not been able to ascertain with certainty that the hind coxæ are soldered to the ventral segments, but I believe this to be the case, and if so the genus may take its place in the *Bidessini* near *Bidessus*, though very distinct therefrom on account of the structure of the prothorax.

This interesting creature comes from South Africa.

I. 25.—Genus *ANDEX*. (*Vide* p. 371.)

A single species is isolated under this name. It is but little known, and its individuals are of peculiar form, the prothorax being greatly narrower than the after-body, and almost narrower behind than in front; the most remarkable peculiarity of the species is however the fact that the prosternal process does not connect with the metasternum, but terminates in front of the middle coxæ, so that these latter can be at once observed to be contiguous: the inter-coxal process of the metasternum does not project between the coxæ, and is thus widely separated from attaining the mesosternal fork. The front and middle legs are elongate, and the fourth joint of their tarsi is elongate and slender, the third joint being rather small and but little emarginate; the swimming legs are rather slender and elongate. The head is rounded in front, but not margined.

The Cape of Good Hope is the territory of this creature.

The *Vatellini*, and the genus *Tyndallhydrus* of the *Bidessini* are the only *Dytiscidæ* besides *Andex* that possess a prosternal process not reaching the metasternum. The *Vatellini* are exclusively South American insects, but *Tyndallhydrus* like *Andex* is a native of Southern Africa.

I. 26.—Genus *HYDROPEPLUS*. (*Vide* p. 372.)

This is another autogenus; the individuals of this unique species have much the form and size of *Hyphydri*, but the surface both above and below is very densely and finely punctured. The front of the head is evenly rounded but without raised margin. The prosternal process is small, but somewhat elongate, it is very acuminate, its apex is somewhat bent downwards and rests against the short and inconspicuous inter-coxal process of the metasternum; the extremity of this latter process is a little curved upwards to meet the prosternal process, but it does not connect with the mesosternal fork. The hind coxæ are very largely developed, being very elongate with very arched anterior border, the wing of the metasternum deflexed outside this border forms a very slender parallel-sided band. The hind coxal cavities are quite exposed; the swimming legs are elongate and slender, their tarsi are longer than the tibiæ, and the tibial spurs are shorter than the first

joint of the tarsus. The front and middle tarsi have their third joint short and broad not bilobed, but with the outer portion of its upper surface excavate or channelled for the reception of the base of the terminal joint: this latter is very elongate, two or three times as long as the third joint. The epipleura has at the shoulder a well marked genicular fossa, limited behind by a distinct raised line.

This, like the allies, is an inhabitant of South Africa.

I. 27.—Genus *PRIMOSPES*. (*Vide* p. 372.)

This is at present an autogenus. The insect has much the size of a large *Hydroporus* and is similar thereto in form. The surface above and below is densely and finely punctate, and the sculpture on the anterior parts of the upper surface becomes obsolete. The head is rather truncate in front. The epipleuræ of the elytra possess at the shoulder an indefinite genicular fossa not limited behind by a definite raised line: the swimming legs are quite slender. In other respects the characters are those of *Hydropeplus*.

This species is from Capetown.

I. 28.—Genus *CÆLHYDRUS*. (*Vide* p. 373.)

This is again as yet an autogenus: it consists of a species whose individuals have about the size of the *Cœlambi*, and are of short peculiar form, suggesting themselves as an intermediate between the *Cœlambi* and *Hyphydri*. The head is subtruncate in the middle in front, and not in the least margined; the prosternal process is rather short and very acuminate, its apex is decurved, and in repose just rests on the extremity of the very short and slender inter-coxal process of the metasternum; this is a little curved towards the mesosternal fork, which, however, it does not attain, and it is obscurely grooved in front. The hind coxæ are very large, and their cavities are rather broadly separated, and quite exposed, the coxal processes being adpressed, and without any trace of external acute angle. The swimming legs are rather short, and are moderately stout, the upper third of their tibiæ, being a good deal more slender than the apical portion, the spurs are not straight but distinctly slightly crooked or sinuate. The front and middle tarsi have the third joint rather small; the terminal joint is likewise not greatly developed, it is however exerted, and as long as the third joint. The epipleura has a definite genicular fossa at the shoulder.

This insect is likewise an inhabitant of Southern Africa.

I. 29.—Genus *DARWINHYDRUS*. (*Vide* p. 373.)

This name represents an autogenus, known only by a single individual; it is an insect of small size, of peculiar broad rounded form, with a rather flat upper surface and costate elytra. The head is rounded and margined in front; the swimming legs are slender and rather short; the epipleuræ of the elytra become gradually narrower from the base to the apex; by this character it departs from the other Hyphydrini, and approximates to *Hydroporus nebulosus*, &c. (gen. *Chostonectes*) of Australia.

This insect was recorded in Castlenau's collection as being from Capetown; I consider however there is just a possibility it may really be from Australia.

I. 30.—Genus *HYPHYDRUS*. (*Vide* p. 374.)

About five-and-twenty species at present form this aggregate. The size of the individuals is rather uniform, varying between $3\frac{1}{2}$ and 6 m.m. of length; the form is short, broad, and very elevated, the convexity being chiefly on the undersurface. The upper surface is nearly always variegate in colour, by means of black marks on a yellowish or brownish ground. Head rounded in front and margined, labrum not visible from above, exerted and visible from beneath. Prosternal process short, not truncate behind, somewhat variable in size and form, its apex not received into a groove on the inter-coxal portion of the metasternum: middle coxæ nearly contiguous; the inter-coxal process of the metasternum is curved upwards at its termination to touch the process of the mesosternum, and this perpendicular portion is slightly hollowed in adaptation to the back (or upper) part of the prosternal process. Metasternum elongate in the middle, with excessively short side wings which are greatly deflexed down the outer portion of the hind coxæ. Hind coxæ enormous, their anterior border excessively arched; coxal processes adpressed, their outer terminal angle obtuse or rounded; the articular cavities, are therefore quite distinctly separated and are not at all protected, but (on the leg being extracted from the articulation) are seen to be entirely exposed externally to the coxal process: first ventral segment not soldered to coxæ. Elytra on their inner face near the apex of their raised ledge with a highly developed elongate tongue, which is received into a pocket on the internal face of the lateral piece of the penultimate segment. Swimming legs rather slender; their tibiæ and tarsi rather strongly ciliate, the latter on both upper and under edge; terminated by a rather stout, little curved claw, and with an excessively short and indistinct second claw. Front and middle tarsi four-jointed, the fourth joint short, protruding but little from the groove at the apex of the third joint in which it is inserted, the third joint large, the fourth inserted at a great distance from its base.

The sexual differences are often very striking, the females being often smaller and weaker with quite different sculpture: as regards this latter point the females are dimorphic in some species, certain individuals resembling the males: the

swimming legs of the male are more powerful, as are also often all the other legs; the front and middle tarsi are frequently dilated: these tarsi are also often compressed laterally and rarely are quite flat on the upper surface: the anterior trochanters in the male are frequently the seat of incomprehensible secondary sexual characters, in some species scarcely to be detected, while in others they are carried to an extent that may almost be called ludicrous.

The peculiar structure of the front tarsi readily leads to any water-beetle possessing it being identified as a member of this aggregate. In no other Dytiscidæ is the terminal joint of the front tarsus so little exerted from the third joint; this is so remarkable that in the females of some species of the genus the tarsi have the appearance of being only three-jointed.

The dark marks on the elytra are formed by lines placed in the longitudinal direction, but of irregular lengths, and much united together in the transverse direction so as to give somewhat the appearance of highly irregular transverse bands; the marks so formed rarely extend so far as the outer margin which is thus nearly always paler than the sutural portions.

The genus is in several respects approximated by *Hyphoporus* of the *Hydroporini*.

Hyphydrus is distributed over the whole of the Eastern hemisphere, except the colder parts thereof; in the Western hemisphere it has only been found in New Caledonia.

I. 31.—Genus *STERNOPRISCUS*. (*Vide* p. 384.)

Ten species form this aggregate; their individuals are of small size, and of moderately elongate form; the punctuation of the upper and under surfaces is very dense, and the colour more or less variegate. The sexual differences are often extreme. The thorax has a longitudinal plica on each side. The prosternal process is elongate and slender; the middle coxæ are absolutely contiguous, and their exerted apices project beyond the level of the body; the fork of the mesosternum is elongate, and the prosternal process which extends over the middle coxæ is thus rendered peculiarly protuberant. The hind coxæ are elongate externally. The hind coxal cavities are not contiguous, but each has an internal prolongation, by means of which the basal portions of the two swimming legs are allowed very nearly to meet. The coxal lines are short, but rather acutely elevated, distinctly turned outwards near the apex, forming a rather acute coxal process, with a small coxal border. The swimming legs are slender, their tibiæ are slender at the base, and near the base have a crook or distortion, which is more conspicuous in the males than in the females. The front and middle tarsi are distinctly five-jointed: the mesosternum is placed at a very obtuse angle with the metasternum and thus is quite visible.

The genus is very easily distinguished by the distinctly 5-jointed tarsi, and the comparatively ill-constructed and fitted together parts of the mesosternum and adjacent pieces. It has points of similarity with widely separated forms, and has

no near allies, and is an exemplification of the peculiar isolation so frequently found to exist in the case of these so-called synthetic types. In general appearance and in the structure of the mesosternal parts, Huxelhydrus of the Bidessini makes a quite incontrovertible approach to Sternopriscus; while from another direction Necterosoma of the Hydroporini approximates it by the 5-jointed tarsi; and even Dytiscus dorsalis in Hydroporus makes some approach to it, in the mesosternal structure and some other points.

Sternopriscus is peculiar to Australia; and it may here be mentioned that Huxelhydrus and Necterosoma just alluded to are also exclusively Australian; we are, in my opinion, not justified from these facts in inferring a genetic connection between these forms, but I think we are quite justified in concluding that the conditions of existence of certain Hydroporini in Australia have induced the development of similar structures in perfectly distinct creatures. The similarity of structure is evidence not of descent from a common ancestor, but of conformity of the conditions of existence at certain periods of the ancestral records.

The classification of Sternopriscus is very difficult, for although it is clear that it is correctly placed amongst the Hydroporides, it does not appear possible to locate it satisfactorily in any of the four secondary aggregates which form that group: if we take the aggregate of its characters it would appear to be nearest to Huxelhydrus in the Bidessini, but it does not possess the soldered coxæ and ventral segments, which is the essential character of that group. On the other hand there is no member of the Hydroporini to which it approaches with any nearness, and I have decided that it is the more natural course to leave it at present isolated during the second synthesis, and to unite it with other components to form the Hydroporides of the third synthesis.

I. 32.—Genus *HYPHOPORUS*. (*Vide* p. 390.)

Three species form this aggregate, their individuals have the same appearance as the species of Hyphydrus, to which they are similar in size, form, and colour: and the similarity of structure of the front tarsi, in combination with these slighter characters, indicates an undoubted approximation between the two genera: the third joint of the front tarsus is large, and little emarginate, and the terminal joint short and little exerted. The front of the head is rounded and margined. The elytra have on the shoulder of the epipleura a definite genicular fossa, which is limited externally by a raised line, and the ligula on the inner face of the elytra is highly developed; the epipleuræ are very slender in their posterior portion; the articular cavities of the hind coxæ are slightly but quite distinctly separated, and the extremity of the upper covers of the cavities is distinctly displayed beyond the apices of the coxal processes; the coxal lines are distinctly sinuate or turned outwards near their apex, and there is a short, rather broad, coxal border.

The genus as above stated approximates to Hyphydrus, but its closest ally is

Cœlambus, from which it differs by the terminal joints of the front tarsi, and by the greater separation of the articulations of the swimming legs.

The species are found in the East, in India, and Egypt. The genus is not a very natural or satisfactory one, as *Hydroporus solieri* is not so Hyphydroid as its allies; there can be little doubt that other allied species remain to be discovered, and the separation of the species into two distinct aggregates would be at present premature.

I. 33.—Genus *PAROSTER*. (*Vide* p. 391.)

Three species from Australia form this aggregate: the individuals resemble greatly ordinary *Hydropori*, but have the upper surface more convex transversely than is usual in the species of the genus *Hydroporus*: the size is rather small, (3 or 4 m.m. of length) the form convex, rather short, but not very broad; the surface is without pubescence. The head is not in the least margined in front; the prosternal process is compressed laterally, strongly carinate, and elevate along the middle; the mesosternum does not connect with the inter-coxal process of the metasternum; the hind coxæ have a moderate extension in the anterior direction; their processes are peculiar, the intra-rimal portion being prolonged considerably beyond the extra-rimal portion; the coxal lines are effaced in their posterior part, the coxal border is excessively minute with slender, acute, outer angle, and the articular cavities are much exposed; the structure of these parts may be briefly described by saying, that the articular cavities are rather widely separated, and that there exists a quite distinct, indeed rather large coxal notch, notwithstanding the small size of the terminal portions of the coxal processes. The hind legs are slender, their tibiæ are slender as well as a little crooked below the knee; the genicular area of the wing-case is bordered behind by a raised line; the inner face of the wing-case is without any trace of apical ligula: the basal ventral segment is not soldered to the coxæ.

The species are peculiar to Australia and are very rare in collections at present.

These obscure and unattractive insects prove to be of considerable interest when examined and compared, and to be much isolated: they have resemblances to *Bidessus* (of the *Bidessini*), as well as to *Cœlambus* of the *Hydroporini*; the approximation to *Bidessus* consists in the form of the articular portions of the hind coxæ, which may be described as that which exists in *Bidessus* but rendered more conspicuous by the wider separation of the articular cavities: the slender hind tibiæ also are such as exist in *Bidessus*. The genus differs from *Cœlambus* by the peculiarities of the coxal processes, and by the want of ligula on the inner face of the wing-case.

I. 34.—Genus *HEROPHYDRUS*. (*Vide* p. 392.)

Six species form this aggregate; the individuals are of large size (comparatively with many other Hydroporides), from 4 to 6 m.m. of length: they are oblong-oval in form, very convex beneath; without pubescence, coarsely punctate; the head is either margined in front, with the margin interrupted in the middle, or is without margin; the fourth joint of the front tarsus is but little elongate in comparison with the others, which are narrow in proportion to their length, the third joint only obscurely bilobed, and the insertion of the fourth joint is nearer to the apical than to the basal edge of the third joint; the front tibiæ are short, and rather broad; the ridge on the inner face of the elytra is largely developed, rising gradually from the front towards the extremity till its greatest prominence is attained, and then falling abruptly, so that as regards one of its sides (the posterior) it forms a ligula, but as regards the other does not: the genicular area of the epipleuræ is limited externally by a well-marked line; the hind legs are slender; their coxæ formed as in *Cœlambus*.

The genus is nearly allied to *Cœlambus*, but differs by the elytral ridge, as well as by the shorter, and comparatively broad, front tibiæ; the shape of the tibiæ suggests an approximation to *Hydrovatus*, which is confirmed by the rather small front tarsi, as well as by the swimming legs, slender and ill-developed in proportion to the weight and size of the insect.

Madagascar is the metropolis of the aggregate, three species being peculiar to that island, while the other three are found in neighbouring regions,—two in South Africa, these two the most *Cœlambus* like—; while the sixth species has an extensive range, being found in Arabia, Senegal, Egypt and North Africa, and Southern Europe.

 I. 35.—Genus *CŒLAMBUS*. (*Vide* p. 394.)

This is an extensive aggregate, consisting of about fifty species; the individuals are convex beneath, but in other respects somewhat variable in form, usually oblong-oval, but sometimes shorter, even rotund in form; they are nearly or entirely destitute of pubescence, the upper surface is usually pale, with distinct black marks, the under surface nearly always with coarse, (or moderately coarse) punctuation. There is always a distinct, and abrupt ligula on the inner face of the elytra, and the genicular area of the epipleura is well defined, and generally limited externally by a more or less raised line: the epipleuræ are greatly reduced in breadth in their posterior portion, in fact opposite the hind margin of the second ventral segment there exists nothing of the epipleura but its two marginal lines, which have become contiguous. The front border of the hind coxæ has much extension in the anterior direction, (especially in the elongate species constituting the greater part of the genus), and the culmen or summit of its arch is narrow, and in extreme cases

(*Dytiscus parallelogrammus*) almost angular; in such species the metasternum is elongate in the middle, and although its wing is much abbreviated as its outer portion is reached, yet it remains comparatively broad till the culmen of the coxæ is reached, and there is very abruptly deflexed outside of it as a very slender band.

Although the species of this aggregate show much difference in various points of structure, yet they are constant in the possession of the elytral ligula, and the genus is thus absolutely distinguished from *Deronectes*. Although the head differs much in the extreme forms, yet as it is not exactly alike in any two species it does not justify the formation of two (or more) distinct aggregates; in the shorter species the head is completely rounded in front, and bordered with a distinct raised margin, and the labrum is placed so much on the undersurface as to be greatly concealed,—the head in such species closely approaches that of *Hyphydrus*. In other cases however the labrum is brought forward to the front of the head, and quite exposed (*Hydroporus enneagrammus*, No. 419, *Dytiscus confluens*, No. 423, &c.) the front of the head being truncate-emarginate; various species are more or less intermediate between these extremes.

In the development of the hind coxæ there exists also considerable difference between the extreme forms. The species of short form possess hind coxæ with their antero-external portions less extended towards the front of the body, so that the shape of the culmen of the coxal arch is more rounded and less abrupt and angular than it is in the more elongate species.

In other of the structural points characteristic of the genus, numerous shades of variation may be detected; such is the case with the form of the tarsi, and the development of the genicular area of the epipleura.

In all the species the epipleura is small, and is much reduced in its posterior portion: *Hydroporus enneagrammus* shows us the extreme of this reduction: in this species the epipleura at the base is very small, and before the middle length of the wing-case is reached has altogether disappeared: this diminution of area is accompanied by some alteration in the form of the shoulder of the wing-case, and as a result of this it seems at first sight as if the genicular area were altogether absent, nevertheless on a more careful examination not only is the area seen to be definitely present, but also the existence of a line marking it off externally is certified; in agreement with this reduction of the epipleura, the ligula of the elytra is also extremely minute in this species, but yet it exhibits the form characteristic of the other species; in this peculiar insect there cannot be detected on the undersurface of the body any trace of the coarse punctuation that exists (though in certain species only in a comparatively slight degree) in all the other components of the aggregate.

The external sexual disparities are, as a rule, not strongly marked: scarcely to be detected in *Dytiscus inæqualis* (No. 381), they become so far as regards the legs

considerable in *Hydroporus polonicus* (No. 406); while in certain species (*e.g.*, *Dytiscus parallelogrammus* (No. 416), *Dytiscus impressopunctatus* (No. 409), the females are dimorphic, one of the forms, and that the rarer, departing greatly in sculpture from the males, and ordinary females. The most remarkable of the sexual disparities is that where the males have the ventral segments of a black colour, while they are yellow in the females (*Hydroporus flaviventris*, No. 420, and *H. pallidulus*, No. 422). In *H. enneagrammus* the colour of the ventral segments in the females appears to be variable, sometimes nearly yellow, it is in other individuals quite black except at the tip.

The species are confined to the northern hemisphere, and scarcely exist in its tropical zone; several appear to be fond of brackish or even salt water, and it is probable that when the large fresh-water lakes, and salt lakes of America and central Asia are well examined, a considerable increase in the known species of the genus will result.

I. 36.—Genus *CHOSTONECTES*. (*Vide* p. 408.)

Four species compose this aggregate; they are insects of broad, more or less short outline, convex beneath: the upper surface is pubescent, the undersurface bears coarse punctuation specially remarkable on the coxæ. The head is rounded in front, but not margined; thorax with its greatest width behind; all the legs are rather slender, and the posterior femora are slender, especially in their outer portion; the hind coxæ have only a moderate extension; the outer apices of the coxal processes are acute; the elytra have a very distinct, strongly raised internal ridge, but no ligula; the genicular area of the epipleura is abruptly limited externally, but not by a raised line, though at first sight such a line appears to exist, owing to the abrupt cessation of the coarse punctuation of the epipleura. The hind tibiæ are glabrous externally, possessing only a single series of punctures.

The four species associated in this aggregate are not by any means closely related *inter se*; and may indeed prove to be incorrectly placed as one genus. The general form is that of *Dytiscus inæqualis* (*Cœlambus*) or *Dytiscus ovatus* (*Hyphydrus*), and the shape of the head and eyes especially suggest such likeness: *Chostonectes sharpi* is nearest in form to *D. inæqualis*, *Hydroporus gigas* being more similar to *Hyphydrus*.

The genus is approached by *Hydroporus latus* of the genus *Deronectes* in more than one point of structure, but these Australian insects have a different form from it, a coarse punctuation, glabrous posterior tibiæ, a well marked humeral area to the elytra, and acute external apices to the coxal processes; moreover the terminal half of the epipleura is larger.

The species are peculiar to Australia and Tasmania.

I. 37.—Genus *ANTIPORUS*. (*Vide* p. 410.)

Eight species form this aggregate; the individuals are in colour a mixture of black and yellow, in a rather indefinite and variable manner: the form is oblong-oval, moderately convex beneath, the surface is densely and evenly punctured both on the upper and under sides, and is not shining, and bears an excessively minute, scarcely visible pubescence. The eyes are convex and prominent; the portion of the head in front of them is very short, its front edge is variable in form but does not possess a raised margin. The anterior tibiæ are slender, and their tarsi usually have the joints elongate, and narrow at the base, the third being deeply bilobed, the real fourth joint not visible, the terminal (apparent fourth) joint elongate, and inserted near the base of the third joint. The posterior portion of the epipleura is rather broad, there is no definite genicular area, the epipleura being punctured up to the point where it becomes contiguous with the prothorax: on the inner face of the wing-case there exists a well-marked ridge; this is not developed into any distinct ligula near the apex, although there is a short, more or less distinct prominence on the ridge at the point where the ligula exists in some other genera. The hind coxæ have a very considerable anterior extension (as in most species of *Cœlambus*, *e.g.*, *Dytiscus parallelogrammus*, No. 416). The terminal portions of the coxal lines are parallel, not turned outwards; the hind legs are slender and their tibiæ are punctate externally. The external sexual disparities are nearly confined to the legs, the males are usually in this respect remarkable.

The species of this aggregate in form and sculpture, and even in colour, approximate to the *Deronecti* of Europe, and, as in that genus, the wing-cases are frequently denticulate at the tip; the broader hind portion of the epipleura separates the aggregate from most of those near it, but approximates it to *Chostonectes*, from which it differs by the shape of the front tarsi, which have always an elongate terminal joint, as well as by numerous minor characters, amongst which the fine dense sculpture of the under surface is conspicuous.

These insects are found only in Australia, Tasmania, and New Zealand: the species from the latter locality are very closely allied to Australian species, and it is possible they may be recent immigrants to New Zealand and not really distinct species.

 I. 38.—Genus *NECTEROSOMA*. (*Vide* p. 413.)

This is an aggregate consisting of eight species; in many respects the individuals are similar to those of *Antiporus*, but they differ in some important points, and one of these—the structure of the anterior tarsi—distinguishes the aggregate from all its near allies; all the five joints are distinctly visible; the third joint is not truly bilobed, but only emarginate at its outer portion, and the small fourth joint projects quite distinctly beyond it, and is therefore conspicuous between the third and

fifth joints. The coxal lines have their terminal portions much turned outwards, and in their anterior parts are much less widely separated from one another than they are in *Antiporus*. The ligula on the inner face of the elytra is quite distinct although short and broad. The characters in other respects are much those of *Antiporus*.

The genus is peculiar to Australia and Tasmania.

I. 39.—Genus *MACROPORUS*. (*Vide* p. 416.)

This is an aggregate consisting of six species; the individuals are of large size amongst their allies, the largest attaining 7 m.m. of length, but vary much in width, they are convex beneath; the upper surface is distinctly pubescent, the lower is coarsely punctured: the size attained is greater than in any other *Hydroporini*, and equals that of the members of the *Hyphydrini*.

The hind coxæ have a large area, and are elongate even quite near the middle longitudinally of the body, their anterior border does not stretch abruptly forwards, so that the length of the coxa at its longest part is not twice what it is at its shortest part; the coxal lines are subparallel, being a little divergent both in their anterior and posterior portions; and their articular cavities are but slightly separated; the femora are broad and sublaminæ (showing when viewed from above a distinct lamina at their outer hinder portion, which when the tibia is flexed receives and covers its base: the hind tibiæ are glabrous externally, with a series of setigerous punctures near the margin: the epipleura of the wing-case is moderately broad in its terminal portion, and is impressed at the humeral angle, but there is no trace of any raised line limiting externally this area: there is no ligula on the inner face of the wing-case: the real fourth joint of the front tarsus cannot be perceived.

The genus is especially characterized amongst the *Hydroporini* by the well developed swimming legs, these organs attaining in *Macroporus* a perfection greater than in any other *Hydroporini*. In some other respects there is considerable variety amongst the species; *M. lateralis*, has the terminal joint of the front tarsus quite short, and in fact approximates to *Hyphydrus* by the structure of this part, while the other species have the joint alluded to either considerably or greatly more elongate.

The species are found only in Australia and Tasmania.

I. 40.—Genus *DERONECTES*. (*Vide* p. 418.)

GROUP I.

The characters assigned to the first group of species of *Deronectus* (see p. 419), justify the association together of about twelve species, which when carefully examined exhibit nevertheless important structural differences amongst themselves:

the prothorax may be remarkably narrowed behind and so leave the shoulders of the elytra quite free (*D. longipes*, &c.), or its base may be of equal width with the base of the elytra (*Hydroporus platynotus*, No. 459), or even slightly broader than the elytra (*H. semirufus*, No. 458); in some species there is considerable difference between the sexes in this respect (*Hydrop. lareynei*, No. 454, and *H. opatrinus*, No. 455), which fact has led to the sexes in such cases being considered as distinct species, even by skilled coleopterists. Where such sexual difference exists, it is always the case that the female has the base of the thorax narrower than the male.

The coxal lines show very important differences in the group; thus in *Hydroporus latus* (No. 461), they are very approximate and quite parallel till near the extremity, when they gradually diverge; in *H. opatrinus* (No. 455) they are very different from this, for in front they are widely separated, and then converge till the extremity is reached and here their terminal portion is abruptly turned outwards. In *H. opatrinus* the articular cavities of the swimming legs are distinctly separated, the portion intervening between the two, projecting backwards so as to be very visible, while in *H. latus* the two cavities are contiguous, except that they are separated by a thin lamina, which does not project beyond them, and can only be seen by looking along the plane of the ventral segments. Also the prosternal process shows a good deal of variation in the group: in *H. bombycinus* it is shorter than in the other species, and its terminal portion is considerably decurved or bent downwards; in *H. latus* also it is short, but there is no trace of decurvation of the apical portion; in *H. opatrinus* and *H. mœstus* it is more elongate, and its lateral compression reaches its maximum.

The sculpture of the upper surface in this group is peculiar; it consists of a fine dense nearly evenly distributed punctuation, and in addition to this a coarser and more unevenly distributed punctuation; in the species with the thorax narrowed behind the coarse punctuation is but little developed, but in other species such as *H. opatrinus* (No. 455), and *H. bicostatus*, (No. 460), it becomes so extensive as to overpower or mask the fine punctuation. The undersurface also is covered with a dense, fine sculpture, evenly distributed over the middle and hind bodies, and in addition there may be present on the hind coxæ a few coarse but subobsolete punctures.

Deroneetes longipes may be considered the lowest form of the group, and *H. latus* the highest. Were it not for the existence of the last named species the group would be much more isolated than it actually is; for the separation of the hind articular cavities would then be a character constant in the whole of the group; this separation of the articular cavities exists however in the following group; and on the other hand *H. latus* of the present group departs from its allies in this respect, to resemble the species of the fourth group; so that this character does not justify the establishment of a distinct genus.

GROUP 2.

Two closely allied species form the second group of *Deronectes*; the form of the body is peculiar; the elytra have their terminal portion more prolonged and acuminate, and the last ventral segment is more elongate than in the members of the following group. The other characters of the group have been given on p. 419, and it is only necessary here to remark that as the first group of the genus agrees with this second group in the separation of the hind articular cavities; and as *H. tessellatus*, (the third group), has the posterior tibiæ punctured in a similar manner, it is clear that these characters do not justify the establishment of a distinct genus for the second group: I expect however that characters will ultimately be detected that will call for its separation as a good and distinct aggregate.

GROUP 3.

This group consists of an isolated species, with coarsely punctate hind tibiæ, but in other respects similar to the following or fourth group; it would thus seem to be a connecting link between the first and fourth groups, but such is not really the case, and it is more correctly an insect belonging to the fourth group but possessing to a considerable extent one of the more important characters of the first group. It is to be noted that this exceptional species is an insular one, found in the Canary Islands, and it is additionally interesting to find that the *H. vigilans* of Madeira which I have placed in the following groups, has some punctures placed on the basal portion of the tibia and so forms a connecting link between the *H. tessellatus* and the fourth group.

GROUP 4.

The fourth group of *Deronectes* comprises the majority of the genus, and includes all the species having the infero-external face of the hind tibiæ glabrous and shining. The group is specially well represented in the regions near the Mediterranean, but includes a very widely distributed alpine and boreal species, and one or two from the New World.

About fifty species, arranged in four groups as above expressed, form the aggregate *Deronectes*. The form of the individuals is oval, or oblong oval, and only moderately convex beneath, the upper surface is very finely pubescent, and finely punctate. (In most of the species, the punctuation is very fine, and the undersurface is entirely without coarse punctures, but has an extremely dense, fine, somewhat rugose sculpture, rendering it very opaque, and the upper surface is more or less variegate in colour; the remarkable first group forms however an exception in these respects, for the surface is not variegate, and a coarse punctuation exists, to a greater or less extent, in combination with the fine sculpture).

The head is never margined in front, the epipleuræ of the elytra are much narrowed

(in the length between the hind margin of the posterior coxæ, and the second ventral segment), so that their terminal portion is very narrow, although in some species it remains quite distinguishable till as far, at least, as the commencement of the last ventral segment, (*Dytiscus depressus*, No. 472, &c.); while in others it cannot be distinguished after the second ventral segment is passed (*D. griseo-striatus*, No. 493, &c.); the difference between these two forms is however not great, and intermediates occur. There is no ligula on the inner face of the elytra near the apex; the genicular area of the epipleura is generally indistinct, and is never limited externally by a raised line; the swimming legs are but slender, their femora are never incrassate, and their postero-external angle is never acute. The hind coxæ are not large, their front border having but little extension in the anterior direction, and the culmen of its arch is rather rounded and broad, thus contrasting with *Cœlambus*: the hind articular cavities are contiguous or nearly so.

The species are found in the European and Mediterranean regions, but one or two exist in North India and Abyssinia and Arabia, and one or two others in the northern portion of the New World.

I. 41.—Genus *HYDROPORUS*. (*Vide* p. 435.)

GROUP 1.

The first group of species included in *Hydroporus* consists of certain insects displaying a slight peculiarity in the structure of the apices of the coxal processes; the middle portion of the apex being slightly prolonged, so that the articular cavities are distinctly separated by this middle portion; which is closely adpressed to the plane of the ventral segments. Six species are included in the group; they all have the third joint of the front tarsi strongly bilobed, and the general characteristics are much those of the following group; the punctuation of the under surface is sometimes but little developed, and never very coarse, the wing-cases are variegate in colour, and the undersurface is never black, though sometimes greatly infusate. The species are all rare, and have therefore been but imperfectly examined; one of them, (*Hydroporus vittatipennis*, No. 500), is perhaps not very naturally associated with the other species, for the lateral margin of its prothorax is extremely slender, even in front, while in all the other species it is more or less flattened and thickened in front.

GROUP 2.

In this group the front tarsi have the third joint more deeply bilobed than is the case in the following group; (in some species however the distinction is but slight in this respect, see *Hydroporus dimidiatus*, No. 517); the thoracic side margin is usually thickened and flattened in front, but to this also there are exceptions (see *H. mellitus*, No. 502, and *H. hybridus*, No. 519). The wing-cases are variegate but occasionally only obscurely so; the undersurface is red or yellow; the metasternum

is sulcate in front; the coxal processes have their middle part projecting quite as far as, or a little farther than their outer terminations or angles, but only in a few species can the cavities be detected to be at all separated, (see *H. clypealis*, No. 508); the punctuation of the undersurface is coarse and extensive.

Some of the species depart slightly from the others in the structure of the coxal cavities, to approximate in this respect to the first group. And in *H. dimidiatus* the sculpture of the undersurface may be looked on as intermediate between this group and the third group; the species just named also approximates the third group by the structure of its tarsi. Both in this and the preceding group the coxal lines are usually remarkably sub-parallel, strongly elevated, but little separated in their anterior portions, and very little divergent at their termination; but these characters are not absolutely constant, for *H. hybridus*, Aubé (No. 519), has the lines rather widely distant in front, and rather abruptly approximated about the middle of their course; also in it, and still more in *H. dimidiatus*, they show an undoubted, though never conspicuous, divergence in their terminal portions. In the two groups the apices of the processes never assume, even in an incomplete manner, the form of rounded lobes, but are truncate, or approximating thereto, and their outer angles are nearly acuminate.

GROUP 3.

This group includes about thirty species, of variable form and size, but all have the upper surface variegate; the hind coxal cavities are quite approximate or very nearly so, and the coxal processes do not on the mesial line extend quite so far back as at their outer portion, and so do not present a common straight hind margin, but assume more or less decidedly the form of separated lobes. The species are distinguished from those of all the other groups of *Hydroporus* (except group 9) by the rounded form of the coxal processes; those arranged at the commencement of the group show this character only in a slight degree, and resemble the species of the fourth group of *Deroneetes*: also the earlier species have the third joint of the front tarsus but little lobed, while the terminal one is more elongate than in the species towards the end of the group.

GROUP 4.

This group includes about eighty species; in it the hind coxal cavities are quite approximate and the lamina dividing them quite concealed; the coxal processes are soldered together quite to the hind margin, so as to present a common, truncate extremity; and their outer angle formed by the short coxal border is only very slightly rounded or obtuse; if the common suture at the hind margin is a little more prolonged backwards, yet it is only very slightly so, and the projecting portion is not at all adpressed to the level of the ventral segments. The prothorax is without any longitudinal stria or depression at the side.

The group is a very natural one formed by closely allied species, in no one of which have I been able to detect any important structural distinction from the others. The chief variations of structure are to be found as follows: 1st, in the prosternal process, which in *H. modestus* and the species near it is more elongate than usual; and is also either much compressed laterally, and so appearing narrow—the case in most of the species of the group—or is little compressed and broad, as in *H. arcticus*; 2nd, in the third joint of the front and middle tarsi, which is either comparatively large with very elongate sub-lobes (*Dytiscus modestus*, No. 627), or is small and obscurely lobed, (*Hyphydrus pubescens*, No. 568, &c.); and 3rd, in the amount of extension forwards of the front border of the hind coxæ; this is very slight indeed in some species (*e. g.*, *Hyphydrus mennonius*, No. 558 and *Hydroporus sibiricus*, No. 583), so that the coxa is no longer externally than it is along the mesial line, and the culmen of the arch is very broad and low; in other species the anterior extension may be a little greater (*e. g.*, *Dytiscus planus*, No. 575, *Hydroporus modestus*, No. 627) so that the coxa is distinctly longer externally than it is near the middle, and the culmen of the arch more abrupt. It is impossible however to make use of these characters to tabulate the species, and I cannot make any divisions that would facilitate the naming of the species without leading to error.

GROUP 5.

This group is formed of a single species—*Dytiscus dorsalis*, No. 630—it has the prosternal process more elongate than is the case in any member of the fourth group; and its head has in front a margin, bent down over the labrum, entire throughout, and so allowing an uninterrupted transverse depression to be seen over the labrum—this character is peculiar to it amongst the allies—; to these may be added a peculiarity of form, the thorax being a little curved at the sides, and scarcely broader behind than in front; the mesosternum is placed at a greater angle with the metasternum than usual, so that it is a little more visible between the latter and the thorax; and the shoulders of the epipleuræ are only gradually and slightly bent inwards; the epipleura indeed throughout its whole length is less sharply defined than usual.

Hydroporus kohlstromi, Sahl. (No. 629), agrees with this species in many respects but has not the depression over the labrum.

GROUP 6.

This group comprises six species; they are very little pubescent, and not variegate; and have the posterior coxal cavities slightly, but distinctly, separated; the hind coxa is but little longer externally than it is along the mesial line, the metasternum forming only an obscure band outside the coxa, or the band indeed may be entirely wanting; the prosternal process is narrow, compressed laterally, and acuminate at the tip.

The only essential distinction between this and the fourth group, is the separation of the hind coxal cavities; although this is but slight yet when it is appreciated and examined it is found to be a valid difference: the separation is least distinct in *H. ferrugineus* (No. 636), and that species departs from the others by its more elongate anterior tibiæ; in the other species the front tibiæ are remarkably short and broad.

All the species of the group inhabit springs and small rills, sometimes of very cold water, in mountainous or hilly districts.

GROUP 7.

The three species forming this group have the hind coxal cavities very distinctly separated, and differ from the sixth group by the peculiarly large prosternal process, the wing of the metasternum is bent back so as to form a very short band between the coxa and the epipleura: the males have the front tibia emarginate below the knee.

From the eighth group the species are distinguished by the peculiarly large prosternal process; this is of an elongate-oval form, nearly flat, but very distinctly margined at the sides, and only moderately acuminate at the tip.

H. collaris seems to be a more primitive form than *H. oblitus*, for it has the hind coxæ rather smaller, the hind coxal cavities a little more separated, and the prosternal process a little larger, while its prothoracic side margin is remarkably elevated and distinct.

GROUP 8.

This group consists of five species; they are small subdepressed insects, almost without pubescence, of obscure colour, and rather finely punctate; the hind coxal cavities are very distinctly separated; and the middle sutural part of the conjoined coxal processes projects farther backwards than their outer angle; this latter is not at all rounded; the anterior border of the hind coxa takes a considerable forward extension, so that externally the coxa is much more elongate than it is in the middle; the prosternal process is short, broad in proportion to its length, not compressed, but flat, and more or less distinctly carinate along the middle. The different species do not agree in the size of the hind coxæ.

GROUP 9.

This group comprises five species, and is distinguished by the development of the coxal processes into free lobes, approximating to what we find in the *Agabini*. The wing-cases are not variegate in colour. The mesial line of the conjoined coxal processes is shorter than the coxal lobes, and the outer angle of each of these is rounded or obtuse.

This large aggregate, *Hydroporus*, is composed of about one hundred and sixty species, arranged in the nine groups already characterized and discussed, and is the

most extensive genus of the Dytiscidæ. The insects are always of small size (2-6 m.m. in length), and show much variation in colour, punctuation, pubescence and outline, but are distinguished from all the other Hydroporini by the fact that the mesosternal fork is connected with the intercoxal process of the metasternum. The head is never margined in front: the epipleuræ are always slender, and there is never any definite genicular fossa at the shoulder; the prosternal process varies a good deal, but is never truncate behind. There is no ligula on the inner face of the elytra; the swimming legs are always feeble, and their femora are never thick, and their postero-external angle is rounded or obtuse: their tarsi are slender and feeble, and the joints are not co-adapted to one another so as to give rigidity; they are terminated by two small, slender, equal claws: the posterior coxal cavities are quite approximate, or at any rate very nearly so, and the hind coxa is not very large, so that it is largely separated by the metasternum from the middle coxal cavity. The scutellum is quite concealed. The front and middle tarsi have only four visible joints. The distinctive characters of the sexes are slight, and sometimes external differences can scarcely be found. In a few species dimorphic females occur.

In distinguishing the species of *Hydroporus*, great importance has been attached by describers to the continuity or discontinuity of the outline of the body at the point of the junction of the thorax and elytra. This character is of real importance, for it is correlative with important structural changes in the mesosternum; when this part is larger, or takes a less completely vertical direction than usual, then the outline of the body is much interrupted at the point of junction of the thorax and elytra; with this there is frequently associated an elongation of the prosternal process.

The continuity of outline depends also largely on the extent to which the humeral angle of the wing-case is developed, and extended into a covering for the knee; comp. on these points *Dytiscus palustris*, (No. 612) *Hydroporus modestus*, (No. 627) and *Hydroporus melanarius*, (No. 555).

The genus is especially characteristic of the northern portion of the two hemispheres, with a few species in parts adjacent thereto, as in Mexico, Guatemala, Persia &c.; but there is also a species in South Africa and two in southern South America (Chili and Monte Video). A considerable number of additional species will no doubt be discovered in the northern portions of the New World. The absence of the genus from Japan is a fact well worthy of notice.

I. 42.—Genus *CELINA*. (*Vide* p. 487.)

Six species form this aggregate. They are insects of small size, (4-6 m.m. in length), of narrow, parallel form, but little convex beneath, of uniform, obscure colour, destitute of pubescence, and with mucronate termination of the body. The

scutellum is quite exposed, and visible at the base of the elytra, the base of the prothorax being but little prolonged and not at all acuminate in the middle. The front and middle tarsi are conspicuously five-jointed, the three basal joints being moderately broad (subject however to sexual difference in this respect), the third being emarginate at the apex but scarcely bilobed; the fourth joint although perfectly distinct is much smaller than the others, and the fifth is rather elongate. The prosternum is subvertical in direction between the coxæ, and is not in the least thickened, or raised, along the middle; its process is large, conspicuously margined, pointed at the extremity, which is received into a deep fossa on the apex of the inter-coxal process of the metasternum. The central fork of the mesosternum is imperfectly connected with the metasternum. The hind coxæ are of moderate size, about as elongate along the mesial line as near the side, but their front border is a good deal extended in the anterior direction. The hind coxal cavities are nearly but not quite contiguous, and the coxal processes form divergent lobes, which have however but little extension in the longitudinal direction. The swimming legs are quite slender, their tibiæ and tarsi being slender and elongate, the latter terminated by two equal curved claws. The wing-cases are acuminate at the extremity, and the body terminates in a projecting mucro.

These insects have the prosternum of the Hydroporini, but no Hydroporini show a conspicuous scutellum, and very few have distinctly five-jointed front and middle tarsi. Thus the aggregate formed by these few species, though it may be classed in the tribe Hydroporides, cannot be placed in any of the groups forming the tribe, and so must remain an isolated genus. These insects are so rare, that I have not been able to obtain any specimen for dissection.

I cannot suggest any valid approximation to other insects, but there may be a slight approach to the North American *Hydroporus oblitus*, Aubé, and *Hydroporus collaris*, Lec., for these insects have the apex of the scutellum distinctly exposed, and the prosternal process and hind coxal cavities are not very dissimilar to what we find in *Celina*.

The species of *Celina* are found only in Southern and Central America, with two rare species in the United States of North America.

I. 43.—Genus *METHILES*. (*Vide* p. 489.)

This isolated genus at present consists of three species, they are small Hydroporoid insects, but with the apex of the elytra, and extremity of the body spinose and acuminate.

The scutellum is quite concealed, the base of the thorax distinctly acuminate in the middle: front and middle tarsi five-jointed, cylindric, the basal four joints subequal, without clothing beneath. Prosternum between the front coxæ very small, forming a very slender depressed band placed only at a very obtuse angle from the

plane of direction of the prosternal process ; the anterior portion of the prosternum not in the least thickened along the middle ; the anterior coxæ rather prominent. Prosternal process small, acuminate behind, connected with the very minute inter-coxal process of the metasternum, which is not visibly impressed in front for its reception : mesosternum not connected with inter-coxal process of the metasternum. Hind coxæ rather small, scarcely longer externally than along the mesial line, their cavities not quite contiguous, the processes not quite contiguous, but forming two divergent lobes having very little extension in the longitudinal direction. Hind legs slender, their tibiæ and tarsi elongate, the latter terminated by two rather short equal claws. The maxillary palpi are short, the second and third joints each but little longer than broad, fourth joint slightly swollen, pointed, quite twice as long as the third joint. Labial palpi very short, last joint a little swollen, acuminate, mentum without tooth in the middle.

The form is rather parallel not very convex, the surface without pubescence, the extremity acuminate with a projecting spine.

This very interesting aggregate consists at present of three or or four obscure species. The resemblance in appearance is rather to *Celina* than to any other known form ; the tarsi are those of *Agabini* (but as yet the sexual distinctions are not known) but the scutellum is covered (as in *Hydroporini* and *Laccophilini*), and the co-adaptation of the base of the thorax and elytra is very complete. The head shows no frontal suture at the sides, it terminates in front as an edge and the labrum is exposed, the eyes are small.

The genus must remain at present very isolated, its tarsi quite forbid an association with the other families forming the aggregate *Hydroporides*, and it cannot even be included as itself a separate member of that aggregate. One might be tempted at first to consider it as only a primitive form of *Agabini* ; but careful comparison with the other primitive forms of that aggregate (such as *Agabus cordatus* and the allies) fails to indicate a relationship. *Methles* shows no trace of a frontal suture on each side of the head (as do the *Agabini* alluded to) ; its prosternum is distinctly depressed between the front coxæ, and is more evidently placed on a different plane to the prosternal process : the hind coxal cavities are not conjoined, and the coxal processes and their lines have not the characteristics of the *Agabini* ; again the base of the thorax and elytra are accurately co-adapted and the scutellum concealed, a character quite foreign to the *Agabini*.

The genus can therefore not be considered as belonging either to *Hydroporides* or *Agabini* and can only be united in the synthesis that shall include both those groups.

It may perhaps be looked on as the remnants of a group which played a more extensive and important part in the early history of the water beetles : of the few individuals known, one comes from Madagascar, and it is quite possible that other species may there be detected, and that this locality will prove to be a centre from

which the few species found outside it have diverged: the other species known having been found in Africa and Mesopotamia.

I. 44.—Genus *HYDROTRUPES*. (*Vide* p. 492.)

This is an autogenus, known at present only in a very imperfect manner. The form is rather convex above and flat beneath. Antennæ short and stout, palpi very short, the labial ones excessively short and stout, the terminal joint being subquadrate. Prosternal process short and flat, about as broad as long, strongly margined, metasternal impression short; metasternum short, its sides with an abrupt deflexed slender termination; hind coxæ moderately developed, the coxal processes large, the coxal lines start from the apex of the metasternum and are at first approximate and parallel, but their terminal portions are much turned outwards, and do not reach the apex of the coxal processes; these have a peculiar supra-articular border formed by a thickening of the edge of the process. Hind tarsi slender, (their joints not lobed,) of little use in swimming, terminated by two equal rather small curved claws.

The above notes comprise all the information I can offer about this curious species, as I have not, when writing, the unique individual any longer at my disposition; on the whole it would seem that *Metronectes* is the form to which it comes nearest, but this must be considered as being at present little better than a guess.

It is said to have been found in California.

I. 45.—Genus *METRONECTES*. (*Vide* p. 492.)

This is an autogenus; the form is rather depressed, but similar to that usual in *Agabus*, the base of the thorax being as broad as that of the elytra, the surface is polished and scarcely visibly reticulate; the antennæ and palpi are short and stout, and the last joint of the labial palpi is a good deal dilated; the hind coxæ are but little developed, being short, and their anterior border very little arched, the wings of the metasternum are comparatively large, the coxal lines and coxal border are almost entirely absent: the sides of the thorax are very distinctly margined; the epipleuræ behind the middle are a mere edge; the prosternal process approaches a plane surface, and is finely margined; the swimming legs are feeble, their tarsi terminated by two curved equal claws. The sexual distinctions are very feeble: the male tarsi being very little incrassate, and the two basal joints furnished beneath with a very rudimentary sexual pubescence confined to a small area on the two basal joints, and the claws are quite short and simple like those of a female.

This insect is readily distinguished from *Agabus*, by the absence of the coxal lines and the peculiar palpi; it recalls in some respects the South American *Agametrus*, but those insects have the hind coxæ very large instead of very small

as in *Metronectes*. The unique species is found in Corsica, and must rank as a low form; on the whole its nearest systematic ally is the *Agabus cephalotes*, which also is peculiar to Corsica.

I. 46.—Genus *AGABUS*. (*Vide* p. 493.)

This is a very extensive aggregate, comprising no less than ninety-five species: the size is moderate, varying from 6 to 12 m.m. of length, the colour is usually sombre, but in a few species is variegate, and a brassy tint of the upper surface is not uncommon, the sculpture of the wing-cases nearly always consist of a fine reticulation; the meshes formed being variable in size and shape according to the species; the terminal joints of the palpi are not, or scarcely, broader than the preceding ones; hind coxæ never extremely large; wings of metasternum externally generally of moderate length, but in a few species, very short, and parallel sided. Epipleuræ of elytra narrow behind the middle; coxal lines always present, never greatly approximated, (in *A. serricornis*, however, much more approximated than normally) divergent in front, coxal lobes well formed, with distinct border. Swimming legs often slender, never very highly developed, their femora, with setigerous patch (often ill developed) at the postero-externo angle, their tarsi with the lower parts of the hind margin of the basal joints not lobed, *i.e.*, not produced so as to considerably overlap the following joint), their claws simple, equal, and more or less curved.

The above characters are drawn up to define a large number of species showing great variety in parts of their structure, but all possessing the characters alluded to, which is not the case with any of the allied aggregates.

I have sought in vain to arrange the ninety-five species in separate aggregates, but have failed in doing so, and have been obliged to content myself with arranging them in twenty-three groups, to each of which I have assigned, as will be seen, characters drawn from all such parts of the structure as I have been able to observe. There are other characters to be found which I have not used, owing chiefly to my not being able to examine them in the numerous cases of species where I have only a single individual for study. Such are the structure of the inner face of the wing-cases, and that of the various abdominal stigmata. The amount of variation of structure shown by the aggregate will be gathered by an examination of the characters I have mentioned as defining the various groups. C. J. Thomson (in his *Skandinaviens Coleoptera*, Vol. I, and *Opusc. Ent. VI*), has established several genera which I have not been able to adopt; in doing this he has pointed out a number of structural characters of great value, but he has unfortunately relied largely on one which is very unsuitable for the purpose of arriving at a natural classification; I am alluding to the size and form of the wings of the metasternum; so variable is this character that scarcely any two species can be found exactly agreeing as to it, and on the other hand, species which are nearly or quite conform-

able as to this are really by no means naturally allied by their other characters (*c.f.*, *D. abbreviatus*, and *D. femoralis*, Nos. 727, and 726).

The peculiar form of the wings of the species, for which I have established group 23 (*viz.* *Colymbetes bifarius*, Kirby) is worthy of special attention : ample wings are so characteristic of the Dytiscidæ, and evidently so valuable to insects whose power of walking is nearly destroyed by the transformation of their hind legs into swimming organs, as to render of great interest such a reduction of the means of flight as we find here exhibited.

The genus shows species of various grades of development. In some, notably those of the first group, the swimming legs are very poorly adapted to aquatic locomotion, and the general structure of the external parts is imperfect, less compact, and not closely fitted together. Other species such as *Dytiscus brunneus* (No. 688), *D. didymus* (No. 705), and *Agabus conspicuus* (No. 738), are of perfect and continuous form, with really powerful swimming legs.

A genus comprising such a variety of forms is pretty certain to have numerous points of approach to other genera. The great deviation from the rectilinear direction of a line drawn from the front to the back of the prosternum shown by *Dytiscus fuscipennis* (No. 752), is an approach to the structure of that part as existing in the Hydroporides, but the species alluded to does not possess any other points of resemblance with the Hydroporides. Group 19 of the genus seems however to make a real approximation to *Ilybius* ; and various of the allied smaller genera likewise approximate to some or other of the genus.

A point of special interest and requiring very careful investigation, is the sexual sculpture. It is very common in the genus that there should be some slight difference between the two sexes of a species in the sculpture of the upper surface, and in certain cases this becomes very marked, and then it is common that the females (the sex displaying the peculiar sculpture) should vary very much in this respect. The variation is often, perhaps generally, geographical : *Dytiscus conspersus* (No. 714), and *D. congener* (No. 706), are notable instances of this. These cases require careful investigation to ascertain whether they are instances of dimorphism or polymorphism, or whether the variations are connected intricately together by intermediate forms. My own impression is that the latter will prove to be the case. It is possible, too, that some of the peculiarities considered by me to be sexual variations may ultimately prove to be specific ones ; for this is a genus in which a minute examination of specimens in a good state of preservation is indispensable for deciding on specific characters.

The geographical distribution of the species is confined to the northern portions of the two hemispheres ; and the richly watered and extensive northern portions of the New World, are probably the most rich in species of *Agabus*, and it is there no doubt that numerous others yet unknown will be discovered.

GROUP 1.

Outline of thorax discontinuous with elytra; prosternum but little thickened in the middle in front; swimming legs elongate and slender, the femora feeble, with rounded postero-external angle. Mesosternal cavity ill developed.

The insects associated by the above characters may be looked on as little developed forms, as the characters used in defining them indicate. They show no close relationship *inter se*: thus *Agabus cordatus* has the middle coxæ very approximate, while in *Agabus caraboides* they are much more separated; *A. cephalotes* is in this character intermediate between the two. *Agabus abnormicollis* seems to approximate to *Dytiscus biguttatus* (No. 676), the prosternal process and metasternal cavity being very conform in the two. *A. cephalotes* seems to have only the two basal joints of the male tarsi clothed with sexual pubescence beneath, while in *Agabus cordatus* there are distinctly three joints so clothed. *A. maderensis* is a species of imperfect form, but its thorax is very nearly as broad as the base of the elytra.

The prosternal process and metasternal cavity in the group are comparatively imperfect, and in *Agabus intersectus* the former terminates in front of the middle coxæ and is not received into the metasternal cavity.

It is probable that the species will ultimately be separated to form as many distinct groups or genera; all the species (with the exception perhaps of *A. cephalotes*) seem to be excessively rare, so that I have had a good deal of difficulty in ascertaining their characters, and have as yet only very imperfectly succeeded.

GROUP 2.

Outline of thorax slightly discontinuous, or continuous, with that of elytra; prosternal process comparatively broad, nearly flat, evenly and distinctly margined, shining and impunctate; metasternal groove moderately broad. Hind coxæ never large; wings of the metasternum large; coxal lines deeply impressed in their upper part, much prolonged in the anterior and outward direction; hind legs slender or moderate (never thick) the femora little thickened, their postero-external angle little obtuse, sometimes rectangular. Male front feet but little developed, clothed beneath with very short "glandular" pubescence; sexual differences of sculpture slight.

The species comprised in this group show a good deal of difference in various points. *Dytiscus guttatus*, appears to approach the first group by the comparatively ill-fitting base of the thorax and elytra; while the latter species, by their more perfect form, shorter swimming legs, polished surface and more highly developed metasternal groove, approach the two following (3rd and 4th) groups. *Agabus hypomelas* is a somewhat exceptional species, for although greatly resembling *D. guttatus*, it has the prosternal process slightly raised along the middle, and feebly punctate.

GROUP 3.

Outline of thorax and elytra continuous, prosternal process very broad, polished and flat, middle coxæ rather widely separated, with highly developed metasternal impression; hind coxæ rather well developed, the wings of the metasternum rather short; swimming legs moderately slender.

These species differ from the more highly developed of the members of group 2 by the broader metasternal impression, and by a better development of the hind coxæ, which encroach more on the wings of the metasternum, so that these are shorter. The other characters therefore are those mentioned as distinguishing the second group.

Agabus brevicollis, Lec., is only placed provisionally in this group, for I have seen but a single badly preserved individual: its prosternal process is elongate, and therefore appears comparatively narrow.

GROUP 4.

The characters of this species are similar to those of the highly developed members of group 2, but the swimming legs are highly developed, being thick and short.

The species must be considered as one of the most perfect of the Agabi: the outline is very continuous, the surface polished; the prosternum is carinate-elevate along the middle, its process broad and flat and powerful. The hind coxæ are of moderate size. The clothing of the undersurface of the basal joints of the front feet of the male is rather elongate, but does not show distinct palettes.

GROUP 5.

Prosternal process broad and polished; its margin just behind the coxæ very broad and dilated, in the posterior half excessively fine.

The three species associated by the above character form a natural group; they are of perfect form with continuous outline, their hind coxæ are largely developed, so that the metasternal wings are rather short, the hind femora are largely developed; especially distinct is the lamina at the postero-external angle. The coxal processes are broad, and subtruncate at their common extremity, the notch between them being but short. In *Colymbetes stagninus*, the laciniae of the metasternum are rather longer than in the other two species; in *Agabus texanus*, the coxal processes are not so extremely truncate at the apices.

GROUP 6.

Thorax and elytra very coadapted and continuous in outline; prosternal process rather narrow, very little dilated behind the coxæ, polished, gently convex transversely, not at all compressed, very finely margined throughout; hind coxæ well

developed, wings of metasternum short ; hind femora with well developed lamina at postero-external angle. Sexual disparities on legs remarkable, of sculpture none.

The group consists of two very similar North American species.

GROUP 7.

Hind coxæ small, wings of metasternum large, hind tarsi feeble, but hind femora with distinct lamina at postero-external angle ; male front claws short and dentate beneath ; no abdominal file ; prosternal process not. or slightly, compressed, glabrous or feebly punctate, either narrow or moderately broad : ciliæ at angle of lower surface of hind femur very rudimentary.

I have associated these three species together to avoid multiplying the groups, but they are discordant, and have affinities in different directions, and the group so constituted is not a natural one.

Dytiscus uliginosus is a peculiar species with small coxæ, compressed and punctulate prosternal process, and very imperfect metasternal groove ; it approximates to the 12th group.

Colymbetes semipunctatus has the prosternal process comparatively broad, polished, and little compressed, with a deep and well developed metasternal groove, and approximates to the second group.

Agabus æneolus has the wings of the metasternum smaller than the above species ; the prosternal process is a good deal compressed, and the species seems to be really more allied to *Dytiscus femoralis*, than to the proceeding insects, but it has the wings of the metasternum larger.

GROUP 8.

Form narrow and parallel ; males with short anterior claws, dentate beneath, and with a series of striæ forming a file (no doubt a stridulating organ) on each side of the third ventral segment : the prosternal process is rather narrow, and very little compressed, nearly glabrous, or feebly punctulate ; the anterior border of the hind coxæ is much arched, the wings of the metasternum are moderately large ; the hind tarsi are rather feeble, but the femora have a distinct lamina at the postero-external angle : the ciliæ at this spot are very rudimentary.

This is a natural group of very similar species, distinguished by the peculiar stridulating organ of the males ; this is very highly developed in *Agabus stridulator* ; the hind femora possess a fine indistinct raised margin on their upper anterior edge ; I think sound can only be produced by this apparatus when the hind body is distended, or made prominent at the spot where the rugæ are.

GROUP 9.

Hind coxæ moderate or rather large, wings of metasternum moderate; prosternal process acuminate compressed, finely margined; swimming legs moderately stout; male claws of front feet rather long; elytra marked with yellow.

This is by no means a natural group; of *Agabus lineolus* and *A. desertorum* I have no specimens at present, and place them here only from my imperfect notes, their males moreover are quite unknown to me. These two species have the prosternal process very compressed, the metasternal groove very rudimentary and narrow; their hind coxæ are little developed.

In *Colymbetes tæniolatus* and *A. disintegratus*, the yellow colour and marks are much developed, the metasternal cavity is narrow and indefinite, and the swimming legs are only moderately stout.

In *Dytiscus didymus* the yellow marks are merely some dots on the wing-cases, the metasternal groove is better developed, and the swimming legs are stout.

GROUP 10.

Anterior tarsi of male never greatly incrassate, their claws more or less elongate, their undersurface bearing distinct but never large palettes. Prosternal process elongate, never broad, but little compressed, and not carinate; metasternal groove rather long; wings of metasternum rather large, hind coxæ moderately developed, their front border much arched: swimming legs moderately slender.

The group is not a natural one. *Agabus strigulosus* Lec., has the prosternal process rather short and punctulate, and the male front tarsi are clothed beneath with glandular hairs amongst which are three rows of small palettes: and it, (as well as *A. austini*) has the uppersurface very distinctly reticulate, the reticulation forming large meshes. In the other species the prosternal process is shining and impunctate.

In *Dytiscus nebulosus*, *D. conspersus*, and *A. austini*, the claws of the posterior feet are longer than in the other species, and they have the prosternal process broader.

D. nebulosus and *D. conspersus*, have the clothing of the male tarsi forming longer hairs and less distinct palettes than in the other species.

A. subfuscatus is a species which in appearance and structure stands about equally as near to *Dytiscus paludosus* and *A. japonicus* of group 2 as it does to *D. congener* of this group.

Agabus austini and *Dytiscus striolatus* make a slight approach to group 20, and the clothing of the male tarsi can scarcely be said to show any palettes.

GROUP 11.

Outline of thorax and elytra discontinuous, male front tarsi slender but with long claws; prosternal process rather small, nearly flat, very finely margined, feebly

punctate ; metasternal groove imperfect ; swimming legs elongate, slender and feeble ; hind coxæ rather small, but wings of the metasternum not large.

I am obliged to place these species isolated from the other groups ; the imperfect structure should place them near to group 1, and to *Agabus hypomelas*, (the first species of group 2) but the anterior claws of the male are elongate ; while by the rounded sides of the thorax they approach the twelfth group, from which they differ by the scarcely compressed prosternal process, and the less obscure metasternal groove.

GROUP 12.

Prosternal process small, much compressed ; middle legs very approximate so that the metasternal groove between them is rudimentary and obscure. Sides of thorax rounded. Coxal lines rather deep and a good deal divergent in front.

These four species seem to form a natural group on account of the above peculiarities ; the hind coxæ are short and their upper border but little arched, and the wings of the metasternum are not short, though in this respect the species do not closely agree *inter se*. The swimming legs are long and feeble.

Agabus altaicus, Gebl., of the nineteenth group has a quite similar form of the prosternal process and metasternal groove, but the coxal lines are very different.

GROUP 13.

Prosternal process acutely raised or carinate along the middle, but its sides little depressed, so that it is not compressed, the sides evenly and distinctly margined ; metasternal groove well developed ; swimming legs elongate, rather slender ; wings of metasternum large (*D. confinis*) or moderate (*Agabus infuscatus*) ; male front tarsi little incrassate, their claws elongate.

These two species are readily distinguished from all others by the acutely carinate prosternal process.

GROUP 14.

Hind coxæ large, with acutely arched upper border ; wings of the metasternum very short ; prosternal process rather small ; swimming legs rather slender. Male tarsi but little incrassate.

These two species are associated together because of the very short wings to the metasternum ; in some other respects they are very different, *Dytiscus femoralis* has a very small prosternal process which is much compressed, and an extremely narrow metasternal groove ; *Dytiscus abbreviatus* has a moderately large prosternal process, and it is not compressed, but is somewhat carinate along the middle, and its metasternal groove is better developed.

GROUP 15.

Sides of thorax very feebly margined, not at all curved. Prosternal process very flat, not visibly margined ; metasternal groove rather elongate ; wings of metasternum

large ; front border of hind coxæ little arched ; swimming legs feeble, and elongate ; male front tarsi with the basal joints but little incrassate, the fifth joint angularly dilated in the middle beneath, claws elongate.

The unique species of this group forms the genus *Aretodytes*, Thoms. ; it may be readily distinguished by the above combination of characters.

GROUP 16.

Prosternal process compressed on its apical half or through its whole length, finely but quite distinctly margined ; wings of metasternum moderately large, or large ; swimming legs moderately stout ; reticulation of surface often very conspicuous ; male front tarsi much incrassate and dilated, their claws variable, either short and dentate beneath, or elongate, or very elongate.

The group approximates closely to the tenth group, but differs from it by the broad male tarsi : and the prosternal process is usually broader. The species forming the group differ a good deal, however, in the various peculiarities of the male tarsi, and in the prosternal process, and as they are not bound together by the possession of any positive common character, the group cannot be considered a natural one. *Agabus lecontei* has the prosternal process resembling almost exactly that of *Dytiscus congener*, of group 10 ; *A. reticulatus* has the process broader, only compressed on its apical half, while *Colymbetes erythropterus* has it compressed for its whole length so greatly as to appear carinate along the middle. In this latter very remarkable species, the front claws of the male are excessively elongate, while in *A. griseipennis*, they are remarkably (one might say abnormally) short. The male front tarsi indeed of this latter species are highly peculiar, they are dilated and comparatively little compressed, and the fifth joint is densely set beneath with fine pubescence ; *A. lecontei* agrees with it in these peculiarities, although they are not quite so highly developed in it. The group also shows much variation in the development of the sexual clothing of the undersurface of the male feet ; thus in *A. reticulatus*, the palettes are but inconspicuous, while in *A. obsoletus* they are highly developed.

GROUP 17.

Prosternal process flat, very finely or indistinctly margined ; male front tarsi much incrassate, and furnished beneath with remarkably large palettes ; wings of metasternum only moderately large ; swimming legs moderately long and stout ; surface conspicuously reticulate.

In these two species the combination of flat, almost unmargined, prosternal process, with large palettes on the feet of the male is diagnostic ; the prosternal process is not very different from that of *Dytiscus elongatus*, (group 15), while the large palettes are approximated by certain species of group 16.

GROUP 18.

Swimming legs highly developed, short and incrassate; prosternal process rather broad, but a good deal compressed; wings of metasternum moderately large; male front tarsi much incrassate, furnished beneath with rather long hairs bearing rather well developed palettes, claws rather short.

The powerful swimming legs of the single species, suggest a comparison with *Dytiscus brunneus* (group 4), but there is no evidence of other approximation between the two.

GROUP 19.

Coxal lines in their anterior part but little directed outwards. Prosternal process rather broad but always compressed; wings of metasternum large, or moderate. Male tarsi and claws variable.

The essential character of this group is that the coxal lines are different in their direction in their anterior portion, to what they are in the other groups, being more abbreviate and having a less outward prolongation; in the other groups these lines have their anterior parts sensibly prolonged so that they join the front border of the coxa in a gradual manner, forming a most acute angle: in this group they either do not join the front border of the coxa at all, or do so in such a way as to form a very considerable though still acute angle.

The group however includes some very discrepant forms. *Agabus discors*, Lee., has the metasternal groove extremely rudimentary, the front feet of the male bear beneath an abundant elongate sexual clothing, but this bears no palettes, and the claws are very elongate. In *Dytiscus vittiger* the metasternal groove is narrow and ill developed, the male tarsi are poorly developed as regards both incrassation and the claws and the sexual clothing: this species has the hind claws rather stout and distinctly unequal, and the hind margins of the outer sides of the joints of the hind tarsi are slightly lobed in their lower parts. *A. altaicus* agrees with *D. vittiger* in the narrow imperfect metasternal groove, but in other respects accords with *Dytiscus chalconotus*. *Agabus subtilis* and *A. nigroæneus* are peculiar in the male characters, this sex having the basal joint of the hind tarsus with the lower external edge margined, (approximating group 1 of *Ilybius*) and their claws are rather stout and little curved, and unequal.

Thus these species (*D. vittiger*, *Agabus subtilis*, and *Agabus nigroæneus*) appear to make an approach to *Ilybius* in the hind feet, but in different directions; *D. vittiger* approximating by this character to the second group of *Ilybius*; *A. subtilis* and *A. nigroæneus* to the first group.

The other species of the group are more homogeneous, but still they show considerable discrepancies in the claws and sexual clothing of the male tarsi, and also in the width and length of the metasternal groove.

The group not only approximates to *Ilybius* in two directions as above indicated, but also by *D. vittiger* and *A. altaicus* approximates group 12 of its own genus

(i.e., *Agabus wasastjernæ* and its allies), and by yet other species a great approach is made to members of the second group of *Agabus*; *D. chalconotus* of this group and *A. lugens* of the second group being in most points of their structure very similar, but the difference in the coxal lines essentially distinguishes the two, and is moreover confirmed by an important difference in the hind claws of the two species these being elongate and simply curved in *A. lugens*, while in *D. chalconotus* the curving occurs only near the apex and that in a slightly unequal manner, the apex of the outer claw being thinner and more curved than that of the inner.

GROUP 20.

Coxal border very wide; the coxal lines gently, not abruptly, turned outwards at the extremity; prosternal process punctulate, slightly raised along the middle.

The fact that a large proportion of the area of the coxal processes is formed by the coxal border distinguishes these species from all the other groups. In *Agabus tristis*, the border is not quite so large as in *Dytiscus bipustulatus*. This latter species is a most extraordinary one on account of the great variation it shows in structural and sexual characters.

GROUP 21.

Anterior portion of prosternum united with prosternal process so as to form a sensible angle; prosternal process compressed; wings of metasternum rather short; coxal lines not greatly turned outwards at the extremity; coxal border small; male anterior tarsi much developed; hind legs slender.

For one of these two species C. J. Thomson proposed the generic name *Acatodes*, but his separation of the insect cannot be adopted at present; he appears to have relied chiefly on the elongate basal joint of the hind tarsus, but this is found in most of the *Agabi* with slender and elongate swimming legs. The peculiar bend of the prosternum is very marked in *Dytiscus fuscipennis*, but is comparatively obscure in *Agabus coxalis*; in this latter species the male tarsi are broader and have larger palettes beneath than is the case in *D. fuscipennis*.

GROUP 22.

Prosternal process extremely compressed; wings of metasternum short, coxal lines much approximated, abruptly turned outwards at the apex; apical joints of the antennæ dilated in the male.

C. J. Thomson restricted the generic name *Agabus* to one of these three species (*Dytiscus serricornis*); but the isolation of the group under a separate name can scarcely be adopted at present, especially as the characteristic structure of the prosternum and coxal lines is much diminished in *A. clavatus*, Lec.; but of all the groups I have adopted for the genus this is the most likely to prove really distinct.

The excessively compressed prosternal process is very similar to that found in the

genus *Ilybius*: moreover *D. sericornis* has the structure of the wing-cases similar to that which exists in *Ilybius*: on their inner face the marginal line is scarcely to be detected, but at the apex it is replaced by a tomentose area (this not so largely developed however as in *Ilybius*); whether this character exists in the other species of the group I am unable to say. The approximate coxal lines and the consequent form of the coxal lobes are somewhat similar to what is found in *Copelatus*, to which aggregate however this group shows no other approach, indeed it is more distinct therefrom than is any other group of the genus.

GROUP 23.

Under-wings reduced to subclavate slips, which are insufficient for flight; sculpture of elytra consisting of isolated scratches, of which the basal ones assume an oblique, the outer and apical ones a transverse direction.

The reduction of the wings is most remarkable and has but few parallels in the rest of the carnivorous water-beetles; I have examined a specimen of each sex, for in the individual where I first observed the fact I thought the occurrence of so abnormal a structure must have been a mere deformity. Except for this character, and the absence of a coxal file, the species would come very near to group 8 by most of its other characters.

I. 47.—Genus *ILYBIOSOMA*. (*Vide* p. 537.)

This is an autogenus; the insect is of the size of the larger *Agabi*, of dark colour, and with convex upper surface, so as to approach somewhat in form to *Ilybius*.

The outline of thorax and elytra is continuous; the lateral margin of the thorax is broad and subobsolete, being but little raised, and at the posterior angles nearly effaced. The prosternal process is elongate, convex transversely but not compressed, its side finely margined, the margin not extending to the extremity. The coxal processes are largely developed in the transverse direction, and much separated from one another; the coxal border is narrow, the coxal lines are a good deal divergent in their anterior portion, but they are abbreviated before reaching the front border of the coxa. The short stout hinder tarsi have a slight lobing of the hinder margins of the basal joints on the outer side. Hind coxæ largely developed, with greatly arched upper border; the short wings of metasternum greatly deflexed in consequence; swimming legs thick and abbreviated; epipleuræ behind the middle narrow.

Agabus regularis, Lec., which possesses the above characters has much the appearance of the large species of the 19th group of *Agabus*; but the linear form of the wings of the metasternum is much more conspicuous, and the swimming legs are thickened and abbreviated. It perhaps is less widely separated from *Agabus politus* and *A. gagates*, than it is from any other species known to me. It inhabits North America.

Besides the relations with *Agabus* as above mentioned this interesting insect shows a great approximation to *Platynectes* in its systematic characters; especially to the first group of that genus inhabiting Australia and Tasmania, but *Ilybiosoma* is not only of much greater size and entirely different appearance, but has moreover the swimming legs incrassate and abbreviate, and the coxal processes much greater in the transverse direction, and more separated from one another, and the coxal lines more divergent in front.

I. 48.—Genus *PLATYNECTES*. (*Vide* p. 538.)

This aggregate comprises thirteen species; the individuals are of rather depressed form, often very broad, the surface frequently very shining and polished, and some times marked with yellow spots or lines arranged in a symmetrical manner, but very variable within the bounds of the same species. The front tarsi of the male are slender. The thorax and elytra are very continuous in outline. The hind coxæ are very large, and the wing of the metasternum deflexed outside the coxa is a very slender, parallel-sided or linear band. The coxal lines are fine, and but little divergent in front, and do not reach to the front border of the coxa. The prothorax has a raised side margin; the epipleuræ of the elytra are quite narrow behind the middle; the swimming legs are either quite slender, or moderately slender, and the hind tarsi externally show a slight lobing of the hind margins of the joints.

The above characters sufficiently distinguish this genus from its allies, with several of which it agrees, or approaches, by one or more of its characters.

The species are found in Australia and Tasmania, Eastern Asia and the Austro-Malay islands, and in South America; and form three tolerably well distinguished natural groups, as defined on p. 538; of these three groups the first comprises the species least different from *Agabus*, and the third the most distinct and highly developed forms; the swimming legs in this third group are decidedly thicker than in the others.

I. 49.—Genus *LEURONECTES*. (*Vide* p. 546.)

This aggregate comprises only two dissimilar species, with the following characters:—

Side of prothorax without margin. Hind coxæ large, the wing of the metasternum deflexed outside it as a very slender parallel sided band. Coxal lines fine, but little divergent in front, abbreviate before reaching the front border of the coxa. Epipleura quite narrow behind the middle. Swimming legs slender or moderately slender. Prosternal process broad, flat and acuminate.

The two species are closely allied to the third group of *Platynectes*, but the prothorax is without lateral margin. They are different in appearance, one being narrow the other rather broad; *L. parallelus* is a considerably lower form than

Colymbetes gaudichaudi, its swimming legs being more slender and its hind coxæ having the front border less arched, it has scarcely any trace of lobing of the joints of the hind tarsi, and the outline of its thorax and elytra are less perfectly continuous than they are in *C. gaudichaudi*.

The two species are found in western South America.

I. 50.—Genus *AGAMETRUS*. (*Vide* p. 547.)

This aggregate comprises only three species; the individuals possess a very polished surface, and the outline of the thorax and elytra is very continuous, the former is destitute of any raised margin at the side.

The prosternal process is broad, flat and acuminate; the epipleuræ are quite narrow behind the middle: the hind coxæ are very large, and the wing of the metasternum deflexed outside it is a very short, parallel sided, or linear band. The coxal lines are quite absent.

The genus is very closely allied to *Leuronectes*, but is well distinguished by the absence of the coxal lines.

The species are found in South America.

I. 51.—Genus *AGABINUS*. (*Vide* p. 548.)

This is an autogenus, comprising a single species, having quite the appearance of one of the smaller, shining black *Agabi*. Coxal lines deeply impressed, nearly straight; the hind coxa small, its front border scarcely at all arched; the coxal border very distinct and continued forward till it meets the front border of the coxa at nearly a right angle, the wings of the metasternum are large, and not deflexed outside the coxa. Epipleuræ narrow behind the middle (but still broader than in *Agabus*). Swimming legs slender. Prosternal process rather broad, strongly acuminate, its basal portion with a peculiarly thick margin, but its apical half quite without margin.

These characters are exhibited only by a single species; it has a very polished surface and is in appearance very similar to *Agabus aubei*, (*Metronectes*). The peculiar structure of the coxal processes, gives it a superficial resemblance to *Noterini*, but it has no real approximation thereto, and when the coxal processes are compared with those of *Dytiscus maculatus* (*Gen. Platambus*) and with those of a member of the *Noterini*, it is readily seen that even in this portion of the structure the relationship is with the *Platambus*, and not with the *Noterini*: with *Agabus pictipennis* (another member of *Platambus* found in Japan) the resemblance is still greater, and the true position of the genus is demonstrated in an irrefragable manner by this latter species. Although *Agabinus* has not the broad epipleuræ of *Platambus*, still it shows an approach thereto, for they are quite distinctly broader than in *Agabus*.

A comparison of *Agabinus* and *Platambus* with a view of ascertaining if either of the two forms can be considered ancestral to the other, gives a strongly negative result: which may thus be summed up. *Platambus* must be considered a much higher form than *Agabinus*, because of the much greater development of the hind coxæ, and the superior swimming legs, and it is more strongly differentiated from *Agabus* by the broad epipleuræ than *Agabinus* is. On the other hand the peculiar coxal processes of *Agabinus* depart extremely from *Agabus* and all other *Agabides*, except *Platambus*, and the latter in this respect is intermediate between ordinary *Agabides* and the genus *Agabinus*. Thus looking at *Platambus* and *Agabinus* as two approximated forms, differentiated from average *Agabides* in similar manners, by the widened epipleuræ and straightened coxal lines, we must say that, as regards the epipleuræ, *Agabinus* is intermediate between *Agabides* and *Platambus*, while as regards the coxal lines and processes the reverse is the case, *Platambus* being intermediate between *Agabides* and *Agabinus*.

Another suggestive comparison may be made between *Agabinus*, and the Australian *Hyderodes*. This latter insect may be looked upon as a primitive form of the group (*Dytiscini*) to which it belongs; and in it we find a shape of the coxal processes, approximating considerably to *Agabinus*, but notwithstanding this general resemblance of the coxal processes of the two, there is seen the important difference that a deep coxal notch or cleft exists in *Hyderodes*, while there is scarcely any trace of such to be seen in *Agabinus*. It appears to me that the inference we are entitled to draw from this is that among primitive *Dytiscidæ* the development of the coxal notch was a mode of differentiation prior to differentiation in the general form of the coxal processes.

This insect is peculiar to California.

I. 52.—Genus *PLATAMBUS*. (*Vide* p. 548.)

This aggregate comprises three species distinguished by the structure of the epipleuræ of the elytra, which present behind the middle a flat surface that is considerably broader than in other *Agabini*. Coxal lines very deep in front, and distinctly directed outwards before their termination, so that the coxal lobes are quite distinct, but have a less extension in the transverse, and a greater in the longitudinal direction than they have in other *Agabini*.

Hind coxæ large, with the front border considerably arched, and approaching nearer to the middle coxa than it does in *Agabus* (even in group 14 of that genus); the wings of the metasternum therefore very short and sublinear. Prosternal process very broad. Swimming legs moderately stout, but their femora with the postero-external angle rounded, and its setæ but little developed.

The three species of which this aggregate is at present composed, all have the upper surface variegate with yellow and the hind angles of the prothorax a little

acute. The prosternal process is very broad, in one species, *Agabus sinuatus*, it is quite flat and almost without margin, in *A. pictipennis* the basal portion is coarsely margined, while in the third species, *D. maculatus*, the middle portion of the process is slightly convex, and the sides are again flattened out or explanate, and are finely margined. In *A. sinuatus* the coxal lines are not so deep as in the other species, and they are rather more divergent in front, and do not quite reach the border of the coxa; in this latter species the epipleuræ are not quite so broad as in the other two.

The broad epipleuræ are not found in other members of *Agabides*, but reappear in *Hyderodes*, and in *Cybister* in a variable manner.

The geographical distribution is in Europe, Persia, and Japan.

I. 53.—Genus *ILYBIUS*. (*Vide* p. 550.)

This aggregate comprises twenty-four species, and is characterised by the structure of the swimming tarsi which have their claws more or less unequal, and the basal joints externally with the hind margin (more or less) distinctly lobed. Prosternal process very compressed. Inner face of elytra with a tomentose area at apex. Side of prothorax margined; epipleuræ narrow behind the middle.

The species are generally of peculiar shape being distinctly convex longitudinally as well as transversely, their sculpture is a reticulation of a fine and dense character on the upper surface, and beneath they are finely strigose; the colour is black and pitchy red, and the only pale marks are a spot or dash near the side of the wing-case, accompanied by another near the apex, and sometimes by a marginal yellow band.

The approximation made to *Agabus* is considerable and is at more than one point. The lobing of the joints of the hind tarsi occurs slightly in some of the species of the 19th group of *Agabus*, and the inequality of the hind claws of *Ilybius cinctus* is very slight, and not greater than what is found in the male of *Agabus subtilis*, a member of the group of the genus just mentioned. *I. cinctus*, however, does not make any approach to any particular species of *Agabus*, and the approximation between it and *Agabus subtilis* is an approximation not of the species themselves but of the two aggregates of which they respectively form a portion.

The lobing of the hind tarsi is greater in some species of *Platynectes* than it is in *I. cinctus*, but there is no approximation between these two in other respects.

This lobing of the hind tarsi is really distinctive of the genus as compared with *Agabus*, for it is greater in *Ilybius cinctus* (the species of the genus where it is least) than it is in any species of *Agabus*. The inequality of the claws of the hind tarsi is also really distinctive between the two aggregates, although as regards this the two actually touch by means of *A. subtilis* and *I. cinctus*.

The compression of the prosternal process is greater than in any group of *Agabus* except the 22nd group.

I have not been able to observe the tomentum on the interior of the elytra in all the species, but I have found it trustworthy in all such cases as I have examined.

Many of the species are very similar to one another, and require an examination before they can be distinguished with certainty.

Considerable variety prevails in regard to nearly all the characters of the genus. The characteristic shape or form is scarcely present in certain species, especially the smaller ones: the lobing of the hind tarsi, very conspicuous in certain species, (*Dytiscus ater*, *e. g.*) is much less developed in others (*I. oblitus* for example). The swimming legs are better developed in *I. apicalis* than in any other species, and they are in it much thicker, shorter and more powerful than they are in *I. discedens*; these two species being the extremes of the genus in this respect. The hind coxæ and the wings of the metasternum, also show considerable variety, in fact there are scarcely two species which agree exactly in the size and form of these parts.

The external sexual differences are confined to the legs and last ventral segment; difference in sculpture between the two sexes being quite absent; the male tarsi are never highly developed, the incrassation of their joints being at most only moderate; the clothing of their undersurface however attains a considerable length in some species (*cf. Dytiscus ater*), and as it spreads out in a divergent manner increases very much the apparent size of the tarsus; these hairs bear very small paper-like palettes at their extremity. The last ventral segment is usually coarsely strigose in the male (though to a variable extent) on its apical portion, and very frequently has a fine carina on the middle of this part; in the female this segment has its apical portion compressed on each side in a peculiar manner, so as to form a notch or groove which varies in apparent shape in accordance with the point from which it is viewed.

The genus is characteristic of the northern portions of the two hemispheres, and there is no doubt, that the north of America will prove to be its metropolis; *I. discedens* must be considered the most primitive of the species yet known; it has poor swimming legs with the setæ at the outer angle of the femur very small, rather small coxæ, feeble development of the male feet and their clothing, the claws of its hind tarsi are less differentiated than in other species, the lobing of the joints of the hind tarsi is small, and the characteristic facies of the genus is but little developed in it. The few species known from the eastern portions of the Old World and Japan are aberrant, as is also the *I. cinctus* of Thibet.

I have arranged the species in two groups according to whether the hind tarsi of the males have on the outside the joints margined beneath, or quite unmargined.

1. 54.—Genus *COPELATUS*. (*Vide* p. 562.)

This is an extensive aggregate, comprising more than ninety species; they are rather flat insects with a very continuous outline; and are oval or oblong-oval in form; the colour is variable, frequently unicolorous black, while not unfrequently there is a yellow basal band on, and a pale extremity to, the wing-cases; the size is frequently quite small and the greatest length attained is 10 m.m. of length: the sculpture of the upper surface is remarkable and usually consists of regular lines, which frequently form elongate striae on the wing-cases, but sometimes are abbreviate and broken up, and sometimes are quite wanting; the upper surface of the prothorax frequently bears short irregular scratches. The coxal lines are peculiar, being extremely close to one another, so that near their divergence at the coxal lobes they are almost contiguous with the longitudinal line dividing the two coxæ; moreover at the anterior part of the coxal lobes they become excessively fine, so that they can with difficulty be detected, and are abruptly turned outwards at right angles to their former direction. These peculiarities of the coxal lines are quite sufficient to characterize the aggregate; but it must be added that the sides of the thorax have a very fine margin, the prosternal process is never very elongate and the intercoxal process of the metasternum has its anterior part reflexed and impressed in adaptation to the apex of the prosternal process, but does not possess any prolonged groove, or highly developed depression in front. The hind coxæ are always large, and the wing of the metasternum terminates as a slender band deflexed outside of the front border of the hind coxa. The swimming legs are slender, more especially the tibiæ and tarsi, for even in the species where the femora are distinctly incrassate, the tibiæ and tarsi are scarcely correspondingly developed. The coxal lobes always display a well marked coxal incision and the apex of the posterior femur is destitute of accumulated setæ. The hind tarsi are almost, or quite, destitute of lobing of the joints externally, and are terminated by two small, equal, claws. The male tarsi are sometimes scarcely different from those of the female (*Colymbetes parvulus*, Boisd.), in other cases the three basal joints become considerably dilated, and furnished beneath with four rows of distinct palettes, placed almost immediately on the tarsus; their claws are not subject to much elongation or development. The females often show a highly developed sexual sculpture, which seems to be either variable or polymorphic within the limits of one species: this sexual sculpture is independent of the peculiar sculpture already alluded to, which however is also to some extent liable to sexual differences.

The genus is wanting in cold climates, but is widely distributed in the warmer parts of the world, and will probably prove to be one of the most extensive in the Dytiscidæ. A large proportion of the one hundred species known to me are at present very rare in collections, and it has for this reason been impossible for me

at present to attempt a natural classification of them, based on the whole of their structures. The peculiar sculpture of the wing-cases offers however a very simple means of arranging the species in groups, and I have accordingly made use of it, and classed the species in fourteen groups. Seven of these groups have, in addition to the conspicuous striæ, a submarginal stria placed very near the outside of the wing-case, quite close to the irregular punctures near the epipleural margin; this stria is of variable length, sometimes quite short; in groups 1 to 7 no trace of it exists.

I. 55.—Genus *AGLYMBUS*. (*Vide* p. 596.)

This aggregate is formed by seven species; they are similar in most respects to *Copelatus*, and possess on the upper surface a beautiful and conspicuous sculpture of very short lines. The hind coxæ are very large; the wing of the metasternum terminates as a slender band abruptly deflexed outside the front part of the coxa; the coxal lines are quite obliterated, the coxal lobes are shaped as in *Copelatus* and possess a well marked incision.

The aggregate is allied to *Copelatus*, differing from it in the obliteration of the coxal lines; all the species, except *A. brevicornis*, have the spaces which should be included between them (if they were not obliterated) broader than in *Copelatus*; *A. brevicornis* departs however from the other species in this respect and is similar to *Copelatus* by the excessive reduction of these spaces. It is highly probable that this species, and probably also *A. gestroi*, should be separated from the others; and even then it is possible that the remaining South American species could not properly be included in one genus. The species are however so excessively rare, that of most of them I have seen only a single individual, and in several cases I have no specimen now before me for comparison and verification and have merely to trust to the imperfect notes made when I drew up the descriptions of the species.

The following additional characters are drawn from *Agabus rufipes* Aubé:—Prothorax very finely margined. Middle coxæ rather closely approximate; impression on the apex of intra-coxal process of the metasternum short and indefinite. Hind femora rather stout, with well marked lamina at extremity, without accumulated setæ near this angle; hind tarsi rather elongate and slender, terminated by two rather small nearly straight and equal claws. Male front tarsi strongly compressed. Sculpture of the upper surface consisting of short impressed straight lines.

In this species the basal joint of the hind tarsus is feebly lobed externally, and the following joints are destitute of lobing. While in *Agabus leprieuri* (No. 898) and *Aglymbus sculpturatus*, the four basal joints are strongly lobed; and in these two species the male tarsi are nearly simple, and the sculpture of the upper surface

consists of very numerous impressed lines, those on the apical portion of the wing-case taking an oblique direction.

As at present constituted the genus is South American with two representatives in Abyssinia.

I. 56.—Genus *LACCONNECTUS*. (*Vide* p. 598.)

This aggregate consists of only two species; the individuals are of small size, (not more than 5 or 6 m.m. long) and of rather broad, depressed form, of polished surface, and of pallid colour, with the wing-cases more or less infusate. The coxal lines are quite obliterated; the coxal lobes are rather broad, almost without any trace of a coxal notch.

These insects have a resemblance to *Laccophilus*, on account of their size, colour and polished surface, but have no other relationship therewith, and can only be placed near the preceding genus, from which they differ, by the absence of any coxal notch or incision, by the polished surface without impressed lines, and by the less approximate middle coxæ. The following are additional characters. Thorax rather obscurely margined at sides. Prosternal process broad, short, nearly flat, finely margined, obtuse at apex. Intercostal process of metasternum with very short impression in front. Hind coxæ very large; wing of metasternum deflexed outside front border of coxa as a very slender, quite parallel-sided, band. Swimming legs moderately well developed, their femora without accumulated setæ at hind angle; their tarsi rather slender, without lobing of the joints externally, and terminated by two very small closely applied claws, which are nearly equal in size.

The two species known to me are from the East Indian region.

I should think it was one of these species that Motschoulsky had in view when he proposed the name *Lacconnectus*, (*Études Ent.* 1855, p. 83) and I have therefore used this name; but the characters he assigns render it by no means certain that I am correct in so doing.

I. 57.—Genus *AGABETES*. (*Vide* p. 599.)

This is an autogenus; the insect is not at all closely allied to any other at present known; it is of broad, short, depressed form, not variegate in colour, but with a very beautiful sculpture on the upper surface, formed by dense and distinct, elongate punctures or extremely short lines. The thorax is without lateral margin; the coxal lines are perfectly parallel in the front part of their course, and continue so till near the extremity, where they are gently divergent, and leave external to them a very large and distinct coxal border.

The prosternal process is much raised along the middle; the middle femora bear some erect long setæ beneath, and the anterior ones have also some similar, although

less conspicuous, setæ; the hind coxæ are large, and the wings of the metasternum are deflexed outside them as slender nearly parallel-sided bands. The hind legs are rather slender, but their femora have a rectangular apical angle; their tarsi have no lobing of the joints externally and are terminated by two short, stout, very nearly equal claws. The male characters are highly peculiar; the front tarsi are not broad, but are incrassate and compressed, and bear beneath some pencils of long setæ, mixed with which are three or four transverse series of small palettes, and they bear extremely long claws; the last ventral segment is marked by two very deep parallel lines running along its middle.

This interesting and very rare North American insect, has no close allies, the peculiar coxal lines and processes, are not very different to what exist in *Matus*, but it is worthy of remark that it is the Australian, not the North American, species of *Matus* that most approach it. The male tarsi are an approximation to what exists in some *Colymbetini*, the peculiar *Dytiscus pustulatus* (No. 945), for example.

I. 58.—Genus *MATUS*. (*Vide* p. 599.)

Three species form this aggregate; their individuals are of rather narrow parallel form, but a good deal attenuate behind, and with very broad head. The prosternum is sulcate along the middle, the groove extending from near the front margin of the prosternum to the apex of the prosternal process: the side of the prothorax has a raised margin.

The middle coxæ are rather widely separated, and the intercoxal process of the metasternum bears in front a highly developed cavity for the apex of the prosternal process. The hind coxæ are very large, and their front border approaches very close to the middle coxa, the wings of the metasternum are therefore very short, and greatly deflexed as slender bands outside the front part of the hind coxæ, this band is in its terminal portion so excessively slender that it is truly an acuminate line; the coxal lines are deep, and start in front from the apex of the metasternum and are parallel or subparallel till they approach the coxal lobes, and then are gently turned outwards, leaving a broad supra-articular border. The hind legs are well developed for swimming, being rather short and stout, and their tarsi are peculiar, the hind margins of the joints being well lobed externally; but the lobe, or produced part, is here at the upper edge, whereas in the other genera where a lobing of this sort occurs it is at the lower edge of the tarsus; the two claws terminating the tarsus are straight, and slender, and very unequal in length, the outer one being about twice as long as the inner one.

The surface is polished and almost without sculpture; the male tarsi are but little developed.

The genus is again an isolated one; the species when seen from above suggest

from their form and details, a likeness to the aberrant group of Carabidæ, Pseudomorphini, but I am not able to find any real approximation. There is however a decided although not close approximation to Platambus.

The genus as here defined comprises one North American, and two Australian species. Hamlet Clark (*Journ. of Entomology*, II, p. 15,) proposed a distinct generic name, *Batrachomatus*, for the Australian species known to him, but I do not think it is advisable at present to separate the Australian from the North American species; the only differences I can see are that in the Australian *Batrachomatus wingi*, Clk., the prosternum is not so deeply sulcate, and the coxal lines are quite parallel in front, the coxal border is broader, and there is a distinct, although small coxal notch, and the epipleuræ are rather broader. It is quite probable however that ultimately the North American may have to be separated from the Australian species, and in that case the name Clark proposed will be useful.

I. 59.—Genus *COPTOTOMUS*. (*Vide* p. 601.)

This aggregate comprises three species; their individuals are of narrow, oval, rather convex form, and red or yellow in colour, with black marks on the upper-surface. The terminal joint of the palpi (more especially of the labial) is broader than the other joints and notched or emarginate at the extremity. The middle of the prosternum is greatly thickened so as to present a vertical front part, somewhat as in *Cybister*.

The prothorax is margined at the sides. Viewed in one direction, the terminal joint of each palpus, looks slender and slightly pointed towards the extremity, but viewed from a direction at right angles to this, the last joint of the maxillary palpus is seen to become slightly broader from the base to the apex, and its apical margin to be emarginate, one side of the notch being more projecting than the other; the apical joint of the labial palpus presents a similar structure, but more exaggerated, the joint being broader, and one side of the apical portion of the joint being greatly larger than that on the other side of the notch. The prosternum is very incrassate along the middle, so that it presents in front a distinct vertical edge at right angles to its longitudinal axis of direction; the prosternal process is rather elongate, and is acuminate, and at the sides finely margined, but is so much compressed that its margin is concealed; the inter-coxal process of the metasternum bears in front a rather elongate, narrow, well developed cavity. The hind coxæ are very large and their anterior border is excessively large, so that although the metasternum is elongate in the middle, it possesses only short side wings, and these are deflexed outside the front border of the coxæ as narrow parallel-sided bands. The coxal lines are rather fine but are perfectly distinct, they are widely separated, and in front much divergent, they do not reach the front border of the coxæ, their divergent anterior portions running parallel to, and at a considerable distance from, the front

borders of the coxæ; on reaching the coxal process they are rather gently directed outwards, and leave the coxal lobe large and broad with a narrow supra-articular border; the separation behind of the two coxal lobes is but slight, and they show only the very slightest trace of a coxal notch. The hind legs are rather powerful and well developed, the femora have a well marked lamina at the apex, with a sharply defined rectangular angle, and no trace of setæ: their tarsi have the lower portions of the hind margins strongly lobed externally, and are terminated by two nearly straight closely applied claws, that are about equal to one another in length, but the inner one is considerably stouter than the other. The apices of the elytra are slightly obliquely truncate.

The position of the genus is decided in a positive manner by *Rhantus marginatus* in *Lancetes* (No. 917, *Coptotomus argentinus*, Reiche); although clearly allied to *Coptotomus*, this however differs strikingly from it in the form of the coxal lobes; these in *Coptotomus* are similar to what exists in *Ilybius*, whereas in the genus *Lancetes* the approximation in structure of the coxal lobes is to the very different form found in *Dytiscus*. The peculiar form of the prosternum is not so different to that of *Lancetes*, but may be defined as an exaggeration of the *Lancetes* prosternum after the manner of *Cybister*.

The species are, so far as yet known, confined to the United States of North America.

I. 60.—Genus *LANCETES*. (*Vide* p. 602.)

The five species associated to form this aggregate, consist of insects of rather large size for the Agabini (about 10 m.m. or over in length), they are of more or less narrow form, and their colour is a variegate mixture of black and yellow, or yellowish red, and they have very little sculpture; their appearance is greatly that of the species of *Rhantus*. The elytra are distinctly sinuate-truncate at the extremity, the coxal lobes elongate, and deeply separated from one another. The colour is a variegate mixture of black and yellow, or yellowish red, and they have very little sculpture. The prothorax is margined at the sides; the palpi have the apical joint only slightly or not at all incrassate, and with faint indications of an apical notch: the prosternum is thickened along the middle, but is not vertical in front; the prosternal process is elongate and acuminate and received into a well developed cavity on the inter-coxal process of the metasternum. The hind coxæ are moderately large, but the side wings of the metasternum are also large, and not deflexed outside the coxæ. The coxal processes are very peculiar, the coxal lines are not greatly turned outwards to form the coxal lobes, and at the same time the separation between the two lobes is deep and elongate, so that the processes have a greater extension in the longitudinal direction, and a less in the transverse one than is usual, and the base of the articulation of the legs is more imperfectly covered and protected; in all the species (except *Colymbetes nigriceps*)

it is easily seen that this middle gap is partly filled up by a growth of the excessively fine margin that in the allied groups borders the inner edge of the coxal processes ; thus along the inner and upper part of this middle separation of the coxal processes there is seen in *Colymbetes lanceolatus* a sort of broad border marked off by a deep suture ; in *Colymbetes nigriceps*, the evolution has been carried to a greater extent, and the suture in question is obliterated although its position is still to be distinguished by some remaining punctures, and thus the form of the coxal processes in that species approaches very much nearer to *Rhantus*. The apices of the elytra are much truncate, but in a variable degree ; in *L. unguicularis*, this truncation is extreme. The hind legs are rather elongate and slender, their femora are but little incrassate, and have a series of setigerous punctures placed along the middle of their under surface, somewhat near their outer extremity ; their tarsi have the hind margins of the joints externally slightly lobed beneath, and are terminated by two claws, very variable according to species.

These are interesting insects and will probably ultimately be distributed in three different genera, viz., 1, *Col. lanceolatus* ; 2, *L. unguicularis*, and the two species following it ; and 3, *Rhantus marginatus*. In *Col. lanceolatus* the elongate palpi when viewed in one direction, show an evident emargination at their slightly truncate extremity, and this is also seen in *Rhantus marginatus*, where the palpi are much shorter. In *Col. lanceolatus* the prosternal process, as is shown by its margin, is but little compressed at the sides, while in the others it is very strongly compressed. The series of setigerous punctures distributed along the hind femur may be considered I think homologous with those which in the *Agabus* allies are accumulated together at the hind angle of the femur. The approximation of *Rhantus marginatus*, (No. 917) to *Coptotomus* is quite clear and has been alluded to in the notes on that genus ; it is also evident that *Colymbetes nigriceps* makes a real approach to the genus *Rhantus*, though remaining very distinct therefrom.

The species are Chilian, but one is found at Buenos Ayres, and another in Australia and New Zealand.

I. 61.—Genus *SCUTOPTERUS*. (*Vide* p. 606.)

Two species form this aggregate. These insects are of different appearance to the other *Colymbetini*, and remind one somewhat of large *Agabi*. Leconte indeed described the only species known to him as an *Agabus* not a *Colymbetes*, and they have a sculpture of the upper surface consisting of a very highly developed fine reticulation, not very different to what exists in *Agabus*, (*A. tristis*, No. 74, *e.g.*). From all the other aggregates forming the *Colymbetini* (*i.e.*, those first aggregates that have stigmatic rugæ) the genus is abundantly distinguished by the broad ventral side pieces which are formed as in *Agabus*. In *Meladema* the length of the fourth ventral side piece is about six times its breadth, while in *Scutopterus*

horni] this piece is only about $2\frac{1}{2}$ times as long as broad. In many other respects however the genus undoubtedly comes near *Meladema*. The prothorax is without side margin; the prosternal process is rather broad, distinctly compressed; the metasternal groove is imperfectly developed; the wings of the metasternum are not large, (in *Scutopterus horni* they are decidedly small); the coxal lobes have a considerable extension in the transverse, but little in the longitudinal direction. The swimming legs are rather slender especially the tarsi, and the lamina of the femora is rounded at its outer angle; the terminal joint of their tarsi is elongate, longer than the preceding one, and their lower claw is very long, twice as long as the other.

The species of this interesting and isolated genus are peculiar to the northern parts of North America, and are still rare in collections.

I. 62.—Genus *RHANTUS*. (*Vide* p. 607.)

This is an extensive aggregate, with forty species: the size of the individuals is moderate (from 8 to 15 m.m. of length). The side pieces of the fourth and following ventral segments are very narrow; the metasternal groove is distinct and well-defined, and the terminal joint of the hind tarsus is not longer, (or is but little longer) than the preceding one.

The numerous species are distinguished constantly from their allies by the above characters, as well as by two others, which are not quite so constant, these are first that the prothorax has a distinct lateral margin, Nos. 957, 958, and 959 being however exceptions in this respect; and second, that the swimming legs are rather well developed, the femora having their undersurface forming a developed lamina towards the extremity. The colouration of the upper surface usually is yellow, with black specks on the wing cases, but in some species it is entirely black, and in other cases nearly so; where the wing cases are nearly but not quite entirely black it is generally the margins that are pale, and the black colour seems to have been produced by a coalescence of the black specks. The prosternal process is moderate in length, never elongate, nor very short, and neither slender nor broad, always distinctly compressed. The metasternal groove though not elongate is perfectly well developed, the middle coxæ never being so much approximated as to interfere with its development, and it has therefore always perfectly distinct sides; the coxal lobes are broad and the division between them extends far forwards (except in *Colymbetes capensis* (No. 957) and *Rhantus goudoti* (No. 958), which depart from the other species in this respect; the supra articular border is narrow; the coxal lines are much separated in front; the side wings of the metasternum are variable in size, but are never very small. The swimming legs are well developed in some species such as *Rhantus goudoti* (No. 958), and *Dytiscus calidus* (No. 942), but are more slender in others, especially in *Colymbetes pacificus* and other species placed near the

commencement in this arrangement of the species. The hind tarsi have the joints lobed beneath externally but to a variable extent; their claws are often extremely unequal in length, but this is not constantly so, and in *Col. pacificus* they are very nearly equal; there is no file on the second ventral segment except in *Colymbetes nitidus*, where there is an extremely fine one; the penultimate abdominal stigma is small in comparison with what it is in the following genus: the prothoracic side margin is usually quite distinct, but it is very fine in *Rhantus plantaris* (No. 923) whereas in *Colymbetes capensis* (No. 957), it is broad, but so obsolete that it is not easily detected, and in *Rhantus goudoti* (No. 958) and *R. validus* it is quite absent. The elytra are quite rounded at their apex. The male tarsi are variable; they always bear palettes beneath, which may be very minute, or comparatively large, they are more or less evidently laterally compressed, (very little however in *R. plantaris*) and the front claws are often very elongate, and frequently unequal.

It will be seen that there is much variation in structure among these species, which to a superficial glance possess a monotonous similarity; a natural classification of the genus must be deferred till all the species are known; the characters which I anticipate will prove most useful for the purpose of such grouping, are the size of the side-wings of the metasternum, the lobing of the hind tarsi, and the clothing of the male front feet, but at present no useful purpose would be served by carrying out such a classification. The most aberrant species are *Colymbetes pacificus*, (No. 920) on account of its nearly equal hind claws; *Rhantus plantaris* (No. 923), on account of its uncompressed male tarsi, *Colymbetes atricolor* (No. 939), on account of the broader posterior portion of the epipleurae, *Colymbetes nitidus*, (No. 940), because of its possessing a fine ventral file; *Colymbetes capensis* and *Rhantus goudoti* (Nos. 957 and 958), because they have the coxal processes less cleft asunder than usual; and these two and *Rhantus validus* (No. 959), because they have the prothoracic side margin obsolete. *Dytiscus pustulatus* (No. 945) may also probably prove to be a distinct genus.

The genus as a whole is almost or quite cosmopolitan; species being found even in the Pacific islands and New Zealand: and one of the species *Colymbetes pulverosus* (No. 924), has a remarkably wide geographical distribution in the Eastern hemisphere, and islands of the world, but is wanting in the New World. It is probable that ultimately the species of the genus will prove to be inhabitants of temperate regions, and when found in the tropics to be confined to a considerable elevation.

I. 63.—Genus *COLYMBETES*. (*Vide* p. 624.)

This aggregate comprises eighteen species whose individuals are of comparatively large size; the wing-cases are of obscure colour with the margins more dilute and in nearly all the species are marked with transverse scratches or grooves, which in some species form a very conspicuous and beautiful sculpture. The side pieces of

the fourth and following ventral segments are very narrow; the metasternal groove is narrow and indistinct; the terminal joint of the hind tarsus is not longer than the preceding one. The prosternal process is short and comparatively broad, and distinctly compressed: the metasternal groove is indistinct, its lateral margins being ill defined owing to the great approximation of the middle coxæ: the side wings of the metasternum are large, and their anterior border is very little arched: the coxal processes have much extension in the transverse, and but little in the longitudinal direction; the swimming legs are rather long and slender; with the lamina at their extremity obscure and its angle almost rounded, their tarsi have the hind margins of their joints strongly lobed externally, and their claws are very unequal in length; the prothorax has no lateral margin; the second ventral segment bears a file which in some species is highly developed, but in others is fine and inconspicuous. The penultimate abdominal stigma is large and transverse. The claws of the male front tarsi remain short, and never show the tendency to elongation so frequent in *Rhantus*.

The greater development of the penultimate abdominal stigma, and the contracted, indefinite groove on the metasternum seem to distinguish this aggregate in a positive manner from the preceding one, *Rhantus*.

The male tarsi are variable, and in accordance with their structure the species may be arranged in four groups as follows:—

Group 1. (Four species, Nos. 960 to 963).—Male tarsi much dilated, not compressed, densely clothed beneath with glandular hairs, but without any palettes; ventral file variable; transverse sculpture of elytra very distinct.

Group 2. (Three species, Nos. 964 to 966).—Male tarsi much dilated, not compressed, clothed beneath with three series of well developed palettes, and a basal band of glandular pubescence. Transverse sculpture very distinct.

Group 3. (Seven species, Nos. 967 to 973).—Male tarsi much dilated, not compressed, clothed beneath with four series of well developed palettes, and a basal band of glandular pubescence. Transverse sculpture of elytra very distinct.

Group 4. (Four species, Nos. 973 to 977).—Male tarsi but little dilated, much compressed, with palettes beneath, the heel without glandular pubescence; transverse sculpture of elytra very slight or entirely absent.

The species of the first three groups are nearly all very rare in collections and confined to the northern regions of the New and Old Worlds, some extending into Arctic regions; one species of the third group is however excessively abundant throughout all Europe. The species of the fourth group are confined to the Mediterranean region of the Old World.

I. 64.—Genus *MELADEMA*. (*Vide* p. 631.)

Two species are all that are at present known to form this aggregate, but they are far from closely allied, and will perhaps have to be separated. They are of large size (20 m.m. or more long), one of them is very black in colour, and its wing-cases bear a very peculiar sculpture, giving them an appearance as if they were covered with overlapping scales; the other species has the wing-cases yellowish, speckled with black after the manner of *Rhantus*, and in it the peculiar sculpture of the other species remains undeveloped, although on careful examination some rudimentary signs of it can be detected. The prothorax is without lateral margin. The side pieces of the fourth and following ventral segments are very narrow; the metasternal groove is moderately well developed; the hind tarsi are elongate, their terminal joint distinctly longer than the preceding one. The prosternal process is rather narrow and compressed, and the metasternal groove for its reception is distinct but narrow. The wings of the metasternum are not so large as in *Colymbetes*, but their termination in *Dytiscus lanio* (No. 979), is more slender than in the genus *Scutopterus*. The hind coxæ are not very large. The swimming legs are long and slender, their femora with the lamina at the outer angle very little developed, and its angle indefinite and obtuse; their tarsi have the hind margins of the joints but little lobed externally. The penultimate abdominal stigma is moderately large. The male tarsi bear palettes beneath and their claws are elongate.

The aggregate seems to be quite distinct both from *Rhantus* and *Colymbetes*; although in respect of the metasternal groove it is intermediate between the two, in other respects this is not the case. It is distinguished from *Rhantus* by the slender swimming legs, with less developed femora, by the narrower metasternal groove, and by the more transversely elongate penultimate abdominal stigma. It shows no approach to those species of *Rhantus* (*Colymbetes capensis*, No. 957), &c., which like itself have the thorax without a lateral margin; nor is there any other species of *Rhantus* which specially approximates it.

From *Colymbetes* it is distinguished by the better developed metasternal groove, by the little lobed hind margins of the posterior tarsi, and their longer terminal joint, as well as by the different sculpture and by the male tarsi and claws.

Although there are but two species in the aggregate, they are so different that they must be considered representative of two groups, viz.:—

1. *Meladema coriacea*.—Anterior border of hind coxa scarcely at all arched externally; elytra with intricate sculpture.
2. *Dytiscus lanio*.—Anterior border of hind coxa a good deal arched externally, and the termination of the wing of metasternum slender: elytra shining, with obsolete tubercles.

The species of the first group inhabits southern Europe, and the Canary Islands; while that of the second group is peculiar to Madeira; where it is probable there is more than one species. Wollaston indeed has already described a second which remains unknown to me.

I. 65.—Genus *HYDERODES*. (*Vide* p. 633.)

Three species, very similar to one another, form this genus in its present condition. They are of moderate size, between half and three quarters of an inch in length; of dark colour with the front of the head and the side of the thorax yellow; the form is rather broad and short, moderately convex. The suture between the clypeus and the front can be seen at the sides, but is quite obliterated in the middle. The prothorax has a thickened lateral margin. The prosternal process is acuminate, and rather elongate, not compressed, its anterior half distinctly margined, its posterior half quite without margin; the inter-coxal process of the metasternum bears an elongate deep groove for its reception. The hind legs are moderately well developed for swimming, rather elongate, comparatively little thickened, the hind margins of the joints of the tarsi are scarcely lobed externally, the claws are rather short, curved, and of about one length. The hind coxæ are moderately large, their front border is only moderately arched, the wings of the metasternum are rather small. The coxal lines are very little curved, and the elongate coxal border is nearly straight; the coxal lobes are very elongate, prominent, their apical portion extends a good deal more backwards than the coxal notch, and is obtuse, the coxal notch is elongate. The side piece of the fourth ventral segment is of moderate breadth, about one-third as broad as it is long; the abdominal stigmata are large, the penultimate one a good deal broader than the preceding one, but not twice as broad as it, the last stigma transverse, moderately developed. The male front tarsi have the three basal joints greatly dilated, so as to form a moderately large, nearly circular saucer, the fourth joint quite undilated, short, the fifth elongate, about as long as the three basal ones together; the saucer is furnished beneath with eighteen or twenty large palettes, not differing greatly from one another in size. The three basal joints of the middle tarsi are considerably dilated to form a kind of oval plate, which bears beneath several rather large palettes. The tibiæ of the anterior legs of the male are rather thick, and their posterior aspect is obliquely truncate, or shaved off, to allow the dilated tarsus to turn back behind the tibia; this truncation does not extend half way up the tibia, and when the leg is looked at from the front, the only trace of it that can be seen, is a kind of emargination, or interruption of the outline of the lower part of the external face of the tibia.

The species are as yet found only in Australia and Tasmania, and I expect they will prove to be essentially Tasmanian, and to have extended into Australia at a comparatively recent period of their history.

Although the true position of this interesting genus has not yet been understood, there can be no doubt that it should be placed near *Dytiscus*, and also that it shows no other approximation. It cannot however be considered to be very near to *Dytiscus*: the terminal abdominal stigma is much less developed, the male front tarsi and tibiæ are much more imperfect, and the clypeal suture is more obliterated

The swimming legs and hind coxæ are quite as well developed as they are in the most perfect species of *Dytiscus*. The form of the coxal lines and processes is very similar to that of *Dytiscus hybridus*.

We find in *Hyderodes*, as in *Dytiscus*, dimorphic females; certain individuals of that sex being smooth like the males, while others have the thorax and elytra roughened, by a peculiar, very coarse and deep, irregular sculpture, giving rise to a corroded appearance.

I. 66.—Genus *DYTISCUS*. (*Vide* p. 634.)

All the species forming this aggregate (twenty-two in number) are of large size, (an inch or an inch and a half long), the upper surface is of dark colour with a yellow stripe along the side of the thorax and elytra, the clypeus is yellow, and there is on the middle of the head an angular yellow mark; in addition to these yellow marks some species have the anterior and posterior margins of the thorax yellow, and the eyes margined with yellowish colour. The colour of the under surface is either pitchy black or yellow, or is intermediate between the two colours, or a mixture of them. The form is comparatively little convex, always elongate, but of variable width.

The clypeus is always separated from the front of the head by a suture visible across the whole width of the head. The prothorax is destitute of a lateral margin. The prosternal process is of variable length, usually rather elongate and narrow, being only very little widened out after passing the coxæ, it is not compressed, and is indistinctly margined at the sides, the margin not extending to the extremity; in a few species the process is short and comparatively little acuminate (*e.g.*, *D. latissimus*, and *D. lapponicus*). The inter-coxal process of the metasternum is occupied by an elongate narrow depression for the reception of the prosternal process. The hind legs are but little developed for swimming, being elongate and rather slender; the femur has a group of accumulated setigerous punctures at the extremity that does not quite extend to the hind margin; their tibiæ are usually about three times as long as they are broad; the tarsi are considerably longer than the tibiæ, and are terminated by two rather slender, curved, nearly equal claws, the hind margins of their joints are but little lobed externally. In the more perfect species (*e.g.*, *D. hybridus*, and *habilis*) the swimming legs have become shorter and thicker, and their claws more unequal.

The hind coxæ are rather small, and their anterior border is not much arched, the wings of the metasternum are only of moderate area. The coxal lines are but little bent, and the coxal lobes have a great extension in the longitudinal direction, while they are comparatively small in the transverse direction; the coxal border is elongate, and before the apex is usually a good deal broader than in front, the coxal notch is elongate, and beyond it the processes tend, in numerous species, to lengthen and become slender, so as to form two spinose projections in the extreme

cases. The abdominal stigmata are large, the terminal two being very much larger than the others and very highly developed.

The anterior tarsi of the male are very highly developed; the three basal joints are very dilated, and coadapted to form a nearly circular saucer, this is fringed at the circumference beneath with elongate hairs, and their under surface bears two large palettes at the base, and elsewhere a dense glandular pubescence, each hair of which is in fact a stalk bearing a minute palette at the extremity; the fourth and fifth joints are not dilated, the latter is elongate. The middle tarsi of the male have the three basal joints dilated and elongate, the three together thus assuming a narrow, parallel form, and are densely clothed beneath with a glandular or spongy pubescence.

In many species the females are dimorphic, one form being nearly similar to the male in sculpture, while the second bears deep elongate grooves on the wing-cases.

The species inhabit the northern parts of the Old and New Worlds; Persia and Japan are the extreme points to which it extends, each of these countries possessing one peculiar species.

The genus is remarkable by the entire clypeal suture; this character, so far as I have observed, exists only in this genus, and in *Pelobius* and *Amphizoa*, and in *Meladema* of the *Colymbetides*, and is found in no other *Dytiscidæ*, although it is common in *Carabidæ*;—in *Harpalus caliginosus*, for example, it is very similar to what it is in *Dytiscus*. The suture however varies greatly in its depth in different species of the genus, and differs, in certain species, greatly in the two sexes; thus in *D. hybridus* and *D. habilis* it is very obliterated, while it is very distinct in *D. circumflexus*, and *D. dauricus*, and in the latter species is in the female so distinct that the clypeus is conspicuously raised or swollen.

Certain species may be considered as more perfect, or higher, than others of the genus; thus *D. habilis* and *D. hybridus* have the form continuous and perfect, as in all the higher water beetles, and the swimming legs more abbreviated and thickened; these species have the coxal processes rounded; in others of the genus the form is very discontinuous, and in these species the coxal processes are very spinose; should these characters continue to be differentiated, the genus will clearly become divisible into two or more aggregates when the various forms become more perfected.

Dytiscus latissimus is most remarkable by the great development of its surface which is increased by the great expansion of the elytral and thoracic margins; it is worthy of remark that this species is very subject to deformities, and its breast is marked by wrinkles (which occasionally are quite deep) as if the surface were subject to some kind of tension: in one specimen in my collection the whole of the middle portion of the metasternum is thrown into concentric wrinkles, and the strain has so affected the structure that the inter-coxal process of the metasternum

is almost withdrawn from articulation with the mesosternum. This species is frequently found in fish ponds and is said to cause much destruction amongst the fish; whether the abundant supply of food the species procures has any connection with the great expansion referred to is a question worthy of consideration.

The spinose coxal processes found in certain species (*e.g.*, *D. circumflexus*) is a very interesting development, which is not found in any other Coleoptera so far as I am aware.

The species are characteristic of the northern parts of the Old and New Worlds, one is found as far south as Mexico, and in Persia; a species or two also occur in Japan, but not in the southern part thereof.

I. 67.—Genus *PRODATICUS*. (*Vide* p. 648.)

The single peculiar species, has somewhat the form of a very large *Agabus*, but the elytra are variegated with large yellow marks in the style of the genus *Sandracottus* and its allies. The head is broad, the eyes are large and very convex, the antennæ only moderately slender. The prothorax is without lateral margin, but its upper surface is flattened out or as it were expanded at the sides. The prosternal process is formed as in *Hydaticus*, but is rather narrower. The hind coxæ are rather large, and of the same shape as they are in *Hydaticus*, but their anterior border is widely separated from the middle coxæ. The coxal lines are fine and obsolete, but can nevertheless be detected; they are greatly sinuate, being much approximated to the common suture at the axilla, and then greatly turned outwards so that the coxal lobes are broad; the supra-articular border marked off by them is indefinite and placed at the anterior part of the coxal lobe, quite as much as at its side, it is not very broad, there is a small coxal notch. The hind legs are rather stout and well developed for swimming, and their tarsi are terminated by two long claws of nearly equal length.

The hinder tibia shows on its upper face an irregular series of punctures, about half the length of the tibia, and nearly parallel with its outer or upper border, the basal punctures are however nearer the middle of the face of the tibia than the outer ones are: the hind femora shows a group of obscure setigerous punctures, placed quite at its extremity but not at its hinder angle.

Although this species has to a great degree the structure of *Hydaticus*, it departs therefrom in several important respects, the coxal lines are greatly turned outwards in their hinder portion, so that the coxal lobes and supra-articular border are of a different shape from what exists in *Hydaticus*, the coxal border especially is reduced in size and becomes less distinct; the anterior border of the hind coxa is less arched, and consequently this piece is less in area than it is in any *Hydaticus*; the claws of the hind tarsi are of nearly equal length, and the hind angle of the prothorax is obtuse and rounded. In these respects and some other details the

approximation to *Agabus* is undoubted, but the form of the prosternal process, and the ciliation of the hind margins of the swimming tarsi are quite those of *Hydaticus*, while the style of colour is quite foreign to *Agabus*. There is no reason therefore to look on the insect as in any respect a connecting link between *Hydaticus* and *Agabus*, nor as having any genetic connection therewith; it is really and truly a *Hydaticinid*, having some parts of its structure approaching to the structure of the like parts of *Agabus*. We may interpret this as an indication that it has had an environment, at certain periods of the history of the species, like that of *Agabus*, but that on the whole the environment of the ancestry has not been dissimilar to that of *Hydaticus*.

Although it must be considered as on the whole a lower form than *Hydaticus*, it does not display any special relations with the lower species of that aggregate: thus the lower species of *Hydaticus* have the eyes peculiarly small, while *Prodaticus pictus* has them larger than even the higher *Hydatici*; while its peculiarities of colour and form are not in the least approximated by the lower *Hydatici*; thus, although it must be considered the lowest form of *Hydaticini* yet brought to light, it displays no affinities whatever (except those of less evolution) with the next lowest forms of existing *Hydaticini*, and does not tend to suggest any descent from a common ancestor.

It is worthy of remark that the colour is spot for spot the same as that of the North Australian *Sandracottus guttatus*.

The insect is found in Persia or Northern India, a region lying between the region of *Agabus*, and a region where *Hydaticus* has a great development.

I. 68.—Genus *HYDATICUS*. (*Vide* p. 648.)

This aggregate consists of about forty-five species, whose individuals are of moderate size (one-third to two-thirds of an inch in length), of perfect form, with impunctate or polished surface, and with the upper surface variegate with black and yellow (only one or two exceptions.) The head has the antennal portion of moderate size or much reduced; the eyes moderately large; the prothorax is without lateral margin. The anterior legs are separated by a rather broad space, and the prosternal process is distinctly but not greatly broader than this space, and is obtuse or rounded at the apex. The hind coxa is rather large, its front border is never very near the middle coxa: the coxal lines are quite distinct, and are only moderately turned outwards in their hinder portion, but mark off a broad supra-articular border, the coxal lobes are of about equal development in the transverse and longitudinal directions; there is a minute coxal notch. The swimming legs are highly developed, their terminal claws are nearly straight and the inner one is elongate, about twice as long as the other; the upper face of their tibia has a series of large punctures, each of which bears a thick furcate seta, this series of punctures (in order to view which the marginal ciliæ must be elevated) extends

for fully half the length of the tibia, and is parallel or subparallel to its outer border.

The intermediate femora bear quite short setæ. The terminal abdominal stigmata are of moderate size. The male front tarsi have the three basal joints dilated into a circular plate; this bears large palettes beneath, and of these the three or four basal ones are distinctly but not greatly, larger than the others; the basal fringing hairs are present (except in one or two species); the middle tarsi have the three basal joints distinctly, or even broadly dilated, and bearing beneath distinct round palettes; when the females have a sexual sculpture, it consists of some rugæ on each side of the thorax; these rugæ may be coarse and sparse, or very fine and indistinct and dense.

The species are distributed over the warmer parts of the Old and New Worlds and Australia, and one group of a few species is peculiar to the northern or temperate parts of Europe and North America, with the exception of one of its species which occurs in Australia.

f. 69.—Genus *ACILIUS*. (*Vide* p. 672.)

Six species are united to form this rather heterogeneous aggregate. The form is rather flat above, and the outline continuous, the surface is punctate above and below, the head and prothorax being however in some species smooth. The prothorax is without any lateral margin. The prosternal process is variable, but is never very elongate or acuminate at the apex; the middle coxæ are rather widely separated, and the impression on the apex of the inter-coxal process of the metasternum is a broad, short, shallow, rounded depression. The hind coxæ are extremely large, their front border is very arched, and the wing of the metasternum, much curved and deflexed outside the coxa, is dilated a little before the termination, its extreme apex being however somewhat acuminate. The coxal lines although subobsolete can always be distinguished in the posterior part of their course, and they there mark off a distinct supra-articular border, which is never very broad, and always acuminate or attenuate at its termination behind. The coxal lobes are rounded and short, and there exists only an obscure trace of the coxal notch. The swimming legs are well developed, but not very incrassate, and are terminated by two nearly straight claws of which the inner is about twice as long as the outer one: the spurs of the tibiæ are distinctly emarginate at the apex. The epipleuræ are variable in their width, but are never very narrow at the shoulders. The front and middle femora bear a few, elongate, rigid setæ on their lower margin. The terminal abdominal stigmata seem rather well developed. The sexual characters are variable, but the front tarsi of the males are highly developed, and the plate formed by the dilated three basal joints is surrounded with beautiful fringing hairs, and bears beneath three large palettes (one of them very large, but the other two

much smaller,) on the basal portion, and a dense glandular pubescence on the outer portion.

The male intermediate tarsi are almost, or quite undilated.

The aggregate, although consisting at present of only six species is heterogeneous: and the species might be arranged into two groups as follows:—

1. (*Acilius auctorum*).—Coxal border not very large; male intermediate tarsi bearing beneath on their inner edge, on each of the three basal joints a tuft of elongate hairs (these however in one species—*A. fraternus*—are but little developed); females with grooves on the elytra, but in one species a second form of the female—destitute, like the male, of grooves—occurs.
2. (*Homœolytrus ex parte*).—Coxal border smaller than in *Acilius*, and coxal lines more indistinct; males with no tufts of hair on the middle tarsi; females destitute of grooves on the wing-cases.

This grouping however would still leave each of the two groups heterogeneous; and the most satisfactory arrangement is one based on the sexual peculiarities, this would bring the species into four categories:—

1. Male intermediate tarsi with tufts of hair on the inner edge, and with a few small palettes along the outer margin of the three basal joints; female wing-cases always sulcate. (*Dytiscus sulcatus* and *canaliculatus*.)
2. Male intermediate tarsi with tufts of hair on the inner edge, but without palettes; female either sulcate or smooth. (*Acilius semisulcatus* and *fraternus*.)
3. Male without tufts of hair on the middle tarsi, but with the basal joints bearing numerous very minute palettes; female wing-cases without grooves. (*Acilius duvergeri*.)
4. Male without either tufts or palettes on the middle tarsi, females not sulcate. (*Dytiscus mediatu*s, Say.)

The species of *Acilius* are found only in the temperate northern regions of the Old and New Worlds. They are still insufficiently known, and it is probable that other species may be discovered in Eastern Asia, in Japan, or in North America

I. 70.—Genus *THERMONECTES*. (*Vide* p. 677.)

The fourteen species composing this aggregate consist of individuals of moderate size, polished surface, rather convex form, and more or less elegantly variegated upper surface. The thorax is without lateral margin, the prosternal process is broad and short, rounded or obscurely angulate at the apex. The swimming legs are highly developed, being short and thick. The hind coxæ are extremely large, and approach very near to the middle coxæ; the wing of the metasternum is a slender band dilated towards the apex, and is much deflexed outside the coxa. The coxal lines are quite short, but although fine are distinct for all their course, and they

mark off a broad supra-articular border: the spurs of the hind tibiæ are quite distinctly emarginate at the apex, and the tarsi are terminated by two straight claws of very unequal lengths. The epipleuræ are narrow, even at the shoulders. The intermediate femora and tibiæ bear long setæ on their hinder or inner margin, and the three basal joints of the middle tarsi bear each below, at the inner and outer edge (in each sex), a single elongate depressable or erectile seta: the middle tibiæ are slender and always without spinules on their lower face; the front tarsi in the female bear long, rigid, erect setæ. The apical abdominal stigmata are quite small.

The male front tarsi have their circular plate furnished beneath with numerous small palattes, and at the base with three of larger or variable size: the intermediate tarsi are quite simple. The fringing hairs around the front tarsi are very little developed, but this is variable, for they are better developed in *Acilius basilaris* than in the other species.

The females show a sexual sculpture on the basal portion of the wing-cases, consisting of rather elongate punctures; in some species this sculpture extends on to the sides of the thorax.

The genus is peculiar to the warmer parts of the New World, one or two species extending to the southern parts of the United States of North America; numerous species besides those described doubtless exist.

Thermonectes simulator is a very peculiar species, entirely resembling in form and markings the species of the European genus *Graphoderes*.

I. 71.—Genus *ÆTHIONECTES*. (*Vide* p. 684.)

The unique species is known to me by two individuals only; and its general characters appear to be those of *Thermonectes*, but the front and middle tarsi bear beneath only short rigid setæ, in place of the elongate ones of *Thermonectes*, and the middle femora have only some short setæ.

The prosternum is very thickened along the middle, and the front legs are rather broadly separated, so that although the prosternal process is broad it is not broader than the prosternum between the legs: the hind legs are well developed for swimming, and are terminated by two claws of which the outer is much more slender than the other, but is not much shorter.

In all the other characters I can observe, the species agrees with *Thermonectes*.

This insect occurs in West Africa; the species of *Thermonectes* only in the New World.

I. 72.—Genus *SANDRACOTTUS*. (*Vide* p. 685.)

Ten species, of rather large size ($\frac{1}{2}$ to $\frac{3}{4}$ inch of length), rather convex form, highly polished surface, and beautifully variegate colour, are united to form this aggregate. The antennal portion (*i.e.*, portion anterior to a transverse line drawn across the

head at the spot where the front part becomes free from the eyes, and therefore just behind the insertion of the antennæ) of the head is very reduced, and the eyes are large and convex; the broad, short prosternal process is a good deal broader than the width of the prosternum between the coxæ. The hind coxæ are very large, but still their front border is separated by a not altogether short space from the middle coxæ; the elongate deflexed wing of the metasternum is somewhat dilated towards the extremity. The coxal lines are obliterated; traces of their existence may be detected round the axilla, but on the coxal processes they are quite absent so that there is no trace of a supra-articular border; the coxal processes have no notch, but are marked by a rather conspicuous fovea; the hind legs are highly developed for swimming, being short and thick, and are terminated by two elongate, but very unequal claws. The two terminal stigmata are transverse, and somewhat large. The middle legs are slender, their tibiæ have no spinules (or only very fine ones) on their lower face, their femora bear three or four setæ of moderate length. The females have on the front and middle tarsi rather long erect setæ on their edges beneath. The front tarsi of the male are only of moderate size, they are destitute of fringing hairs, being surrounded only by distant spinules, the palettes of their undersurface are of moderate size, the basal ones considerably, but not enormously larger than the others: the middle tarsi are slightly incrassate at the base, and bear round palettes beneath. The females are destitute of sexual sculpture.

The genus seems a perfectly natural and homogenous one, as it stands at present; the generic characters drawn from the absence of coxal lines and the nature of the setæ of the middle legs, being confirmed by numerous less conspicuous characters, as well as by the sexual ones.

It is distributed over a portion of the Earth's surface in tropical Eastern Asia, Malasia, and Australia; it will probably prove specially characteristic of the Malayan region, with species in the proximate portions of Asia and Australia.

I. 73—Genus *RHANTATICUS*. (*Vide* p. 691.)

The single species isolated under this generic name has the appearance of the species of *Rhantus*, its individuals being of small size (a good deal less than $\frac{1}{2}$ inch in length) and of yellow colour, with the wing-cases speckled with black. The antennal portion of the head is extremely reduced, the eyes large and convex; the short and broad prosternal process is a good deal broader than the width of the prosternum between the coxæ. The hind coxæ are extremely large, and their front border approaches very near to the middle coxæ; the elongate deflexed wing of the metasternum becomes slightly broader towards its termination; the coxal lines are obliterated, and there is no supra-articular border; the coxal lobes have no coxal notch, but a group on each of two or three punctures; the hind legs are highly developed for swimming, being short and stout; the middle legs are slender, their tibiæ are

almost without spinules on the lower or anterior face ; their femora bear numerous quite short setæ. The last two abdominal stigmata are small. The females have on the front and middle tarsi quite short spines at the edges beneath. The front tarsi of the male are rather large, they have well developed basal fringing hairs and the basal palettes on the undersurface are considerably larger than the others ; the middle tarsi are scarcely incrassate, but bear small palettes beneath. The female is destitute of sexual sculpture.

This isolated insect is least widely separated from *Sandracottus*, but it differs greatly therefrom in appearance; and the short spines on the middle femora, the smaller terminal abdominal stigmata, the more highly developed male tarsi, and the greater approximation of the hind coxa to the middle ones, call for its separation.

This species has a wide geographical range in the warm zone of the eastern hemisphere.

I. 74.—Genus *GRAPHODERES*. (*Vide* p. 692.)

Eleven species, whose individuals are of rather large size (half an inch or rather more of length), form this aggregate, they have a polished surface, are of a yellow colour, with the wing-cases uniformly speckled or vermiculated with black. The antennal portion of the head is moderately large, and the eyes are of moderate size, the portion of the head between them being considerably more than twice the transverse width of the eye as seen from the front. The prosternal process is short, broad and rounded. The hind coxæ are very large, and their front border approaches near or very near to the middle coxæ ; the wing of the metasternum forms an extended slender band, becoming broader near its termination. The coxal lines are fine and short, but distinct in their hinder portions, they are a good deal turned outwards on the coxal lobes, and mark off a moderately broad supra-articular border : the coxal notch is absent or extremely rudimentary. The hind legs are rather highly developed for swimming. The two terminal stigmata are moderately large. The middle legs are moderately slender, their tibiæ bear distinct spinules on their anterior or lower face, their femora have short, or rather short setæ ; the females have on the front and middle tarsi, short, rigid spinules. The front tarsi of the males are rather large, and highly developed, with beautiful basal fringing hairs, and with the basal palettes a good deal larger than the others. The middle tarsi are in all the species except one (*Hydaticus austriacus*) provided with palettes beneath and have the basal joints more or less thickened. The females vary as to their sexual sculpture, sometimes they have none, while in other species there is an extremely highly developed tuberculation, rendering the wing-cases very uneven and rough.

The genus is confined to the northern portion of the Old and New Worlds.

It is a perfectly distinct one, and would be very homogeneous, were it not for *Dytiscus liberus* (No. 1,084), which departs considerably from the other species. It is smaller than the other species, less convex, and has no black markings on the head and thorax as the other species have; it has moreover the middle legs more slender, and their tibiæ less spinulose, and the antennal portion of the head shorter, and the setæ of the middle femora shorter. In some of these points it makes an approximation to *Rhantaticus*. Some of the other species likewise depart more or less in their structure from the average, thus Nos. 1,085, 1,086 and 1,087, have the front border of the hind coxa not so near the middle one as the other species have: and *Hydaticus austriacus* (No. 1,085), differs from the other species by the simple middle tarsi of the male.

I. 75.—Genus *ERETES*. (*Vide* p. 699.)

Two closely allied species are all that exist to form this very distinct aggregate. The shape and colour are peculiar, and the skeleton is much softer than in most other Dytiscidæ. Rather flat above, and rather narrow, the insect is a good deal narrowed towards the front, the outlines of the thorax and elytra are very discontinuous, and the eyes large and prominent. The whole insect is of a pale yellow, or whitish colour, the head and thorax have two or three, inconstant (sometimes absent) transverse dark markings, and the elytra are more or less densely marked with very distinct isolated punctures, each of which is black, and there may be a transverse irregular black fascia before the apex: this is sinuate so that the suture projects slightly there. The head in front of the eyes is extremely reduced. The prothorax has a very fine elevated lateral margin. The prosternum is very reduced in front of the coxæ, but the inter-coxal portion is much thickened, the prosternal process in which it terminates is rather narrow, gradually acuminate towards the apex, and obsoletely margined. The hind coxæ are enormous, so that the metasternum which is elongate in the middle, is reduced at the sides to a very short, parallel-sided, curved lacinia or wing, which is greatly deflexed round the anterior border of the coxa, and is a little dilated near its rounded termination; this termination is placed far from the epipleura, and the coxa is prolonged behind it and the metathoracic episternum as far as the epipleura, while intervening between the edge of the epipleura, the outer hinder edge of the episternum and the upper terminal border of the coxa, there is seen very distinctly a triangular piece, which is a portion of the metathoracic epimeron left uncovered by the very reduced epipleura: the posterior margin of the coxa becomes thickened in a peculiar manner near its termination, so as to mark off the outer portion as a triangle separated from the larger part by a thickened raised line: the coxal lines are fine, short and abbreviated in one, obsolete in the other species; the coxal lobes, are very short, rather broad, without supra-articular border. The hind legs are rather slender, their tarsi are elongate, the basal joint being not greatly shorter than the tibia, they are terminated

by two rather elongate straight claws, which are closely applied to one another, immobile, and subequal in length: when the outer face of the tarsus is carefully examined it is seen to display a peculiar sculpture, consisting of coarse shallow punctures, each of which bears a very adpressed elongate squama or scale, at the hind margin of each joint these squamæ are contiguous to one another, and form a series of ciliæ overlapping the following joint. The front and middle legs are slender and densely ciliate with very long hairs. Epipleuræ of elytra very reduced, and not fitting closely to the margins of the body, except just at the shoulder, without the least elevated line on their inner face. The basal ventral segment shows at the side an elevated margin which is a little curved, and there is left between it and the epipleura a considerable gap or opening: the epipleura is here at its narrowest, and behind this opening again becomes slightly broader; the upper edge of the epipleura is set, as it passes the third, fourth, and fifth ventral segments, with short, rigid spines. The side pieces of the ventral segments are greatly reduced, that of the first is peculiar; it is bounded below by the curved raised line above described, and this line in front is dilated and flattened out so as to form there a flat piece which articulates directly with the hind border of the metathoracic epimeron; except for this anterior portion the rest of the side piece is almost membranous; the side piece of the second segment is still more membranous, and on the following segments the side piece may be said to be reduced to an almost linear piece.

The apical stigmata are peculiarly small.

The male front tarsi are highly developed; the three basal joints are dilated and coadapted to form a circular plate, which beneath is fringed with ciliæ, and bears at the base two large cups, and on the rest of the surface dense glandular pubescence, each hair of which is in fact a stalk, bearing a minute palette at its apex; the middle tarsi are undilated; the females are without peculiar sexual sculpture, but in one of the two species, they have a short impression near the lateral margin of the wing-case about the middle.

This genus is certainly one of the most interesting of the Dytiscidæ, and its detailed study will probably be attended with interesting results. The following points are worthy of attention. First, the reduced wing-cases, colour, and soft skeleton; these should be compared with certain *Cœlambi*, (*vide* *Hydroporus emneagrammus*, No. 419) where we find a parallel condition. Second, the serrate edges of the elytra are peculiar. Third, the direct articulation between the basal ventral sidepiece and the metathoracic epimeron. Fourth, the peculiar sculptured hind tarsi. Fifth, the development of the hind coxæ, and the ciliation of front and middle legs, carried to a greater extent than in any other water-beetle; and, sixth, the beautiful development of a band of transverse pubescence on the upper face of the hind femur.

This combination of points of peculiar interest indicates a very isolated ancestral record, and peculiar habits.

Some of the structural characters have undoubtedly a direct relation to peculiarities of respiration, the structure of a number of different pieces adjacent to, or surrounding the basal abdominal stigma being peculiar; thus the elevated line of the first ventral segment, the reduced epipleura adjacent to it, and the gap thus formed, appear to indicate that air is either admitted to, or escapes from the stigma at this point, and the undeveloped condition of the apical stigmata seems to confirm the fact that the respiratory power is here largely concentrated on the one or two basal stigmata: the peculiar articulation between the basal segment and epimeron is probably in more or less immediately direct relation with this respiration: it may be that in order to exclude water from the interior of the body in this changed condition of the proximate parts, a peculiar development of this articulation was necessary; it may be to form a wall to prevent the escape of air after it has been admitted by a peculiar channel.

The great development of the hind coxæ, and the cilie of the legs, and the very large eyes, as well as the pallid colour, seem to point to great or constant activity under much exposure to light.

The sculpture of the hind tarsi is of great interest. The ciliation of the hind margins of the tarsal joints found in the *Hydaticides* is peculiar to them, and the sculpture and scales we find existing in *Eretes* may hint to us how it has been developed. In all the other *Hydaticides* the face of the tarsus is highly polished except for the cilie placed at the hind margin of each joint, whereas in *Eretes* the face of the tarsus is punctured, but each puncture is filled by an adpressed squama, and it is such squamæ that project over the hind margins of the joints. I think then we may assume that the ancestors of the species of *Hydaticides* had hind tarsi punctured externally and bearing scales in the punctures, that these scales and punctures disappeared from the joints except at their hind margin, because the process of evolution in *Dytiscidae* is to produce smooth polished surfaces which shall move through the water with greatest facility; but at the hind margins of the joints the cilie instead of disappearing become more highly developed because of the fact that by their perfect accuracy of adaptation they add greatly to the integrity of the surface of the tarsus, and to its rigidity, thus increasing its utility as an organ of aquatic locomotion.

The geographical distribution of the genus is highly interesting, one species is found over a large portion of the warm parts of the world, except Australia, while the other (closely allied) species is peculiar to Australia.

The widely distributed species is very abundant in the Indo-Malay region, and it has spread to a considerable number of islands in various parts of the world, including even the Galapagos

I. 76.—Genus *SPENCERHYDRUS*. (*Vide* p. 701.)

Three species form this aggregate; they are amongst the smallest of the Cybistrini, scarcely attaining 20 m.m. of length; the yellow colour on the lateral part of the wing-case is extensive. The upper border of the hind coxæ is greatly approximate to the middle coxal cavities, the laciniae of the metasternum being shorter and more linear, and less abruptly turned backwards than is the case in *Cybister*: the coxal lines are present; the prosternum is channelled along the middle; the hind tarsi bear two claws of which the inner is much the larger, the unguicular cleft is broad and short, its anterior part curved, not angular: the palettes of the male tarsi are subelliptical, and without paper-like external prolongations.

The three species agreeing in the above characters may be arranged in two groups according to whether the side of the thorax appears to be raised (*S. pulchellus*), or is normal and without any appearance of being margined (*S. latecinctus*, and *S. semiflavus*). They depart from all the other Cybistrini by the male tarsi, the fifth joint of which is unusually elongate, while the palettes on the undersurface of the dilated basal joints are of peculiar form being destitute of the external paper-like prolongations found in all the other aggregates. The genus agrees with *Homœodytes* in the structure of the hind claws, and the form of the unguicular cleft, but departs from it by the presence of coxal lines, as well as by the form of the laciniae of the metasternum, and the peculiar male tarsi.

The three species are peculiar to Australia, and very rare in collections.

 I. 77.—Genus *HOMŒODYTES*. (*Vide* p. 703.)

Three species form this aggregate. The individuals are of the usual *Cybister* form, with lateral stripe on the elytra. The size varies from 15 to 27 m.m. of length. The coxal lines are completely absent, and by this character they depart from all the other Cybistrini; the structure of the hind claws and their point of insertion is much the same as in *Spencerhydrus*; they differ therefore from *Megadytes* and *Cybister* in this respect, but the structures of the male tarsi and of the laciniae of the metasternum agree with the two genera just mentioned.

The three species are sufficiently discrepant to form two well marked groups; A, (*Dytiscus atratus*) size small (15 m.m. long) prosternal process distinctly channelled along the middle; postero-external angle of hind femora rectangular; intermediate male tarsi with largely developed sexual pubescence on the three basal joints, female without sexual sculpture; and B, (*C. scutellaris*, and *C. hookeri*), size moderate (about 25 m.m. long), prosternal process with channel obsolete; postero-external angle of hind femora acute or spinose; male tarsi with sexual pubescence on the third joint but not on the two basal joints, female with very dense fine sexual sculpture on the wing-cases.

The species are found in Australia and New Zealand.

I. 78.—Genus *MEGADYTES*. (*Vide* p. 704.)

Sixteen species are included in this aggregate; they show much variety in several respects, but agree in that the males have the tarsi of the swimming legs terminated by two claws, either very nearly equal, or the inner one rather less than the other; the females like the males have always two claws, but the inner one is frequently small and rudimentary; the unguicular cleft is acuminate at its origin.

The genus thus differs from *Cybister*, in that there are always two claws on the hind tarsi, and that these are more developed in the males than in the females, while in *Cybister*, when there is a difference between the sexes in this respect, it is that the females have the claws more developed than the males.

The species show considerable variety in certain respects and seem to be naturally arranged in three groups, viz., A. (Nos. 1103 to 1110, *Dytiscus lævigatus* and allies) claws of hind feet in male two in number, of equal or nearly equal lengths, in the female a single long claw with a much more rudimentary one on its under and inner side; the smaller spur of the hind tibia simply acuminate at the extremity. This group is heterogeneous and contains at any rate four, if not more, distinct forms, viz.: 1, (*M. expositus* and *Cybister glaucus*) species of moderate size with vague yellow lateral band on the wing-case, and with the termination of the lacinia of metasternum far from the epipleura, and the termination of the metathoracic epimeron very distinctly exposed; the two species are widely discrepant in certain other respects. 2, (*Dytiscus latus*) a species of smaller size, without yellow band on the wing-case; the lacinia of the metasternum closely approximate to the epipleura, and no portion of the metathoracic epimeron is exposed; the character that separates this species widely from the third sub-group is that in the male the inner claw of the hind foot is decidedly shorter than (as well as finer than) the outer one. The female has a sexual sculpture of excessively short punctiform lines. 3, (Nos. 1106 to 1109, *Dytiscus lævigatus*, &c.) like the preceding, of rather small size (at most 24 m.m. long), with or without yellow band on elytron, and the inner claw on the hind tarsus of the male quite as long as the other; the females have a very beautiful sexual sculpture consisting of deep, regular, short, almost punctiform lines. 4, (*Cybister puncticollis*), this species is imperfectly known; it is of rather large size (about 30 m.m. long), the elytra have a yellow stripe, the lacinia of the metasternum are approximate to the epipleuræ, and the apex of the metathoracic epimeron is not exposed; the female is without sexual sculpture; this species in appearance resembles those of group B; its male is unknown.

The second group, (B) is more homogeneous, although the width of the epipleuræ varies much in the different species; in it each sex has on the hind tarsus two claws of nearly equal lengths; the smaller spur of the hind tibia is minutely tridentate or trituberculate at the apex; the species are six in number (Nos. 1111 to 1116), and are of moderate or large size, the epipleuræ of the elytra are frequently

very broad; the females differ greatly as regards sexual sculpture, which is sometimes very highly developed, sometimes quite absent.

The third group, (C.) comprises two species (*Cybister giganteus* and *Megadytes ducalis*) they are of very large size, and have in each sex two claws of about equal lengths on the hind tarsus; the smaller spur of the hind tibia is largely bifurcate at the apex; the epipleuræ are not broad, and the females have no sexual sculpture.

The species of *Megadytes* are peculiar to South America, where they have a great range, from Mexico to Buenos Ayres, including the Antilles.

I. 79.—Genus *CYBISTER*. (*Vide* p. 714.)

This large aggregate comprises fifty species; they differ from the other *Cybirini* in that the males have only a single claw on the hind tarsus; the females have also usually only a single claw, but they possess in certain cases a rudimentary second claw placed on the underside and at the inner edge of the larger one; the unguicular cleft is acuminate at the base; and the prosternum is not channelled.

The numerous species may be arranged in six groups.

A. Nos. 1119, to 1121.—Elytra with a yellow stripe, female with rudimentary second claw; male with axillary plicæ or rugæ, near the articulation of the swimming leg. The species of this group are peculiar to North America.

B. Nos. 1122 to 1134.—Elytra without a lateral yellow stripe, male with rudimentary second claw; male destitute of axillary rugæ. The species are found in the tropical regions of the Old World (Asia and Africa).

C. Nos. 1135 to 1139.—In this group the females are without rudimentary second claw; in other respects they agree with group B, the elytra being without lateral yellow stripe, and the males destitute of axillary rugæ. It is to be noted that individual female specimens of certain species of this group are occasionally met with in which there may be detected a very slight rudiment of the second claw; the group therefore cannot be considered as sharply separated from the preceding one.

D. Nos. 1140 to 1151.—Elytra with a yellow lateral stripe which extends to, and includes the epipleuræ; female without any trace of a second claw on hind foot.

E. Nos. 1152 to 1168.—Elytra with a yellow lateral stripe which does not quite extend to or include the epipleura; female without rudiment of second claw on hind foot. In this group *C. wehnekianus* repeats the peculiarities of *C. pectoralis* of the preceding group, except as regards the yellow stripe on the wing-case. *C. cephalotes* appears at first sight to have the yellow band extending to the epipleura, but on a more careful examination it is seen that the raised marginal line is of dark colour throughout its whole length so that the species is better placed in this group.

F. Nos. 1169 to 1171.—This group is distinguished by a peculiarity in the females,

which is not found in any of the other groups, viz., that the swimming feet in this sex are furnished beneath with swimming hairs along their outer edge, like the males, whereas in all the other groups only the males have the swimming tarsi ciliate in this manner.

Species of this aggregate are found in most parts of the eastern hemisphere, and in North America, but are wanting in South America, one of the species, *Dytiscus tripunctatus* has a very wide distribution from Japan, Australia, and New Caledonia, through the Philippine and Malay Islands and Asia, to Africa, and Southern Europe; and appears to be the most abundant species of the family Dytiscidæ.

SECOND SYNTHESIS. (GROUPS)

II. 1.—Group NOTERINI. (*Vide* p. 263.)

Three genera, one of which is an autogenus, while the other two contain each six species, form this secondary aggregate. The size of the individuals varies from $2\frac{1}{2}$ to 5 m.m. of length; the form is very constant, transversely very convex above, almost flat beneath, the outline very continuous, forming an oval attenuate behind, there is no variegation of the upper surface, and the sculpture is peculiar, consisting of more or less isolated large punctures on the wing-cases (sometimes peculiarly asperate), and more or less completely wanting on the basal portion. The antennæ are very variable, but sometimes show a most remarkable and extraordinary form in the males. The anterior tibiæ bear a more or less elongate curved spur, and their outer angle is either conspicuously prominent (*Pronoterus*) or quite rounded off (*Synchortus*, *Noterus*.) The prosternal process is never large, sometimes very short and small, it is either rounded or obtusely acuminate behind. The suture between the hind coxa and metasternum approaches very near to the middle coxa; the hind coxal cavities are contiguous, and the swimming legs are either moderately or well developed; the hind margin of their femur is destitute of any group of ciliæ at its extremity, and the lower face of the femur is either impunctate (*Pronoterus*) or furnished with a transverse series of conspicuous punctures, extending somewhat parallel with, but at a distance from, the hind margin.

The geographical distribution of the species of Noterini, is in accordance with their arrangement in genera, viz: tropical South America, one species (an autogenus); European region and Japan, six species (forming one genus); Madagascar and tropical Africa, six species (forming one genus).

The South American insect is the lowest of the forms, and it is doubtful whether on the whole the European *Noterus* or the Africo-madagascarene *Synchortus* is the higher form. It seems probable that the centre of distribution is either Madagascar or tropical Africa.

II. 2.—Group SUPHISINI. (*Vide* p. 267.)

Only two genera, one consisting of three species, the other an autogenus, form this secondary aggregate :

The form of the individuals is short, and excessively convex above ; the prosternum in front of the coxæ is very reduced and small, so that the coxæ are very near its front edge, and along the middle longitudinally the prosternum is a good deal thickened ; the prosternal process is nearly truncate behind ; although the metasternum is very short the suture between it and the hind coxa does not approach very near to the middle coxa. The swimming legs are very feeble, and their articulations are a good deal separated from one another ; the hind femora have elongate projecting setæ ; the front legs are wonderfully modified, in the manner detailed in the description of *Colpius* (p. 837).

The structure of the prosternum, and the extreme differentiation of the front legs authorize the treating of these few species as a distinct aggregate : it is somewhat approached by *Synchortus* of the *Noterini*, for in this there is a slight approximation to the prosternal structure of the *Suphisini*, but in *Synchortus* the hind legs are without femoral ciliæ at the extremity of the hind margin. It has perhaps really more claims to relationship with *Hydrocanthini*, where as in the *Suphisini* the femoral ciliæ are present, but the *Hydrocanthini* seem to me to present such an important departure from the *Suphisini* in the prosternal structure, that I have thought it would be unnatural to class them together in the same secondary aggregate.

These insects are of interest inasmuch as that they are amongst the lowest *Dytiscidæ* if the hind legs and coxæ are the points considered, and yet they display in the most extreme degree of perfection the structure of the tibiæ characteristic of the higher *Noterini* ; in other words the hind legs, coxæ, and general form class them as amongst the least differentiated of the water beetles, while the structure of the front legs class them as amongst the most extremely differentiated. It is thus impossible to look upon them as displaying any genetic relationship with the nearest allies ; they are below them (or ancestral) in one important respect, above them (or more recent) in another important respect. Of the two forms included in the *Suphisini*—*Colpius* and *Suphis*—*Colpius* is probably to be looked on as the lower form, and from its retention of primitive characters is certainly one of the most interesting water beetles.

The *Suphisini* are peculiar to the New World, *Colpius* has been found only in the United States, *Suphis* only in South America and the west Indies.

 II. 3.—Group HYDROCANTHINI. (*Vide* p. 268.)

Only two genera, one comprising forty-one, the other twelve, species, constitute this secondary aggregate. The individuals vary in size, from 2 to 8 m.m. of length, the form is very convex (especially transversely) above, flat beneath, the outline

an oval, attenuate behind, but varying from extremely short to elongate ; the upper surface may be punctate, but is usually excessively polished, the wing-cases are variegate, or not so ; the prominent platform of the breast is nearly always very coarsely punctured. The antennæ show no remarkable developments ; the front tibiæ have the outer margin rounded and densely set with short regular ciliæ, the outer apical angle has completely disappeared ; moreover the tibia is narrowed towards the apex, and on its posterior face is a large cavity in which is inserted a thick curved spur ; owing to the attenuation of the tibia, this spur has often the appearance of being an actual prolongation of the tibia. The anterior coxæ are always a good deal separated from one another, the anterior transverse band of the prosternum is in front of the coxæ moderately long, the prosternal process proceeds backwards from this band from an almost insensible point of departure, and behind the coxæ becomes greatly broader (*Hydrocanthus*) or gently broader (*Canthydrus*) and its posterior margin is truncate, or only very obscurely a little longer in the middle.

The coxal processes are greatly prolonged backwards, and their terminal angle is rendered acute by a group of rigid ciliæ. The swimming legs are either moderately or greatly developed ; their femora have at the extremity of their hind margin a very highly developed group of ciliæ ; the face of the femur is either traversed by a series of punctures parallel to, but at a distance from, the hind margin (*Hydrocanthus*), or placed so very close to the margin as to give the appearance of the hind margin itself being ciliate (*Canthydrus*).

The *Hydrocanthini* are distributed over the warmer parts of the world ; in the European region they do not extend north of the Mediterranean, and in the American are found at any rate as far north as Massachusetts.

So far as regards the distinction of the species, the *Hydrocanthini* are amongst the most difficult of insects to deal with ; the species however, notwithstanding their extreme similarity, will be found, I have no doubt, to be really distinct, and probably will prove to be much more numerous than is at present anticipated.

II. 4.—Group VATELLINI. (*Vide* p. 282.)

This group comprises only nine species, arranged in three genera, two of which are autogenera. They are insects of rather small size, (from 3 to 8 m.m. in length) ; of *Hydroporoid* appearance, but with the outline of the body much more interrupted at the junction of the thorax and elytra than is usual in the *Dytiscidæ* ; the front and middle legs are elongate, and the front tarsi are peculiarly elongate and narrow in some of the species. The head is very short in front of the large and prominent eyes ; the prosternal process is very abruptly bent, and does not connect with the metasternum, but its point terminates in front of the middle coxæ, between which it is concealed ; the middle coxæ are exposed, and prominent, and

quite contiguous, there being no inter-coxal prolongation of the front of the metasternum. The mesosternum is more or less exposed between the metasternum and prothorax. The hind coxæ are large, their front border has a considerable extension in the anterior direction, and its most forward point lies very near the outside of the body. The hind coxal cavities are not contiguous; and the swimming legs are slender. The front and middle tarsi are peculiar, the three basal joints are elongate, more or less compressed laterally, the third joint is scarcely bilobed, but has an emargination at the apex, in which is inserted the fourth joint, the terminal joint is therefore exerted, it is not very long, but is very slender, and is terminated by two very small claws; at the base of this (truly the fifth joint), the true fourth joint may be detected, although it is very small and minute; the joints of this tarsus are very loosely articulated, so that the foot has a very fragile appearance; there is in some species a good deal of sexual disparity in the structure of the tarsi, and in the males of some species of *Macrovatellus*, the peculiar form of the tarsus is little apparent, and departs but little from what exists in the *Hydroporini*.

The three genera when examined are found to be very distinct *inter se*, *Derovatellus* is a small insect, *Hydroporoid* in form, and has the mesosternum but little exposed, the head is very short in front, and has no anterior band inflexed over the labrum; its head is in fact *Hydroporoid*, while in *Vatellus* this part is more *Hyphydroid*, there being an inflexed anterior edge placed at right angles to the plane of the upper surface; this genus, *Vatellus*, is highly remarkable on account of the deep sutures of the ventral segments.

In *Macrovatellus* the individuals are of comparatively large size, and the front tarsi are not so slender as in the other two aggregates, while on the other hand in it the exposure of the mesosternum reaches its maximum; in respect of its head and the posterior coxal cavities, it may be considered as intermediate between *Vatellus* and *Derovatellus*.

The *Vatellini* form a very natural and interesting aggregate; although on account of the structure of the intermediate coxal cavities the group belongs to the *Dytisci fragmentati*, yet it has no other relationship with the components of that series; it may be considered to be the analogue in the *Dytisci fragmentati*, of the *Hydroporides* in the *Dytisci complicati*. The *Vatellini* show in fact several points of approximation to the *Hydroporides*, but these approximations are to different members of that tribe, not to any one form thereof, and the approximation is never in a number of characters, but only in a single point. Thus the peculiar prosternal process not connecting with the metasternum, reappears in *Bidessini* (*Tyndalhydrus*) and in *Hyphydrini* (*Andex*). The peculiar tarsi are somewhat similar to those of *Hyphydrus* very much elongated, and this point is also approximated to some extent by *Necterosoma* of the *Hydroporini*. The widely different and isolated *Sternopriscus* approximates the *Vatellini* by the exposure of the mesosternum. One of the most peculiar of the European species of *Hydroporus* (*Dytiscus dorsalis*

No 630) much approximates the Vatellini in form, and has also the mesosternum more than usually exposed, and even makes some approach to the Vatellini by a greater than usual elongation of the front tarsi.

The external sexual differences in the Vatellini are apparently confined to the front and middle tarsi.

The group as at present known is peculiar to the warm parts of South America, but I shall not be at all surprised if it be found to have representatives in Patagonia.

II. 5.—Group LACCOPHILINI. (*Vide* p. 286.)

This aggregate of the second degree consists only of two most unequal genera, one being an autogenus, the other comprising eighty-three species.

It is not necessary to repeat all that has been said of the structure of *Laccophilus*. The Laccophilini are insects of small size, of very continuous outline, and with very little sculpture of the surface. The prosternum in front of the coxæ continues the plane of the prosternal process, which is always very acuminate at its apex; the metasternum is very elongate in the middle and very reduced at the sides by the encroachment of the hind coxæ so that it forms on each side a slender curved band. The sides of the prothorax are without lateral margin, and the scutellum can never be perceived, the base of the thorax being either straight in the middle (*Neptosternus*) or more or less acuminate (*Laccophilus*). The front and middle tarsi are five-jointed, the fourth joint being similar to the third in form and size; in the male they are but little dilated. The swimming legs are moderately or highly developed, and their tarsi have a lobing of the joints which is very conspicuous in *Laccophilus*, less so in *Neptosternus*.

The Laccophilini are a very distinct group, and there is no real connection between them and any other group. The *Noterini* agree with them in having a concealed scutellum and the five-jointed tarsi, but are extremely different by the structure of the mesosternum, and other points; and in fact in many important respects the two groups are amongst the most absolutely different of all the Dytiscidæ. A slight apparent approach is made to the Laccophilini by *Coptotomus* of the Colymbetides, and if a *Coptotomus*, say *Dytiscus interrogatus*, Fab., be compared with a *Laccophilus* much resembling it, viz., *C. quadrilineatus*, Horn, the two will appear to have so great a similarity in form, colour, markings and some important particulars of the structure that a real approximation might easily be considered established; but in other and more important respects, such as the very different coxal lines and processes, and the scutellum, the two forms are profoundly divergent; and it is clear that the resemblances are due to the common life of the two. There is not the least reason to believe that the similarities are to be ascribed to any descent from a common ancestor, but it is quite satisfactory to believe that they

may be due to the similarities of environment which the two insects alluded to have long had in common.

The Laccophilini occur probably in all warm and temperate regions except the Pacific Islands and New Zealand; *Neptosternus* has been found only in Madagascar and Zanzibar, and it is probable that other species will be detected in the great African island.

Only highly developed forms exist in the Laccophilini, at present we are quite unacquainted with any more primitive forms of the group. Of the two genera forming it, *Laccophilus* is undoubtedly however a more perfect form than *Neptosternus*, and is indeed entitled to a high place as being amongst the most perfectly organized of the Dytiscidæ. *Neptosternus* though inferior is itself an extremely evolved and specialized form.

The group is widely distributed in the globe, but wanting in the Pacific Islands and New Zealand, and very sparsely represented in the cooler regions of the world

II. 6.—Group HYDROVATINI. (*Vide* p. 320.)

This aggregate of the second degree is formed by one genus of numerous species, and an autogenus: the greatest size attained is 6 m.m. of length and this is only by a single species, the others being usually much smaller than this. The form is short and convex, the base of the thorax is very accurately coadapted with the wing-cases. The hind legs are very feeble, their articular cavities are concealed, but are not contiguous, being separated by an intra-rimal space marked off externally by a very distinct coxal notch, outside this coxal notch the coxal process projects as a prominent free lobe. The anterior border of the hind coxæ is but little arched; and the intermediate coxæ are widely separated. The prosternal process is broad and short, and is broadest behind, showing in fact a nearly straight, or truncate, hind border. The mesosternal fork is largely connected with the intercoxal process of the metasternum. The scutellum is quite invisible, and only four joints can be detected on the front and middle tarsi.

The peculiar structure of the coxal processes, when once appreciated is found to be very characteristic; it will be noticed that the articular cavities of the hind legs are broadly separated by a piece (or rather by two conjoined pieces) adpressed to the level of the ventral segments, and outside of this part the coxal cavities have a visible opening, which is in fact their inward termination; the whole of the articular cavity except this internal opening is protected by a well developed free process placed outside the coxal notch; thus when the insect is in the natural position (ventral surface downwards) the base of the trochanter moves over the extra-rimal portion of the coxal process, while the coxal notch and the adpressed intra-rimal portion allow the trochanter, when extended as far as possible in the posterior direction, to become free and move on the face of the intra-rimal portion.

In short the broad coxal processes are each separated into two distinct parts by the coxal notch—an inner adpressed part, and an outer free part.

This structure is essentially the same as exists in *Pelobius*; and in certain *Hydroporini* the structure is approached in one or more particulars, but in none of the *Hydroporini* do we find a distinct coxal notch, coexisting with a broad intra-rimal and a large extra-rimal part of the coxal process.

The approximations of other secondary aggregates to the *Hydrovatini* are important; the peculiar prosternal process is repeated in some *Bidessini* and *Hyphidriini*; and the general form, and the shape of the hind coxæ (minus the coxal processes), and the swimming legs, is repeated in some *Hydroporini*, (in certain species of *Cœlambus*); the peculiar acuminate hind extremity of the body is reproduced in *Celina* and *Methles*, two isolated primary aggregates of *Dytisci complicati*; while *Hydrocoptus* and *Pronoterus*, two primitive forms of *Noterides* in the *Dytisci fragmentati*, not only resemble *Hydrovatus* to an extraordinary degree in their facies or general appearance, but show a very similar structure of the coxal processes. These facts render it probable that the *Hydrovatini* will be found to be creatures that have retained to a large extent their primitive characters, while becoming highly specialized for a life of very small locomotor activity. If we recall the fact that in the *Hydrovatini* the middle and hind coxæ are unusually distant from one another, it seems probable that the primitive ancestors of the group, at the period when they began to be modified for an aquatic life, were beetles whose coxal cavities were separated by a considerably greater interval from one another than were those of the ancestors of the other (now existing) *Hydroporides*.

The group is widely distributed over the globe, but wanting in the Pacific Islands and New Zealand, and does not extend to the cooler parts of the world; the extreme south of England being, so far as is yet known, its farthest extension into the temperate regions.

II. 7.—Group *BIDESSINI*. (*Vide* p. 336.)

Rather more than one hundred species arranged in six primary aggregates (of which however no less than three are autogenera) form this secondary aggregate. It is distinguished by a single character not only from other water beetles, but from all other beetles, viz., that the hind coxa is soldered completely to the ventral segments, so that the under surface of the body from the front of the metasternum to the hind margin of the third ventral segment consists of one rigid piece.

A second important character of the *Bidessini* is that the posterior articular cavities are not contiguous, and are not protected by the coxal processes; they open directly on the under surface of the coxæ and are separated from one another by the coxal processes which are completely adpressed to the level of the ventral segments; in this portion of their structure they are closely approximated by the *Hyphidriini*.

The hind coxæ are always large, with greatly arched anterior border: this

development of the coxæ is sometimes extreme; thus in *Desmopachria* the hind coxa almost reaches the middle articular cavity.

In other respects very important differences exist between the various components of the aggregate.

Tyndallhydrus possesses a prosternal process that does not connect with the metasternum, agreeing in this respect with the *Vatellini*, (of the *Dytisci fragmentati*), and with *Andex* (of the *Hyphyrini*).

In most of the species of *Bidessus*, the mesothoracic epimeron is very slender and even at its upper posterior (episternal) angle is so little enlarged that it may be almost described as linear; on the other hand, in *Pachydrus*, it is comparatively well developed at the point just mentioned.

In *Desmopachria* the parts of the prosternum are reduced to a minimum of size, forming in fact merely a slender frame for the encasement of the front coxæ; the anterior piece of the prosternum is almost as short as possible. the band between the coxæ is extremely slender and the prosternal process is minute. In *Huxelhydrus* the prosternum is less reduced than in any of the other genera of the aggregate.

In *Bidessus*, *Huxelhydrus*, (and probably in *Tyndallhydrus*), the mesosternal fork does not reach the intercoxal process of the metasternum, whereas in the other genera this connection between these two parts is well completed.

Bidessus, *Huxelhydrus*, and *Tyndallhydrus* have the slender hind tibiæ a little bent near the base, and becoming a little thicker from the base to the apex, whereas in the other genera the tibiæ are stouter, and are straight, and of about one thickness from base to apex.

The three genera, *Heterhydrus*, *Pachydrus*, and *Desmopachria*, by several characters appear to form a naturally distinct aggregate from the other three, thus they are of peculiar short, broad, form, with a broad prosternal process, with thicker swimming legs, and straight tibiæ; short and compressed or subserrate antennæ, and completely separated middle coxæ; and with contiguity between mesosternal fork and metasternal intercoxal process: whereas in the other genera, the form is more oblong, the prosternal process oblong, the middle coxæ contiguous, and the mesosternal fork disconnected from the metasternal process, the hind tibiæ differently formed, and the antennæ comparatively filiform. Although these characters are very considerable, yet the multitude of species included under *Bidessus* show much variety of form, so that it is possible that when carefully examined they may present intermediate forms.

The *Bidessini* are distributed over all lands, but apparently prefer the warmer regions. Tropical America seems to be the metropolis of the *Pachydrus* group of genera, Australia of the *Bidessus* group. No species has yet been found in the Pacific Islands.

I should remark that I have not been able to ascertain with certainty that the hind-body is actually soldered to the coxa in *Heterhydrus* and *Tyndallhydrus*, but I entertain almost no doubt that such is the case.

II. 8.—Group HYPHYDRINI. (*Vide* p. 370.)

About thirty species, of which no less than twenty-four form the genus *Hyphydrus*, while the others are all autogenera, form this secondary aggregate. The size of the individuals is always small but never minute, the greatest length being 6 m.m., the least 3 or 4 m.m. In respect of form, colour and sculpture there is however much variety. The positive characters distinctive of the group are found in the hind coxæ and their articular cavities; these latter are never contiguous, and are quite exposed, being unprotected by the coxal processes; these are adpressed to the level of the ventral segments and thus separate the coxal cavities, their postero-external angles are obtuse; there is no coxal border, and the coxal lines are not curved outwards near the extremity. The hind coxæ themselves have an extreme development, and extend forwards so as to reduce the side-wing of the metasternum to a very slender band. All the components moreover have a largely developed prominent ligula on the inner face of the elytra near the apex. The hind coxa is free and not soldered to the ventral segments.

Although these insects appear to be approximated by the *Pachydrini*, by virtue of the form of the hind coxæ and their exposed articular cavities, yet they remain very distinct by the unsoldered coxæ. In *Pachydrini*, where the adpressed coxal processes are soldered with the ventral segment, the process of evolution can only bring about approximation of the trochanters by diminishing the intervening coxal processes, but in *Hyphydrini* where the processes are not soldered to the ventral segment, approximation of the trochanters becomes possible, by means of freeing the extremity of the coxal process from the level of the ventral segments, and the playing of the trochanter above the liberated portion if extension inwards of the articular cavity accompanies the change of level of the process; now if *Hyphydrus major* be examined it is seen that the outer angle of the coxal process is really somewhat detached so as to form as it were the beginning of such a process of evolution.*

As regards the structure of the articulations of the swimming legs, the *Hyphydrini* must be I think regarded as an imperfect form, the coxal processes serve in no respect to protect the articular cavities, and the pyxal processes project beyond the coxal processes: but in other respects the group has attained a high degree of evolution. The hind coxæ are extremely large, and in *Hyphydrus* have actually attained about the maximum of possible extension. There are no forms known in which the coxæ are small, and the lower forms of the aggregate are in this respect very highly developed. We may I think conclude that we have here then highly evolved forms of an inferior type of structure; and also that the surviving species have been able to maintain their existence by means of extreme evolution of certain

* The process of evolution in the *Hyphydrini* may actually have been the reverse of what is sketched above, this being one of the cases where we can readily see the transitions that may have occurred, but not so readily determine which marks the starting, which the terminal point of the series.

points as above mentioned, while the lower forms have become nearly or quite extinct. Hyphydrus is the highest form by far, and it is rich in species, while the remaining fragments indicate that the ancestors were probably more numerous in species. I should expect that we may find that Dytiscidæ with similar posterior articular cavities, but with smaller coxæ and less developed swimming legs, have existed at a past geological epoch in South Africa.

It seems clear that South Africa is the metropolis of the Hyphydrini, all the fragmentary forms are found there, and there only; and although the highest form, Hyphydrus, is widely distributed, yet the distribution is such that South Africa may be said to be its centre. No species is known from the western hemisphere.

II. 9.—Group HYDROPORINI. (*Vide* p. 389.)

This extensive secondary aggregate or group comprises ten genera and no less than three hundred species. They are small insects, the largest size attained being about 6 m.m. of length: the surface is always more or less punctured, and frequently bears a delicate pubescence.

The prosternal process is attenuate and acuminate towards the apex, and never has a truncate hind margin; its apex always attains the intercoxal process of the metasternum. The mesosternum is always placed at a considerable angle to the metasternum, so that it is but little visible between the prothorax and metathorax. The hind coxal cavities are either contiguous or approximate, never widely separate; the coxal process always shows an outer angle, (or more or less rudimentary lobe) projecting over the coxal cavity, so that this latter is never placed *completely* external to the coxal process. The hind margin of the posterior coxa is free, and not soldered to the ventral segments. The epimeron of the mesosternum is never reduced to a linear band. The scutellum is invisible although a minute portion of its apex is occasionally exposed.

The large number of insects connected by these characters show a great deal of variation in different points of their structure; indeed there is scarcely any part of the external skeleton that remains unvaried throughout the aggregate. Nevertheless by its positive and negative characters it is a perfectly distinct group in the Hydroporides. The coxal processes never show the two widely separated coxal notches with a largely developed extra rimal lobe, such as is seen in the Hydrovatini; and the ventral segments are not soldered with the coxæ as in Bidessini. While from the Hyphydrini the group is distinguished by the coxal cavities never being quite exposed and much separated. Sternopriscus again has the mesosternum very invisible, and with a very narrow, sublinear epimeron.

The genera, with one exception, have the fork of the mesosternum unconnected with the intercoxal process of the metasternum, and thus form an exception (but not an unique one) in the Dytiscidæ, the vast mass of species of the family having these two parts connected.

The genus *Hydroporus* departs however in this respect from the other *Hydroporini*, and possesses the more perfect and more usual structure. As the connection between these two parts is undoubtedly a point of perfection, *Hydroporus* must, other points being assumed as of equal perfection, be considered a higher form than the other genera, in which this connection is not attained. The line of demarcation between the two categories, is however not an absolute one, for in those genera where the connection of the two parts does not exist, there are some species where it is nearly, although not completely attained; and in point of fact, most if not all of the species of the *Hydroporini* may be considered to be in process of gaining this connection, for they show a rudimentary process, more or less developed in different species, and if this increases or continues to grow, the connection between the two parts of the breast will be completed.

I fail to understand this process unless it be considered as a growth that will have this result.

Not only are the species in which the connection does not exist variable as regards their greater or less degree of approximation to its attainment; but those where the connection has been attained show it in various degrees of perfection.

The functional result attained by the union is perhaps some power of mobility of the prothorax by extension; while when not extended, the mutual adaptation of contiguous parts, and their power of resisting strains is increased. *Hydroporus oblongus* may be taken as a type of the most perfect form of the union attained by these parts; in it the apices of the sides of the mesosternal fork are brought to just the same plane or level as the middle of the metasternum, and the apex of the metasternal process is prolonged into the groove of the fork, and its anterior portion is grooved or shows an impression for the apex of the prosternal process.

In other species, such especially as are more convex beneath, as *H. cimicoides* (No. 501) and its allies, the junction is effected by the apex of the metasternal process being recurved and resting on a prominence that projects from the back of the mesosternal fork; the adaptation of the parts being thus much less perfect than it is in *H. oblongus*.

In *Dytiscus dorsalis* (No. 630) the mesosternal fork is elongate and has even grown out a little beyond the general plane of the metasternum, the intercoxal process of which is therefore a little arched, and the junction is effected by the edge or extremity of the two pieces of the mesosternal fork having grown backwards on each side of the apex of the intercoxal process of the metasternum.

We are entitled I think from these facts to conclude that, just as the junction in the genera where it does not yet exist is possibly being effected by the species independently of one another, so where it does exist it has likewise been attained in diverse manners by slightly different modes of growth, and does not indicate any genetic connection between the species possessing it.

Another character which I have much used for the definition of the genera, being also one which has not hitherto been observed or studied, requires some comment. I allude to the development of a ligula or tongue on the inner face of the elytra near the extremity. In all the Hydroporini there exists a raised line on the inner face of the wing-case, approximately parallel to, but at some little distance from, the outer edge. The function of this ridge is to ensure adaptation of the wing-case to the sides of the body and to give increased power of resistance to strains or pressures that would tend to force the wing-cases open and thus allow the access of water to the soft dorsal portions of the insect, where the breathing apertures are placed, an event which would speedily prove fatal. In certain species this ridge is but little developed and its effectiveness correspondingly small (*Dytiscus duodecimpustulatus*, &c.); in others (such as *Hydroporus gigas*, Boh., No. 427) it becomes, a short distance from its terminal portion, highly developed, and folded over so as to form a groove into which the sharp upper edges of the side pieces of the penultimate ventral segments are received; and thus an effective mechanism results. In other forms however a still greater differentiation has occurred; thus in *Cœlambus* we find that although the ridge is but little developed, yet it shows at one point near the extremity an abruptly projecting ligula or tongue bent back very close to the face of the wing-case, and forming a very effective holdfast, and allowing at the same time a considerable vertical motion of the ventral segments, without any danger of their being displaced; a very effectual mechanism is thus formed by the use of a very small amount of material; this then may be looked on as at present the highest development of this part of the organism, and its maximum appears to be attained by *Hyphydrus* of the *Hyphydrini*.

In connection with this I may remark in passing that the *Cœlambi* show a diminution of the epipleura, and the wing-cases are thin and the material necessary for their formation is comparatively limited. It would thus appear that these insects have been developed under circumstances where economy of chitinous substances was of much advantage to the organism; the species are widely distributed and some are especially fond of brackish waters, others of chalky waters, and it is probable we have in these facts the clue for ascertaining at what periods of the world's history and under what circumstances it was that these creatures appeared over a large portion of the surface of the earth. *Hydroporus enneagrammus* is the species where the elytra contain the least material, and this species has been found only in very salt water.

In the Australian genus *Paroster*, a like feebleness of the wing-cases exists, and I anticipate they will also be found to be inhabitants of similar waters.

The Hydroporini are specially characteristic of the European and Mediterranean, the North American, and the Australian regions: and one small genus (*Herophydrus*) appears to belong to Madagascar and tropical Africa. The species found outside these regions are very few in number, and none are yet known with certainty to inhabit

tropical South America, the Pacific Islands (including New Caledonia) or the Malayan and tropical Asiatic regions. The one or two species found in New Zealand are very closely allied to Australian species. Australia (with Tasmania) possesses five genera (containing about thirty species) peculiar to itself, but the great majority of the species are found in the North American and European regions, where the three genera *Cœlambus*, *Deroneetes*, and *Hydroporus* are represented by about 260 species. No member of the group has yet been found in Japan, so that in this respect Japan and tropical Asia agree, and are very different from Europe.

II. 10.—Group AGABINI. (*Vide* p. 491.)

This aggregate of the second degree is formed by ten primary aggregates which include one hundred and forty-four species. The size of the individuals varies from 6 m.m. to 14 m.m. of length, so that in the stature of the individuals the group stands at about the central point of the Dytiscidæ.

The upper surface is very rarely indeed possessed of a true punctuation, its place being taken by a reticulation of fine scratches, forming meshes of various shapes and magnitudes, according to the species; sometimes this sculpture becomes excessively fine, and occasionally the surface is smooth and polished. The colour is usually obscure, or dark with a brassy tint; few species are variegate.

The characters of the group are that the semimembranous piece bordering the inner edge of the first ventral segment is smooth, and not thrown into transverse folds as it is in the Colymbetini; the apex of the wing of the metasternum reaches, when the wing-cases are closed, to the edge of the epipleura; the hind femur bears on its undersurface, at the extremity and quite close to the hind margin, a more or less developed group of ciliæ; and the side piece of the fourth and of the following ventral segments is comparatively broad.

The first of these characters is merely a negative one, and by it the Agabini depart from the Colymbetini to agree with the vast majority of the Dytiscidæ.

The character drawn from the relation of the points of the metasternal wings to the epipleuræ is of little consequence, and moreover is not absolute but is rather one of degree: it depends on the fact that the metathoracic episternum (placed at the antero-external portion of the metasternum) proceeds backwards between the edge of the wing-case and the wing of the metasternum till it terminates as a sharp point, contiguous with the point of the metasternal wing; this character however is not absolute, for in *Dytiscus ater* (No. 781) the exposed terminal portion of the episternum is not a sharp point, but is truncate; the point of the metasternal wing in that species does not therefore reach absolutely so far as the epipleura, although it approaches very near indeed thereto.

In those species of the aggregate that have the swimming legs but little developed, the femoral ciliæ are, like the legs themselves, less highly developed and perfect:

and in groups 7 and 8 of the genus *Agabus*, they are scarcely present, there being merely a few punctures grouped close together in a manner approximating to rectilinear, and each bearing a very obscure short hair or cilia. Where the swimming legs are highly developed (comp. *Agabus*, group 4), the punctures become confluent so as to form a regular line or depression, in which are placed the thick, contiguous, and regularly arranged ciliæ. In all cases however, including even those species where their development is rudimentary, the ciliæ are placed so as to form at their insertion a kind of linear depression parallel with and approximate to the hind border of the femur at its outer extremity.

The width of the ventral side pieces is subject to some degree of variation, but so far as I have been able to examine the character, the variation is not great; and it may be said that the width of the ventral side piece of the fourth segment is about one-half or one-third of the length.

The aggregate may be described as a really natural one, inasmuch as the definition given of it will apply to no member of any allied group; and also because that the primary aggregates of which it is composed are closely linked together.

There is still however doubt as to its being actually isolated, because if other characters besides those above enumerated be taken into consideration, then a fresh combination becomes possible. Moreover each of the characters reappears, or at any rate is greatly approximated to, in allied groups. Thus the wide ventral side pieces reappear in *Scutopterus*, (*huj. op.*) although the rest of the members of the group with which that genus is associated (the *Colymbetini*) have the ventral side pieces narrow. As an instance of an important character that is variable in the group, but which has been left out of consideration by me, I may point out the penultimate stigma; this in *Agabus* is quite small, while in *Colymbetini* it is transversely elongate. In *Ilybius* which I have included among *Agabini*, this stigma is also transversely elongate to as great an extent as it is in certain *Colymbetini*.

C. J. Thomson, (and other naturalists have followed him in this), has made the want of a setigerous space on each of the middle of the third, fourth, and fifth ventral plates a distinctive character of the European *Agabini*, and has thus distinguished the group from the *Colymbetini*, in which the setigerous pore is present in a high degree of development. The character will not however bear when rigidly examined so high a degree of taxonomic importance as that assigned to it by the talented and most observant Swedish naturalist; for on careful examination it may be found present in *Agabini* in various stages of development. Thus in *Dytiscus bipustulatus* (*Agabus* No. 751), a few scattered fine punctures bearing a very short hair may be detected about the middle of these segments, and in *Dytiscus fuscipennis* (*Agabus* No. 752) these punctures and setæ are more highly developed, and are placed so as to form a diffuse patch on each side of the middle of the segment: in *Ilybius* they are present to a greater or less degree of concentration on the middle of the segment;

in *Ilybiosoma* though very indistinct they are still more aggregate ; in *Colymbetes gaudiehaudi*, (*Leuronectes*, No. 773), they are present in a very minute form, and in *Col. peruvianus* (*Agametrus*, No. 776) they are quite concentrated into a fovea and conspicuous, although not so large as in most *Colymbetini*.

The *Agabini* are in their geographical distribution specially characteristic of cold and temperate regions, both in the northern and southern hemispheres, but more particularly in the northern ; and thence a few penetrate into neighbouring tropical regions ; the group is unknown in New Zealand and the Pacific Islands, although well represented in Australia ; the few members found in South America, are probably inhabitants of mountainous regions.

II. O.—(SEVEN UNASSOCIATED GENERA.)

The seven aggregates placed between the *Agabini* and *Colymbetini*, are distinguished from these two groups, by the fact that they do not possess the accumulation of ciliæ at the angle of the hind femur as found in the *Agabini*, and that the stigmatic rugæ of the *Colymbetini* are also absent. As these are both purely negative characters, and as in many other respects these aggregates differ much from one another, it seems to me that they cannot naturally be considered to form an associated group ; at any rate I must decline the responsibility of treating them as such at present.

As regards the other characters made use of by me in the synthesis of the components of *Agabini* and *Colymbetini*, there are some observations that should be made in order to show the kind of variation these characters undergo in these unassociated genera.

The setigerous punctures of the lower face of the femur exhibit some most interesting peculiarities. In *Copelatus* they appear to be entirely absent, and the lower face of the femur shows a smooth impunctate surface. In *Lancetes* on the other hand there is an elongate series of setigerous punctures placed just on the middle of the lower face of the femur, that is about equidistant from its front and hind margins, at some distance from the base, and not extending to the outer extremity ; these punctures are seven or eight in number and vary in minor details of situation and development. In the other genera they are nearly entirely absent but whenever they can be traced it will be seen that they are placed, not near the hind border of the femur as in *Agabus*, but on the middle of its longitudinal axis, that is to say on a line drawn from base to apex of the femur at equal distances from its front and hind border. Thus in *Lacconectus* three or four obsolete punctures bearing each a very fine seta may be detected on the middle axis near the apex, and in addition to them one or two others extending towards the hind angle.

The ventral side pieces in all these seven genera are more or less intermediate

between the broad form displayed by the pieces in the Agabini and the narrow one usually found in the Colymbetini. Thus in *Matus* the side piece of the fourth segment is as broad as in the genus *Agabus*, while in *Coptotomus* it is hardly broader than it is in certain members of the Colymbetini (*Dytiscus grapii*, No. 943, for example). In this respect therefore these genera connect the Agabini and Colymbetini.

In most of the several genera the posterior portion of the metathoracic episternum where it is exposed between the wing of the metasternum and the epipleura is very attenuate and acuminate; this is especially the case with *Copelatus*, *Aglymbus*, *Lacconectus*, and *Matus*; while in *Coptotomus* the wing of the metasternum has so great an outward extension that it is almost invaded by the epipleura, that is to say that its termination cannot certainly be distinguished without slightly raising the epipleura from the breast. Thus this genus which by its ventral side pieces approximates to Colymbetini, by its metathoracic structure departs most widely therefrom. On the other hand *Lancetes* has the posterior extremity of the episternum comparatively broad, and the apex of the wing of the metasternum distinctly though slightly separated from the epipleura, thus making an approximation to the Colymbetini.

In these genera, the setigerous abdominal pores, relied on by Thomson as distinguishing the Agabides from the Colymbetides, undergo much variation; they are distinct on the fourth and fifth segments, but are wanting on the third in *Lancetes* and *Coptotomus*; they are present on the third, fourth, and fifth segments in *Matus*, but are only very slightly impressed; they are present on the three segments but are very small in *Copelatus* and *Aglymbus*; in *Lacconectus* they are also present but are so minute and rudimentary that they can scarcely be detected; and in *Agabetes* they are altogether wanting.

II. 11.—Group COLYMBETINI. (*Vide* p. 605.)

This aggregate is formed by four genera (comprising sixty-two species); the individuals are of moderate or rather large size, varying from 8 to 21 m.m. in length, and the surface is not punctate, but is either nearly smooth or possesses on the wing-cases a peculiar sculpture, which may be either reticulation or transverse scratching (aciculation), or even a kind of faintly raised sculpture having a slightly imbricate appearance. The semimembranous side piece of the first segment of the hind body (*i.e.*, the part interposed between the stigma and the edge of the ventral plate) is marked by transverse rugæ or furrows; when there are any setigerous punctures on the hind femur, they form an irregular patch at the extremity, not however close to the hind margin, but widely separated therefrom.

The most important of these characters is the presence of the stigmatic rugæ, and it is the possession of these rugæ that decides absolutely that a species shall be placed in the Colymbetini rather than in the Agabini. These rugæ are found outside the limits of the Colymbetini only in the two genera *Hyderodes* and *Dytiscus* (forming the

group Dytiscini), so that the character is of considerable taxonomic importance, and will probably be found to have a considerable functional value in the respiratory processes. I have examined a great number of species in addition to those I have actually dissected, and I have not detected any trace of the existence of these rugæ, even in a rudimentary form, in any other Dytiscidæ.

The setigerous punctures on the hind femur are variable in the group, but they never assume the form which they constantly present in the Agabini. In some species they are entirely absent, *Dytiscus calidus* (No. 942), for example, while in a few other species of *Rhantus* (*Dytiscus notatus*, *e.g.*) and in most *Colymbetes* they are rather numerous and conspicuous, and all the intermediate grades occur; on the whole it seems that in the *Colymbetini* the tendency is for these setigerous punctures to disappear in the higher forms, while, on the contrary, in the Agabini it is in the higher species that they display their greatest development and are most conspicuous.

Three of the four genera forming the group agree in possessing the ventral side pieces narrow, and are thus sharply distinguished from the Agabini; the fourth genus (*Scutopterus*) however departs abruptly from the other genera to agree in this respect with the Agabini. In *Colymbetes* and *Meladema*, the width of the ventral side pieces is so much reduced that the fourth may be described as linear, its length being six or eight times its breadth. In *Rhantus* the reduction of width of this piece is not so conspicuous as it is in the aggregates just mentioned, but still it is so great that the genus is by that character alone perfectly distinct from the Agabini; in *Col. grapii*, which so far as I have observed is the species of *Rhantus* that comes nearest to the Agabini in this respect, the length of the fourth side piece is four or five times its width; while in Agabini (as mentioned in that group, p. 932) the length is only about twice the width. *Scutopterus* however forms a striking exception to the other genera of *Colymbetini*, the length being only about twice the width.

Another character by which the *Colymbetini* is contrasted with the Agabini is the greater development in the former group of the penultimate ventral stigma. There is however much variation in this respect, and it is not necessary to go into details of the variations, it is sufficient to remark that in this respect it is not *Scutopterus* that most approaches the Agabini, but *Rhantus*. In *Colymbetes* this stigma is transversely elongate, while in some of the smaller *Rhanti* (*Dytiscus exoletus*, No. 951, *e.g.*) it remains smaller than it is in some of the Agabini.

The hind tarsi show very frequently a lobing of the posterior margins of the hind tarsi externally, but to a very variable extent. In *Colymbetes* this lobing is extreme, while in *Rhantus* it is variable and in some species (*Col. binotatus*, No. 935, *e.g.*) is but slight.

The claws of the hind tarsi are usually very unequal in the *Colymbetini*, and are nearly straight, the inner one being very large, and twice or three times as long

as the outer one, but this character although it has been considered the essential distinction of *Colymbetes* (*auct.*) is not trustworthy, for in *Colymbetes pacificus* (No. 920) we have a species where the claws are almost positively equal.

The sculpture of the upper surface in the genus *Colymbetes* must not be passed over without remark, for it is almost without parallel in the Coleoptera; this peculiar sculpture consists of elongate transverse striæ on the wing-cases, giving rise to a file-like appearance; it is to some extent sexual, and attains its maximum of development in the female of *Dytiscus dolabratus* (No. 971). It is all the more worthy of remark because the tendency of development in the water beetles is towards the attainment of a smooth and polished surface. In the other genera of Colymbetini no trace of this transverse sculpture exists, but in *Scutopterus* a beautiful reticulation of fine but rather deep lines covers the upper surface, and in *Meladema coriacea*, a most peculiar scale-like sculpture exists. In *Rhantus* the surface is usually very polished and smooth, but in most species a very delicate excessively fine, minute reticulation is detected, with a good glass, on the wing-cases; in the little developed *Col. pacificus* however the reticulation on the wing-cases does not exist, but is replaced by an obscure punctuation, while on the other hand in that highly developed species of *Rhantus*, *Dytiscus pustulatus*, the fine reticulation is very distinct, and like what exists in *Ilybius*.

The Colymbetini as a whole are approximated by *Ilybius* of the Agabini, that aggregate displaying enlargement of penultimate stigma, lobing of the hind tarsi, and conspicuous inequality of their claws, characters which are all of them still more pronounced in Colymbetini. *Scutopterus* in Colymbetini approaches Agabini by the broad ventral side pieces, by the little lobing of the hind tarsi, and its sculpture which is a great development of *Agabus* sculpture. Although one aggregate of the Colymbetini thus approximates to Agabini, and one member of the Agabini approximates to Colymbetini, yet there is no approximation between these two aggregates themselves; Colymbetini sends out as it were a pseudopod in the direction of Agabini, and Agabini a pseudopod in the direction of Colymbetini, but the two pseudopods so protruded are not in directions which lead one to suppose they have had, or will have, any actual contact.

Another approximation is made in certain respects to Colymbetini by *Lancetes*; the species of that genus have in fact hitherto been universally placed by writers on the subject actually as part of the genus *Colymbetes*, and they approach the Colymbetini by their general appearance, by the comparatively blunt apex of the metathoracic episternum, by the comparatively large side wings of the metasternum and by the very unequal hind claws; on the other hand by the truncate elytra, as well as by the little lobed hind tarsi, *Lancetes* tends rather towards Agabini than towards Colymbetini: and it is of course positively excluded from the latter group by the absence of stigmatic rugæ.

The mention of this latter character reminds us of another approximation

made towards the Colymbetini—viz., by the Dytiscini; for these are the only Dytiscidæ except the Colymbetini that possess the stigmatic rugæ: and this approximation is rendered more distinct by the fact that the Dytiscini show us perfected that wonderful development of the terminal stigmata of which the Colymbetini show the rudimentary stages; but in this case again we must look upon the approximation as pseudopods, so to speak, not as indications of any past, present, or future amalgamation of the two aggregates, for in many others of the most constant characters of the Dytiscini there is no tendency towards contact, but quite the contrary. Thus Colymbetini are characterized by little extension of the coxal processes in the longitudinal direction, Dytiscini by a most remarkable extension of the processes in the longitudinal direction; Colymbetini have highly displayed lobing of the hind tarsi, which is nearly absent in Dytiscini; Colymbetini have remarkably constantly very unequal hind claws, which is absolutely absent in Dytiscini; so again we should find it with numerous other characters; and moreover there is no tendency whatever for any one member of the Dytiscini to make any approach to any one member of Colymbetini.

The conclusion to be derived from a careful consideration of the approximations between Colymbetini and other allies does not therefore in the least tend to raise or to confirm the idea of descent from a common ancestor; the more thoroughly the details are mastered, the more does the realization of such an idea become hazy and elude the mental grasp.

The species inhabit specially the cool and temperate regions of the Old World, from whence a few have spread into adjacent regions. So far as known to me they are wanting in Australia, except that a species found almost everywhere in the Eastern Hemisphere occurs there; as however two or three aberrant species occur in the Pacific Islands, such may also be found in Australia. A single very peculiar species is reputed from New Zealand, where also the same widely distributed *Rhantus* that is found in Australia occurs. Two or three aberrant species are known from Southern Africa and Madagascar: Madeira shows one or two very peculiar species, but the Canary Islands have only a species found in Southern Europe, which is absent from Madeira. Some species of *Colymbetes* are peculiar or nearly so to the arctic regions; and in the New World besides the numerous species found in North America some others are found in or near the Andes, and one species of *Rhantus* is abundant in the warm parts of the New World (*Dytiscus calidus*, Fab.)

II. 12.—Group DYTISCINI. (*Vide* p. 632.)

This secondary aggregate is formed by twenty-five species arranged in two genera. The size of the individual in all the species is large, not less than half an inch of length, and may attain one and a half inches. The swimming legs are rather slender and are terminated by two nearly equal curved claws; the posterior margins

on the outer face of the joints of their tarsi are not ciliate; the hind coxæ are never very large: the coxal processes are elongate and narrow, and the coxal notch is very deep. The circular outline of the eyes is not interrupted by the side of the head over the insertion of the antennæ. The stigmatic rugæ on the side piece of the first ventral segment are present and highly developed. The stigmata of the two last ventral segments are large and highly developed. The front tarsi of the males are greatly dilated so as to form a large circular plate.

These characters are amply sufficient to distinguish the Dytiscini in a certain manner from all the other secondary aggregates. They have usually been classified near *Acilius* and *Cybister* on account of the large, circular, front tarsi of the male, but this has been a mistake, for the only real approximation they make to any insect outside of their own aggregate is to *Colymbetes* of the *Colymbetides*. In that genus we find as in Dytiscini, stigmatic rugæ present, and the posterior stigmata more or less enlarged, whereas in *Acilius* and *Cybister* both these important peculiarities of the Dytiscini are entirely absent. Even as regards the male tarsi, the approximation of *Dytiscus* to *Colymbetes* is quite as decided as it is to *Cybister*. It is true that the circular margin of the eye is common to Dytiscini and *Acilius* and *Cybister*, and not to *Colymbetes*; if however *Dytiscus* be carefully examined as to this point it will be seen that certain species (*Vide D. lapponicus* and *D. marginalis*) have the outline of the eye distinctly, if slightly, infringed on by the side of the head over the insertion of the antenna, after the manner of *Colymbetes*, so that this point justifies the classification of the Dytiscini in the neighbourhood of the *Colymbetini*, certain members of which have the eyes not greatly emarginate.

The enlargement of the terminal abdominal stigmata is a character of considerable importance and interest, and it seems remarkable that the few species constituting this group Dytiscini, should be the only ones of the whole family Dytiscidæ, or carnivorous water beetles, that have developed to a great extent this respiratory structure: of which we find as it were the preliminary stages in some of the *Colymbetini*.

The stigmatic rugæ of the first abdominal segment are highly developed in the Dytiscini so that the group stands far higher than any other of the Dytiscidæ in the development of its external respiratory apparatus. On the other hand in its powers of locomotion as displayed by the perfection of the swimming legs, the Dytiscini remain far inferior to the *Thermonectini* and *Cybirini*, and even to some *Colymbetini*. The present habits and past history of the species of the group will no doubt be found to be correlative with these peculiarities of their organization.

One of the most remarkable facts in this group is the existence, in numerous species, of two forms of the female sex. It is in this group that the dimorphism of the females so remarkable in the Dytiscidæ is carried to its greatest extent; and it is of especial interest to notice that the two genera composing the group are

extremely different as to the form assumed by the peculiar females,—so distinct indeed, that their development may be said to have been in opposite directions; nothing could be more different than the deep regular grooves of the sculptured females of *Dytiscus*, and the dense irregular tubercles of the corresponding females of *Hyderodes*; this fact would suggest the view that the resemblance or approximation between *Dytiscus* and *Hyderodes* does not arise from genetic connection (or common origin), but is due to a parallelism in the environment of the organisms during their evolution. Much has been written as to these dimorphic females of *Dytiscus*, but little or no light has at present been thrown on the subject; and it will require a very extensive accumulation of observations and recorded facts, before successful generalization can be accomplished. It is worthy of note that the curious difference between the sculptured females of *Dytiscus* and of *Hyderodes* is completely paralleled in the *Hydaticides*, where the females of certain *Acilii* are sulcate like the females of *Dytisci*, while the females of certain *Graphoderes* are tuberculate like *Hyderodes*.

The geographical distribution of the group is very peculiar. *Dytiscus* with its twenty-three species is confined to the northern hemisphere, where it is specially at home in the northern parts of the Old and New Worlds; while *Hyderodes* is peculiar to Tasmania and Australia, and seems especially characteristic of the former; the large intermediate tropical zone comprising the parts of the earth richest in insects is absolutely destitute of *Dytiscini*, so far as we at present know. This peculiar restriction of a small group to the two most widely separated zoological districts of the world is remarkable, and is similar to that of the genus *Pelobius*, except that this latter does not occur in the New World.

II. 13.—Group HYDATICINI. (*Vide* p. 647.)

This aggregate of the second degree is formed by the extensive genus *Hydaticus* (forty-five species), and the autogenus *Prodaticus*. The characters are similar to those of the more extensive group *Thermonectini*, except as regards posterior legs, and the metasternum. The hind coxa is not enormous, its length never being quite so great as its width, and frequently considerably less, so that the front border of the coxa is considerably separated from the middle coxa; the suture between the wing of the metasternum and the episternum is a straight line (or nearly so) drawn obliquely from the front of the breast outside the middle coxa, to the epipleura. On the upper face of the hind tibia, parallel or sub-parallel to its outer margin is an elongate series of punctures, each bearing a stout furcate seta; the spurs of the hind tibia are quite acuminate at the apex.

The species are probably sparingly distributed over all the warmer and temperate parts of both hemispheres, but are absent from New Zealand, and probably from most of the Pacific islands.

II. 14.—Group THERMONECTINI. (*Vide* p. 672.)

This aggregate of the second degree consists of forty-one species arranged in four aggregates, and of two autogenera. The size of the individual is not less than one-third and scarcely exceeds two-thirds of an inch of length; the surface is nearly always variegated, and may be punctate though it is generally very smooth and polished. The antennal portion of the head is short, sometimes extremely short, and the eyes are large. The thorax is destitute of a lateral margin; the prosternal process is short and obtuse or rounded at the apex, and is received into a broad, short, shallow impression on the apex of the inter-coxal process of the metasternum, the middle coxæ being always somewhat widely separated. The hind coxæ are extremely large, their upper border is greatly arched, and never separated by a long space from the middle coxæ, and often very closely approximated thereto; the metasternum very elongate in the middle, terminates on each side as a slender side wing deflexed for a considerable distance outside the coxa, the band so formed is a little broader just before its termination than it is a little distance in front of that point; the suture between the wing of the metasternum and the episternum (that is the piece at the outer anterior part of the breast) is very distinctly curvilinear; and the most internal portion of the metathoracic epimeron may frequently be distinguished, even when the wing cases are quite closed, as a small angular piece, whose inner angle nearly touches the terminal angle of the side wing of the metasternum behind the apex of the episternum: as however the sutures between this epimeron and the adjoining pieces are very obliterated, it easily escapes observation even when really exposed.

The coxal lines are always small, and sometimes quite obliterated, and even when most developed their anterior part is always very far indeed from attaining the anterior border of the coxa; the supra-articular border when it can be distinguished is never very narrow, and is frequently so broad that it forms nearly one half of the coxal lobe. The swimming legs are always highly developed; the upper face of their femora is either smooth and polished, without any punctuation, or possesses some isolated punctures placed in a transverse manner on the basal portion and without any development of pubescence: the upper face of the tibia bears a short series of contiguous punctures (4 to 7 in number) placed near the middle of the limb in a transverse or obliquely transverse direction, each puncture bears a thick seta or spine bifid at the extremity; the tibia bears at the apex two rather slender spurs, each of which when viewed in a certain direction is seen to have its apex not quite pointed but more or less minutely emarginate, though viewed in another direction the spur may appear quite acuminate.

The aggregate is a perfectly natural one, distinguished by the form of the episternal suture and the bifid extremity of the posterior tibial spurs; its curved episternal suture is present in the adjoining Eretes, but the bifid extremity of the

tibial spurs is present in no member of the Hydatioides except the Thermonectini. The most aberrant member of the aggregate is *Acilius*, and it is quite possible that this may ultimately have to be separated in a more marked manner from the allies: but *Dytiscus mediatas*, No. 1057 (which however I have only been able to study in an incomplete manner), seems really to connect the other species of *Acilius* with *Thermonectes*.

Thermonectini are found in all the warmer parts of the globe; two of the genera however (*Acilius* and *Graphoderes*) occur only in the temperate parts of the northern hemisphere.

II. 15.—Group CYBISTRINI. (*Vide* p. 700.)

This secondary aggregate or group consists of four genera comprising seventy-two species. The size is usually large, but varies much (from 14 m.m. to 48 m.m. of length). The outline is very perfect and continuous, and punctuation is absent, so that the surface is polished and smooth, except that the females of many species show a sexual sculpture on the upper surface consisting of short lines or scratches. The swimming legs are very powerful, their tibiae are very short and broad, and their apical spurs very unequal, the inferior one being very broad, and also longer than the other. The front tarsi of the males have the three basal joints greatly, frequently enormously, dilated in the transverse direction, and furnished on the underside with a large number of palettes, all quite similar to one another, and forming four crowded series; the large disc, formed by the dilatation of the three joints alluded to, is fringed along its margins with fringing hairs, and at the base or heel, between the basal row of palettes and the fringing hairs, there is an area of variable size, occupied by dense fine hairs or setae (pubescent area). The intermediate male tarsi are without any dilatation or thickening of the basal joints in the transverse direction. When there is a sexual sculpture present in the females, it consists of fine scratches or short lines, which may extend over elytra, thorax, and head, or some part, or parts thereof.

The characters above enumerated are present in all the Cybistrini, and are quite sufficient to validate the group; but it is also distinguished by numerous other positive and negative characters, not quite so definite or constant as the preceding ones.

The two terminal joints of the male front tarsi and their claws are but little elongate, and the palettes of their undersurface are peculiar in their structure, each being oblong in form, and the outer portion of a peculiar thin or papery-like nature, while the basal portion of each is more solid and is deeply impressed or pitted; the stalk by which the palette is connected with the tarsus is attached to this more solid basal portion: (the genus *Spencerhydrus* forms however an exception to the other Cybistrini in respect of the structure of the male feet, the terminal joints of

the front tarsi being more elongate, while the palettes are nearly circular in form, and without the papery external prolongations).

The intermediate tarsi of the male are sometimes furnished beneath with fine sexual pubescence, but are sometimes quite destitute thereof; the claws are sometimes distinctly, but never greatly, elongate, and are never slender.

The claws of the hind feet differ considerably in the group, the differences being of sexual and specific, as well as of generic importance: they are always however extremely differentiated from the normal, or Caraboid, structure. The females, besides sometimes possessing a sexual sculpture, have often a peculiar form of the epipleura, inasmuch as this part near the base is flattened and twisted up so as to assume a more perpendicular direction: this torsion extends to different lengths according to the species, it generally commences a little behind the shoulder, and terminates before the middle or about the middle of the length of the wing-case. The males have always the underside of the posterior tarsi furnished at both edges with fine swimming hairs, while in the females such ciliæ are present only on the inner edge, except in the case of one or two species of *Cybister*, in which the hind tarsi of the females are ciliate on both edges as in the males.

The stigmata of the hind body are all small, and are nearly circular, and differ little from one another in size or structure, except in the case of that on the apical segment, which is very small and circular, and passes through the integument in an oblique direction so as to form a sort of tube; it is in fact formed as if it were made by a needle being pushed through the dorsal plate in the direction of the long axis of the body, instead of at right angles to it.

The prosternum is greatly thickened along the middle so as to give it extreme strength; the thickening is sometimes so great that, being truncate in front, there is an exposed perpendicular face of considerable length at the front edge in the middle; the prosternal process is short and thick, and gradually acuminate towards the acute apex, which is received into an impression of the metasternum of just the same form as the termination of the process itself; very little mobility is allowed by this articulation. In some of the Australian forms the prosternum shows a deep longitudinal channel along the middle.

The terminal portion of the wing of the metasternum is always very short (in the direction of the long axis of the body) owing to the fact that the upper border of the hind coxa, when it approaches its antero-external termination, is deflexed abruptly so that its termination is about at right angles to its previous direction; this peculiar and characteristic form of the metasternal wing is however departed from by the Australian genus *Spencerhydrus*.

There is usually a distinct, or even considerable, space between the point of the metasternal lacinia and the epipleura; in some cases however (*Cybister latus*, No. 1,105, and *Spencerhydrus pulchellus*, No. 1097) this interval is greatly reduced: in some species (Nos. 1,103 and 1,104) the termination of the metathoracic epimeron

is very distinctly left exposed by the epipleura, while in other cases it cannot be at all perceived when the wing-cases are in the natural closed condition. The epipleuræ show much variation in their width from species to species. The hind coxæ are always very largely developed, and their upper border of the form already described. The coxal processes never have a large extension either in the longitudinal or transverse direction; the coxal lines are but little turned outwards near their termination, and they extend but a short distance in the anterior direction, so that they remain extremely remote from reaching the front border of the coxa, their extension forwards is however indicated by a curved series of punctures in front of the termination of the actual line. In the Australian genus *Homœodytes* the coxal lines are absent, and the coxal processes of rather unusual form.

It is in this group of the Dytiscidæ that the swimming legs attain their greatest and most admirable development; the femora are very broad, and the tibiæ are often so thick and short that their length does not greatly exceed their breadth; in *Dytiscus rœselii* actual measurement shows about $3\frac{1}{4}$ m.m. of length, by $2\frac{1}{2}$ m.m. of breadth. The superior of the two apical spurs is of slender form, and is more or less profoundly canaliculate along its inner face, and is either simply acuminate at the apex, or largely furcate there, or minutely tricuspidate; the inferior spur is dilated and flattened, but is quite acute at the apex, and is longer than, as well as broader than, the other. The tarsi are very thick and their hind margins though sinuate are not distinctly lobate-produced at their outer edges, and are destitute of fine ciliæ. The claws are very variable; either there exists only a single thick, pointed, straight and immobile claw, or there are two, more slender, straight, equal claws, or the two claws may be unequal to a greater or less degree in length or thickness. It has been supposed that when there is only one claw present, it is because the two claws have become soldered and amalgamated into a single one; and as a groove may be detected running along the length of the claw this is cited as a relic of the original distinction into two claws: this is however quite erroneous. When there is only one claw present it is because the second claw is undeveloped or rudimentary; this second claw in point of fact is present in all degrees of development; and moreover where there are two well marked claws present in the genus, each of the two claws may be seen to be deeply channelled (*vide* *Cybister giganteus*, No. 1,117) showing conclusively that the channel is not evidence of two claws being amalgamated.

The Cybistrini are found in most parts of the world, except that they do not extend into the cooler regions, and must be considered as characteristic of the warmer and warm-temperate regions. The Australian species are much more aberrant than those found in any other part of the world.

THIRD SYNTHESIS. (TRIBES.)

III. 1.—Tribe NOTERIDES. (*Vide* p. 260.)

This tertiary aggregate consists of two groups and two isolated genera, and comprises altogether only about eighty species, arranged in nine genera. The size of the individuals, occasionally very minute and never large, ranges from 1 to 8 m.m. of length. The form is peculiar, the convexity is great, but is nearly limited to the upper surface; the thorax and elytra are excessively co-adapted, and thus perfectly continuous in outline; this outline is attenuate or acuminate behind. Variiegation of colour only occasionally becomes conspicuous, the punctuation of the surface may be considerable, or on the upper surface may be wanting, giving place to an extreme polish. The head is short, never in the least margined in front, but terminating in a sharp edge, so that the very exposed labrum continues the plane of the upper surface of the head; the eyes are never very prominent, and their circular outline is a little notched by the side of the head over the insertion of the antenna. The antennæ are short, and the shape of the joints is more or less dissimilar *inter se*; the labial palpi usually have the terminal joint dilated, and frequently notched. The prothorax has always a lateral margin, which is often very broad and very little elevated. The front coxæ are conical in form in some genera (*Notomierus*, *Hydrocoptus*, *Noterus*), but approach more nearly to the spherical form than in the other Dytiscidæ, and in *Suphisini* and *Hydrocanthini* they are nearly truly globose; *Pronoterus* and *Synchortus* being apparently intermediate forms in this respect. The prosternum along the middle longitudinally, is usually of one plane from the front margin to the termination of the prosternal process, but in *Colpius*, it is incrassate in this direction, so that it projects beyond the coxæ, and forms a conspicuous prominent rectangle: the length of the prosternum in front of the coxæ is sometimes extremely little (*Suphisini*), sometimes moderately great, (*Noterus*, *Hydrocanthus*); the prosternal process varies greatly, but it has never a slender acuminate terminal portion, and is usually very large, and becomes broader behind; when small it is broad in proportion to the length; it is always received into a highly developed fork of the mesosternum, and its posterior edge is extremely accurately co-adapted with the anterior part of the inter-coxal process of the metasternum.

The front legs are in the more differentiated forms of the *Noterides* modified in a remarkable manner, the modification reaches its extreme in the *Suphisini* and *Hydrocanthini*, but little or no trace of it can be found in *Notomierus* and *Hydrocoptus*. The femora in *Suphisini* become subcylindric and a little arcuate, and the tibia assumes a position in which the normally upper face looks outwards; this part of the leg is at the same time modified in shape, and terminates in a large hook; this hook is one of the ordinary spurs of the apex of the tibia developed in

a wonderful manner, and firmly fixed at its base in a cavity at the back of the tibia, so as to become rigid and immobile, and appear as if it were a prolongation of the extremity of the tibia; in *Notomicrus* and *Hydrocoptus*, the modification of the leg scarcely exists, but in *Pronoterus* the early stage of such an evolution may be seen in the fact that one of the two spurs at the apex of the tibia is a little elongate and curved. The male front tarsi are modified in a highly peculiar manner in some of these much evolved forms, the basal joint being greatly incrassate, and of peculiar form, while the following joints are in comparison very little modified.

The modifications of the male legs are carried to the greatest extent in *Noterus*, and it would appear that the evolution of the front limb in that genus has been principally subject to a sexual direction, while in *Suphisini* the very great modification is subject only to very slight sexual disparity, and probably corresponds to some vital operations common to the two sexes.

The mesosternum in the *Noterides* shows a great range of development, and in the higher forms its size and position is unusual amongst the water beetles; in *Hydrocanthini* and still more in *Noterini*, instead of being articulated to the metasternum almost at right angles therewith, it is placed in a plane more or less continuous with that of the metasternum; this is not the case in *Notomicrus*; but in *Synchortus* this continuity of the meso- and metasterna is carried to its extreme, so that these two parts are but little discontinuous in their plane; at the same time the area of the mesosternum becomes larger than usual; this development of the mesosternum, rare in the *Dytiscidæ*, is found in water beetles of other families (*Hydrophilidæ* and *Gyrinidæ*) and is no doubt the morphological correlative of greater functional activity of the intermediate legs; these no doubt take a greater part of the locomotive activity in *Noterides* than they do in the other tribes of *Dytiscidæ*.

The increase in the area of the mesosternum is entirely due to growth in the episternum, which becomes very large, the epimeron not sharing in the least in this increase, but rather becoming smaller and more linear. This diminished size of the mesothoracic epimeron is one of the characteristics of the *Noterides*, but it is found in other *Dytiscidæ*, (especially in some members of *Bidessini*) and cannot be used for distinguishing or defining the *Noterides* as suggested by Crotch. In no case however, so far as I am aware, except in the *Noterides*, is it accompanied by an increase in the episternum; the epimeron, even in *Notomicrus*, where the characteristic structure of the *Noterides* is so rudimentary, is small in comparison to the episternum. The angle of the epimeron which touches the angle of the metathoracic-episternum is but little conspicuous, and very obtuse; and owing to the enlargement, above described, of the episternum, the epimeron at this point is much diminished in breadth; these characters although developed to a less extent in *Notomicrus* are yet extant in it, and the *Noterides* may be correctly defined as possessing a mesothoracic epimeron of very small area in comparison with the

episternum, and very small in width at the posterior angle, which itself is obtuse and little prominent. This though true of all Noterides is not untrue of all other Dytiscidæ, for such a description applies also to Huxelhydrus of the Bidessini. The fork of the mesosternum always is highly developed, and accurately coadapted with the inter-coxal process of the metasternum, and one of the most striking characteristics of the Noterides is the accurate coadaptation of the three parts, prosternal process, mesosternal fork, and inter-coxal process of metasternum ; it is by this that the immobility of the prothorax is secured ; and the perfect continuity of the prothorax and after body is thus rendered possible.

The middle legs in the higher Noterides are a good deal thickened and flattened out (see especially *Synchortus*), and their coxæ are small and globular ; they play no doubt, as above observed, a considerable part in the locomotion of the individual, and have undergone a considerable change to facilitate this. This is quite in opposition to the higher forms of other groups of Dytiscidæ, for in them the middle legs do not share in a correlative manner the development of the hind legs into swimming organs.

The metasternum is peculiarly formed in the higher Noterides ; its middle part is prominent, and very closely soldered with the prominent coxal processes, so that the suture is more or less nearly obliterated ; it is short in the middle, and forms only a very obtuse point there ; extending laterally this suture has very little anterior direction, but owing to the brevity of the metasternum, it is never far separated from the middle coxa, and sometimes indeed almost touches the coxal cavity near its middle (*vide* *Noterus*), it then proceeds almost directly outwards with a slight slope in the backward direction till it attains the episternum ; its anterior part in the middle always forms a very distinct and rather broad inter-coxal process, and on the outside of the coxal cavity extends a good deal forwards ; a lateral wing of the metasternum is thus formed, having a very peculiar shape, this shape depends on the middle coxa having, as it were, by the unusual growth of the mesosternum, been forced backwards so that its cavity intrudes greatly on the metasternum, and as the metasternum is short, and has suffered compression from behind in the middle, by the growth of the peculiar and enormously developed coxal processes, the consequence is that on the space between these two forces it has become very reduced, and the lateral wing is almost cut off from the middle part. This peculiar structure is best studied in *Noterus* (*vide* fig. 39) and *Synchortus*, but where the swimming powers of the middle and hind legs are but little developed, as in the *Suphisini*, all that can be said is that there is such a form of the parts as might be developed into the peculiar structure described, by such changes as are necessary to improve the swimming powers. Thus in *Suphis difformis* the middle coxa intrudes comparatively little on the metasternum, and the hind femur when flexed for the stroke of propulsion can be brought comparatively little towards the middle, so that its stroke is much less powerful than it is in *Noterus* and

Hydrocanthus where it can be brought much nearer to the middle line of the body. In *Suphis difformis*, however, as in the higher *Noterides*, the front border of the coxa attains its greatest anterior extension near the middle of the body and thus forms a striking contrast to the *Hydroporides*, where the greatest anterior extension of the coxa is near the outside; in this respect the approximation of the more primitive forms of *Noterides* to *Pelobius* is very decided, and in fact, so far as the shape of the metasternum and hind coxæ go, there is no great difference between *Pelobius* and *Suphisini*.

The hind coxæ are in the *Noterides* modified in a very peculiar manner; the coxal processes are enormously developed and are projected on to a different plane from the external lamina of the coxæ, so as to form a prominent platform; a concavity or elongate axilla is formed by the inner portion of the outer lamina being pushed in above this prominent platform, and this axilla extends the whole length of the coxa, and as the middle of the metasternum is more or less prominent in a similar manner to the coxal processes, a kind of prominent platform continuous with the prosternum is formed, extending the whole length of the breast. This platform is extremely conspicuous and remarkable where the swimming legs are highly developed (especially in *Hydrocanthus*), but scarcely exists in *Suphis*, for although in it the elongate axilla formed by the coxal processes exists, there is not the least prominence of the middle of the metasternum. The coxal processes show no trace of the existence of any coxal lines or coxal borders, and their posterior outer angle is acute or rectangular; the coxal cavities are either distinctly separated or absolutely contiguous: *Hydrocoptus* is the only genus in which the coxal lines can be detected, they extend the whole length of the coxa and mark off a fine coxal border.

The swimming legs vary greatly in their development; the most characteristic peculiarity is that in the higher forms the tarsi do not share in the incrassation of the femora and tibiæ to the same extent as in other *Dytiscidæ*, thus in *Hydrocanthus*, the tarsus is not half so broad as the tibia; the tibia moreover never becomes shorter than the femur; and it seems, therefore, that it plays to a large extent the part performed by the tarsus in other *Dytiscidæ*; the spurs of the tibiæ are never greatly incrassate, but one of them is occasionally beautifully serrate along its inner face (*Hydrocanthus lævigatus*).

The tarsi have the basal joint always very elongate in proportion to the others; and the claws appear to be always small and insignificant, and so far as known are both always present, and nearly equal.

Ciliæ at the hind angle of the posterior femur are either present or not; in *Hydrocanthus* they attain a greater development than in any other *Dytiscidæ*.

Both the front and middle tarsi in the *Noterides* are distinctly 5-jointed, and there is no bilobing of the third joint; when the male front tarsi are thickened, the incrassation is chiefly confined to the basal joint, and there is not the least

tendency for the three basal joints to be co-adapted and dilated to form a saucer; the clothing of the under surface is never more, or other than, a few small palettes.

The Noterides are characterized specially by the structure of the hind coxæ; the anterior border of this part attains its greatest forward extension much nearer to the middle (longitudinally) of the body than it does in any other Dytiscidæ, and thus a peculiar shape is given to the wings of the metasternum; and the interior lamina of the coxæ is very separated for its whole length from the external lamina, and projects and forms an axilla, into which the interior border of the hind femur is received when it is flexed. This structure of the hind coxæ, under various modifications, is found in all Noterides, and is not found in any other of the Dytiscidæ, except the totally distinct *Pelobius* (in which, *inter alia*, the scutellum is visible). There are some other characters by which most of Noterides may be recognized, but they are not quite so constant or peculiar as the coxal structure. These are: first, the small size of the mesothoracic epimeron in comparison with the episternum and its sublinear form; second, the accurate adaptation of the prosternal process to the inter-coxal process of the metasternum; and third, the unusual development of one of the spurs of the front tibia to form a hook. I now proceed to discuss briefly the amount of variation of these characters within the limits of the tribe itself, and to what extent they are possessed by other Dytiscidæ not included in the tribe.

The hind coxæ vary very much in their area as in other Dytiscidæ, but whereas in other Dytiscidæ when they increase their area and encroach on the metasternum the anterior border attains its greatest approach to the front of the body more or less near the epipleuræ, in Noterides, as already stated, this greatest approach is made much nearer to the middle line of the body, and so at a greater distance from the epipleura; this character so far as can be seen is absolutely constant, but it cannot be tested in the minute *Notomicri*, for in these the outline of the coxa cannot be distinguished from the metasternum; but there is no reason for supposing the genus to be really an exception to the other species in any other respect besides that of the obliteration of the suture: *Pelobius* is the only Dytiscid outside of the Noterides in which the coxa has at all the Noterid form; and although nothing can look more dissimilar than the coxa of *Pelobius* and one of the higher Noteridæ such as *Hydrocanthus*, yet if we compare it with one of the lower Noterides, such as *Suphis* or *Colpius*, the likeness of the two is readily perceived. *Pelobius* has moreover the internal lamina of the coxa abruptly distinguished from the outer lamina for its whole length longitudinally, and thus again resembles the Noterides; this latter peculiarity of the structure of the coxa occurs however in other genera of Dytiscidæ, such as *Agabinus* and *Hyderodes*, very widely separated genera belonging respectively to Agabini and Dytiscini.

The small size of the mesothoracic epimeron—one of the features characteristic

of the Noterides—appears to be true of all the species of the tribe, but it is likewise found in some Bidessini, in *Sternopriscus*, and even (though not so remarkably) in *Pelobius*; now as all these widely different forms have in common the fact that the mesosternum is placed on a plane more continuous with the plane of the metasternum than it is in other Dytiscidæ, it is clear that the small size of the mesothoracic epimeron is correlative with the less amount of change of position of the mesosternum, or in other words, just so much as the mesosternum has been bent towards the metasternum, just so much has the epimeron increased in size: although *Bidessus* and *Sternopriscus* resemble Noterides in the small size of the epimeron, they do not agree with it in its comparative obliteration at its upper or episternal angle; this is clearly because growth of the mesothoracic episternum has gone on in Noterides (owing to greater use of the middle legs in locomotion), while no such growth has taken place in *Bidessus* and *Sternopriscus*. Thus we see that the form of the mesothoracic epimeron in the Noterides is the result of the little change of plane of the mesosternum plus the unusual growth of the episternum; and we can clearly see that these peculiarities are properly considered as amounting to evolution from more primitive to higher forms, and we see further that the likeness presented by other water beetles in this respect is not due to any genetic connection or common ancestry, but rather should be looked on as community of structure owing to similarities of evolution.

Another peculiarity of the Noterides, viz., the relation between the prosternal process and metasternum, need not occupy us long; it is very striking in *Hydrocanthini*, but much less so in the other groups, and all that need be said is that whereas in *Hydroporides* and some other groups accurate adaptation of these parts has been gained comparatively late in the process of evolution, on the other hand, in the Noterides it has been a striking feature even in some of the early forms. *Sternopriscus*, which has been just alluded to as approximating to Noterides by one part of the structure, is in this respect abruptly different, it being one of the forms where co-adaptation between the prosternal process and metasternum is most incomplete.

The unusual development of the spur at the apex of the front tibia, is not present in all the forms, it seems to be absolutely deficient (so far as I can see) in *Hydrocoptus* and *Notomicrus*, but it is present in all the higher forms, and in some of the lower ones, and attains its greatest evolution in *Suphisini*, which in some other respects are to be considered low or primitive forms.

Although, so far as we know of them at present, and probably really at the present epoch, the Noterides form a very fragmentary tribe, yet it is one which is very well adapted for studying in connection with evolution; and I have come to the conclusion that certainly there is no ancestral relation between the different forms comprised in it; after careful consideration I feel sure that no species, of it can be considered the ancestor of any other species, no genus the ancestor of

any other genus, and *a fortiori*, no group the ancestor of any other group ; neither can I find it credible that the similarities visible are due to descent from a common unknown ancestor.

The geographical distribution of the tribe is extensive, but fails to reach the cooler temperate regions, or New Zealand and the Pacific islands.

III. 2.—Tribe HYDROPORIDES. (*Vide* p. 319.)

About five hundred species, arranged in twenty-six genera, and forming five secondary aggregates or groups (in addition to two isolated genera) form this tertiary aggregate or tribe. It is therefore by far the most extensive of the tribes of Dytiscidae. They are all small insects, the largest size attained being about 6 m.m. of length, and the surface of the body is nearly always punctate.

The tribe is specially defined by the structure of the prosternum, which is deflected or bent between the front coxæ so as to be very discontinuous in the plane of its direction with that of the prosternal process. The anterior border of the hind coxa is directed forwards as well as outwards, in such a manner that its greatest extension in front is at a point nearer to the epipleura than to the middle line (longitudinally) of the body. The metathoracic episternum penetrates to the middle coxal cavity. The front and middle tarsi have the three basal joints formed so as to show a flat sole clothed beneath with a kind of glandular pubescence : these tarsi have usually only four visible joints, the joint between the third and (true) fifth joints being reduced to a mere knot ; in the cases where this rudimentary joint is quite conspicuous (*Necterosoma*, *Sternopriscus*) it usually remains small in comparison with the adjacent joints. The scutellum is usually quite concealed, but in *Celina* is large and conspicuous.

Of the above characters, that drawn from the structure of the prosternum is the one by which an insect may most certainly and readily be identified as a member of the tribe ; but the tarsal structure and other points must be also taken into consideration, for if not *Suphis* (a primitive form of *Noterides* in the *Dytisci fragmentati*) might be supposed to belong to the *Hydroporides*, as the form of its prosternum corresponds to the above definition.

The *Hydroporides* show no tendency whatever to thickening or strengthening of the anterior parts of the prosternum along the middle, as do all the higher and larger forms of the *Dytiscidae* : on the contrary, the anterior parts of the prosternum are always feeble and but little developed, and afford but slight protection to the front coxæ. The anterior transverse band of this part is always small, and has not the least tendency to being arched in the transverse direction : the band between the front coxæ, connecting this transverse part with the prosternal process, is never more prominent than the coxæ, and is often more or less depressed between them : the prosternal process itself is much more variable and may attain a large development

(*Dytiscus dorsalis*, *Celina*, *Sternopriscus*, *Hydroporus oblitus*, *e.g.*), or may be very small, as in *Dytiscus ovatus*, (*Hyphydrus*, No. 347), and numerous *Hydropori*. The reduction of the pieces of the prosternum seems to attain its maximum in *Hyphydrus*, where the anterior and inter-coxal bands form a mere slender frame for the setting of the coxæ, which are longer than is usual in the other *Hydroporides*. The prosternal process is not only variable in size but is extremely so in form; its junction with the inter-coxal band is frequently very conspicuous and it may project at the point of junction as a kind of angular or tubercle-like prominence: this is especially the case when the prosternal process is thick and powerful as in *Pachydrus*, where the prominence alluded to is clearly seen to be the result of a thickening and growth of the prosternal process, while no corresponding development of the inter-coxal band has taken place; hence at the point between the front coxæ where occurs the junction of the thickened prosternal process with the feeble inter-coxal band, there is an angular prominence. It is worthy of remark that the New World seems to have been more favourable to the production of this thickening of the prosternal process than the Old World has been; not only does it reach its maximum in the New World *Pachydrus*, but it will be found to occur with great frequency in North American *Hydropori*, and indeed in certain cases (*e.g.*, Nos. 492 and 493, *Deronectes prosternalis*, and *Dytiscus griseostriatus*) is almost the only character by which a New World species is distinguished from an Old World one.

In short though the members of the *Hydroporides* agree among themselves in showing a feebleness of the anterior parts of the prosternum, yet that feebleness is accompanied by great variety of structure, and I do not see the least reason for considering it as evidence of genetic connection among the insects possessing it. Its functional value will probably be expressed in terms defining the nature of the movements of the head and front legs performed by the insects.

The front and middle tarsi of the *Hydroporides* show great variety, although agreeing in the generalized and guarded definition given above. Moreover they show much difference in the sexes of the same species, and this renders their use as a means of definition somewhat more difficult. Thus though the three basal joints agree in being more or less flat, and in presenting beneath a sole clothed with pubescence, yet as will be seen by examining the sexes of *Dytiscus ovatus* (No. 347), this structure is much more conspicuous in the males than in the females, for in the former the three joints are comparatively broad and flat, and present a well marked sole beneath, while in the female they are compressed in such a way as to be extremely convex transversely on their upper face and to present but a small surface or sole beneath. It is the rule throughout the aggregate that the males have the front and middle tarsi broader, and so displaying the characteristic structure more markedly than the females. Although the male tarsi may be said to have the basal joints dilated, they never have any tendency to assume the beautiful patellate form occurring in the corresponding sex of the *Hydaticides*, *Dytiscini* and

Cybistrini, where not only is the dilatation of the three joints in question on the front feet enormous, but it is accompanied by a shortening and coadaptation which render them in fact a single organ or saucer. Neither do the males show an incrassation of the basal joints of the tarsi such as exists in Agabini and Laccophilini, where an enlarged sole is gained by an increase in the whole circumference of the joints, the increase being in fact as great in the vertical as in the horizontal direction of each incrassate joint.

Putting aside these sexual differences in the tarsi, other interesting variations in the basal joints, especially in the outer of them—the third joint—may be noted; this is almost subquadrate or truncate-cordate in certain forms (*Hyphydrus*, *Macrovatellus*, *e.g.*) with the upper surface bearing a short groove at the extremity for the insertion of the basal joint; while in others (many North American species of *Hydroporus* of groups 1 and 2), it is deeply grooved, or indeed cleft nearly to the base, so as to exhibit elongate lobes, the terminal joint being inserted near to its base. In this case the structure is essentially that of the tetramerous Coleoptera, as represented by the *Cureulionidæ*, *Phytophaga*, *Longicornes*, &c. : and there is every reason to believe that this modification of structure is essentially similar in its functional value in the two cases. The Coleoptera which walk or run on the surface of the earth have slender cylindric tarsi, destitute of clothing beneath or bearing only a few rather rigid setæ, while those groups which live much on foliage have the three basal joints of the tarsi dilated to form a sole, which is clothed beneath with a peculiar pubescence, while the terminal joint is not used in walking but is inserted so that the claws terminating it are held up from the surface; so in the *Hydropori* mentioned we have good grounds for supposing that the species are much in the habit of frequenting and walking on aquatic plants, while in the other tribes of *Dytiscidæ* the front and middle tarsi (when not modified for sexual purposes) have essentially the structure of the *Carabidæ*. As another striking instance of the relation between the form of the tarsi and these habits of the species, I may be allowed to mention the genus *Stenus* of the *Staphylinidæ*, some species of which run swiftly on earth and mud and have filiform elongate feet, while others which live much on plants have the tarsi broad with a lobed penultimate joint and the surface clothed beneath with fine pubescence. In these *Steni* the tarsi however remain five-jointed and have not as in these specialized *Hydropori* acquired the fully characteristic structure of the tetramerous Coleoptera. In the fact therefore that the structure of the tarsi of some *Dytiscidæ* differs fundamentally but little, scarcely at all, from that of some *Cureulionidæ*, we have clearly a clue to deciphering certain of the environments under which they have been developed.

It is worthy of note that where the true fourth joint of the tarsus is conspicuous, as in *Sternopriscus* and *Neeterosoma*, it is accompanied by an elongation of the fifth joint, and this elongation is different sexually, being always somewhat, often greatly, more developed in the males. A striking example of this may be pointed

out in *Sternopriscus oscillator*, where the middle tarsi of the male are very elongate and their true fourth joint is developed to such an extent that it actually very nearly equals the third joint.

It is a further interesting fact that the only two genera,—and they are widely different from one another—in which the true fourth joint of the tarsi is very conspicuous, are both peculiar to Australia.

Also it should be noted that some of the species of *Sternopriscus*, differing as they do from all other Dytiscidae by the great development of the true fourth joint of the middle tarsi of the males, have no two species in which this part is similarly formed. I judge from this that each species has developed the peculiarity independent of the others, and that their all possessing it (in various ways) is no proof of genetic identity.

There seems reason to believe that the Hydroporides have had ancestors with five-jointed front and middle tarsi; not only because the joint usually wanting (the true fourth joint) remains quite visible in certain genera, (*Necterosoma*, *Sternopriscus*); but also because the posterior or hind tarsi are always five-jointed throughout the tribe. And as in all the carnivorous Coleoptera except these Hydroporides, the front and hind tarsi have the same number of joints (five), and as this is at present the case in a certain number of Hydroporides (where the fourth joint is greatly reduced though still conspicuous), we may reasonably suppose that these Hydroporides which have now only four joints on the front foot, had formerly five joints, and that the true fourth joint has become reduced and lost, in conformity with the plant-frequenting conditions of their existence; it being the rule that beetles which walk on vegetable substances have only four-jointed tarsi. The posterior tarsi remain always five-jointed because they are used not for walking on plants but for swimming, and for this purpose reduction in area would be very disadvantageous.

The scutellum displays in this aggregate great diversity, though as it is concealed from view a superficial or misleading conformity among the species is suggested.

In Hydrovatini it is found in its minimum of development, so that when the prothorax is separated from the after or middle body the scutellum still appears to be absent, indeed the mesonotum in these insects seems to be excessively small and fragile, and owing to the perfect way in which the elytra are locked together, I have not succeeded in getting a view of the mesonotum without rupturing and destroying it.

In *Dytiscus ovatus* (Hyphidriini) the scutellum exists as a moderately large membranous plate; the posterior margin is truncate and presents a sharp edge, but this is not produced into a fine triangular plate: the anterior margin of the scutellum is also truncate and is narrower than the posterior one.

In *Dytiscus duodecimpustulatus* (Hydroporini, *Deronectes*.) the anterior pieces of the mesonotum are larger than in *Dytiscus ovatus* (Hyphidriini) but the scutellum is not larger, and is of a different form, being rhomboidal, and angulate both in

front and behind, and its posterior part projects as a fine edge, which laps over the basal sutural angles of the wing-cases when they are closed.

In *Hydroporus nigriceps* (*Hydroporus*, No. 576) the anterior pieces of the mesonotum are smaller than in *Dytiscus duodecimpustulatus*; the scutellum is however similar in form, but it is received into an angular depression at the base of the elytra, for the reception of the middle of the base of the prothorax, whereas in *D. duodecimpustulatus*, the elytra are truncate at the base.

In all the above insects the scutellum is completely concealed when the prothorax is in its natural position. In *Hydroporus oblitus*, however, a small portion of its apex remains uncovered, and in *Celina* it is largely visible. I have not been able to obtain a specimen of either of these insects for more detailed examination.

Thus the definition "scutellum invisible" applied to the *Hydroporides* covers and includes a series of diverse and interesting modifications.

The functional value of these parts is considerable. Nothing more perfect can be imagined than the manner in which the elytra when closed are locked together by different portions of their structure and by projections of the mesosterna and mesonota; a complicated set of surfaces and edges is so beautifully coadapted that there cannot be the slightest admission of fluid from without, and great strength is attained although the material used is very small.

Almost everything remains to be done in the study of these parts, for they have hitherto been but little examined.

The *Hydroporides* are found in all parts of the world, except some of the Pacific islands. The *Hydrovatini* and *Bidessini* are widely distributed in the warmer parts of the world; the *Hyphidriini* are more specially African; and the *Hydroporini* Palearctic and Nearctic; while *Sternopriscus* is peculiar to Australia, and *Celina* to the warmer parts of the New World.

There exist in the *Hydroporides* numerous grades of development of various organs, and this instability of the structure, combined with the fact that some of the gradations can clearly be distinguished as higher or lower than others, suggests the idea that some of the species or genera may be placed in an ancestral relation to others. *Hydrovatus*, having very poorly developed locomotive organs, possesses a great resemblance to some of the species of *Celambus*, such as *Dytiscus inæqualis*, and this latter form in the structure of its swimming legs might be considered to be an advanced *Hydrovatus*, the apparent connection between the two being greatly increased by their possessing in common a margined head, and a genicular impression on the epipleura, as well as by the general form, by the sculpture, and by the structure of the antennæ. Thus a truly genetic relationship seems to be suggested. But on continuing the comparison the probability of any such relationship quite disappears, for while in *Hydrovatus* the middle and hind coxæ are widely separated and the prosternal process of remarkable width and peculiar form, and the posterior coxal cavities covered and protected, in *Dytiscus*

inæqualis we see the other extreme in these respects, and we find a small and acuminate prosternal process, with very approximate coxæ and exposed posterior coxal articulations. If we take a third form of the Hydroporides, *Dytiscus duodecimpustulatus* of the genus *Deronectes* for example, and continue our comparison, we find in it a general shape and swimming legs more adapted for aquatic locomotion; the head is completely without margin and the labrum is quite exposed. The middle and hind legs are less approximate than in *D. inæqualis*, the prosternal process is much broader and the posterior coxal cavities more protected. As the result of the comparison of the three species we find then, that having regard to the general form and the development of the swimming legs, a supposed line of descent, thus—1. *Hydrovatus*; 2. *Cœlambus*; 3. *Deronectes*; while if we look to the distance of the coxæ, the form of the prosternal process, and the protection of the hind coxal cavities, the order would be—1. *Hydrovatus*; 2. *Deronectes*; 3. *Cœlambus*; and if again we look to the structure of the head, we find that *Hydrovatus* is the intermediate form, and the line of descent would be—1. *Cœlambus* (*D. inæqualis*); 2. *Hydrovatus*; 3. *Deronectes*. It appears, therefore, that a natural classification in which all the structures are dealt with gives no support to the idea of a genetic relationship between these three forms; while in an artificial classification—a classification in which some one or two characters should be taken into account to the exclusion of others—the three forms would stand in different relationships to one another according to what point of structure should be selected as the basis of the classification. It does not however follow, that in a natural classification it would be incorrect to speak of any one of these three species as being higher than the others, for if we were acquainted with all the points of structure, and knew accurately their functional value, we would be able to assign to each organ a numerical value, indicative of its grade of development (as for instance, in the case of the swimming legs, 1 to *Hydrovatus*, 3 to *Cœlambus*, and 5 to the *Deronectes*), and by adding all these together we would be able to say with certainty which was absolutely the higher form; but because we could do this it would not in the least follow that the lower form was ancestral to the higher.

This is equally applicable to the relations of the anomalous *Pelobius* and *Amphizoa* to the other Dytiscidæ; although they are less highly developed as Dytiscidæ there does not appear any reason for supposing them to be truly ancestral forms to their more highly developed allies, and thus the fact that certain of the lower forms have numerous points in common does not indicate a genetic relationship between them; the similarities found are indeed indicative not of such relationship, but rather of similarity in the stage of development of some one or more of the points of structure.

III. 3.—Tribe COLYMBETIDES. (*Vide* p. 490.)

This tertiary aggregate comprises two secondary aggregates and seven unassociated genera placed between them, in all twenty-one genera, with about three hundred and twenty species ; so that it is, next to the Hydroporides, the most extensive of the four tribes of the family.

The tarsi are all invariably quite clearly five-jointed, and the scutellum is always visible at the base of the elytra ; the inter-coxal process of the metasternum always connects with the mesosternal fork, and the apex of the prosternal process always reaches over or between the middle coxæ, and rests on the apex of the inter-coxal process of the metasternum which is more or less grooved or impressed for its reception. A line drawn along the middle of the prosternum, from front to back, is nearly or quite a straight line,* but occasionally, although rarely, the front portion of the prosternum is so much thickened in this middle line, that it presents in front a distinct vertical edge. The hind coxæ are very rarely less than of moderate size, and are sometimes very large : the side wings of the metasternum are very variable in size. The posterior coxal cavities are always absolutely, or very nearly, conjoined, and are always protected by free, projecting coxal lobes or processes.

The swimming legs, sometimes quite slender, are in the highest species well developed, but are never extremely thick : the hind margins of the joints of their tarsi are never externally closely set with adpressed ciliæ, and they are always terminated by two visible claws, which however are of very variable development, sometimes being very small and equal, while as the other extreme the inner one is very elongate and the claws thus become very unequal ; the spurs of the hind tibia are never incrassate or bifid at their apex, and the hind tibiæ themselves never show even the rudiments of the development of a patch of spur-like setæ at the outer and upper angle of the extremity of their inner face.

The Colymbetides are thus most essentially separated from the Hydroporides, by the prosternal structure, and in a rather more subordinate degree by the conspicuously five-jointed front and middle tarsi and the visible scutellum.

In speaking of the Hydroporides I pointed out that that group never exhibited any tendency to thickening of the prosternum along its middle line, and that the anterior portions of the prosternum were always placed on a very different plane to the posterior portions. In the Colymbetides the reverse occurs.

The prosternum is always more or less thickened along the middle, and projects, so that the front coxæ are as it were embedded in it, and there is but little change in its direction or plane from the point of the prosternal process to the front margin. The thickening is found in all degrees of development, it is very slight in the lower forms of *Agabus*, but in the higher species is very much more developed and reaches its maximum in *Coptotomus* : in that genus as a consequence the prosternum

* That is to say, is a straight line drawn on a plane.

shows at the front edge in the middle a distinct vertical face, placed at right angles to the plane of the prosternum; a superficial approximation to the definition of the prosternal structure of the Hydroporides is thus suggested; but a very slight examination is sufficient to show that so far from this being the case, *Coptotomus* is of all the Colymbetides the farthest removed by its prosternal structure from the Hydroporides. In Hydroporides it is the inter-coxal band of the prosternum that is placed on a different plane to the prosternal process, the very small transverse band forming the front of the prosternum being again nearly horizontal in plane like the prosternal process; in *Coptotomus* the horizontal plane is continuous from the apex of the prosternal process to the front margin of the prosternum, and then there occurs the vertical free face of the incrassate portion. *Dytiscus fuscipennis* (*Agabus*, group 21) makes however a genuine approach to Hydroporides in the prothoracic structure, the band between the front coxæ being placed, in its relation to the prosternal process, somewhat as in that group: this interesting similarity is not however accompanied by any other approach in *D. fuscipennis* to the Hydroporides, so that we may say that those influences that have caused this insect to approach Hydroporides have been confined in their operation to its prosternal structure.

The front and middle tarsi are always conspicuously five-jointed, the fourth joint being as far as its length goes, as much developed as the basal ones, and thus a conspicuous contrast with what is usual (but not absolute) in Hydroporides is exhibited. In the male sex of Colymbetides there is always a greater or less incrassation of the three basal joints of the tarsi, and we find in certain members of the aggregate that this incrassation is displayed to a less extent by the fourth joint (*vide* Colymbetides), a most unusual character in the Dytiscidæ. Still however it is interesting to remark that in both Colymbetides and Hydroporides in certain exceptional cases, the sexual development exhibited by the three basal joints of the tarsi is accompanied by an unusual development of the fourth joint.

Except in the case of sexual clothing of the males, the front and middle tarsi are bare beneath, or armed only with rigid ciliæ: their structure being thus that characteristic of locomotion on rough surfaces, while in the Hydroporides we have seen the structure of the tarsi indicates an adaptation for locomotion on plants.

The male tarsi do not show a great range of variation in the Colymbetides, although very different grades of development of their structure are included in the aggregate. As I have already remarked, the three basal joints of the male front feet are more or less incrassate; in one or two cases (*Metronectes*, *Agabius*), only two basal joints are thus affected, the third remaining undeveloped. This increase is in its rudimentary forms but slight, and is an incrassation rather than a dilatation, the increase in the size of the sole for bearing the sexual clothing being obtained by enlarging the diameter of the cylinder in both the horizontal and vertical directions; in the higher forms it becomes greater, and the incrassation is accom-

panied by a flattening of the joints, such as would be produced by a pressure acting on the incrassate cylinder in a vertical direction. These two processes of incrassation and flattening do not go on *pari passu*, some species with much incrassation showing but little flattening, and *vice versâ*. The flattening of the tarsi is carried to its greatest extent in the cases where the individuals are large (gen. *Colymbetes*, *Meladema*), and then the joints are co-adapted, so as to form a saucer-like surface beneath ; but this differentiation never attains the perfection of these parts as seen in *Dytiscus*, *Hydaticini* and *Cybistrini*. The front and middle claws of the males sometimes attain a truly wonderful development, and frequently in such cases are very unequal (*vide* *Lancetes*, *L. unguicularis* ; *Agabus*, *Dytiscus bipustulatus* ; *Rhantus*, *Dytiscus exoletus*, &c.) The clothing of the under-surface shows great difference in its development ; it is rudimentary and inconspicuous in the lower forms (*Metronectes*, and several *Agabi*, &c.), and it may even remain, but little developed in species which in other respects have become considerably perfected. In its rudimentary form the clothing is short and uniform, and has the appearance as if some very fine grains of sugar were placed on the under-surface of the foot : in this state I have frequently spoken of it in my descriptions, as "glandular pubescence;" as development becomes perfected, the clothing undergoes both growth and differentiation, the middle hairs have their glandular extremities developed into conspicuous palettes, while the external ones become beautifully elongated into pencils of fine fringing hairs. These developments do not necessarily go on *pari passu*, but the palettes may be greatly developed, with the fringing hairs less perfect, or *vice versâ* ; the greatest development of the palettes may be seen in some *Colymbetes* (*Dytiscus striatus*, No. 972, *e.g.*), while it is in some of the *Rhanti* (*Dytiscus adspersus*, and *Dytiscus pustulatus* for example), that the most perfect fringing hairs are found ; in these cases the extremities of the fringing hairs are beautifully curved. This differentiation into palettes and fringing hairs is not the only one that has occurred in the *Colymbetides*, for in some of the species of *Colymbetes* we find that there is (*vide* *D. striatus*, &c.) coexistent with these two structures, a basal patch of glandular or cilia-like pubescence ; in such an insect we have a transformation similar to what has occurred in *Cybistrini*, where the male palettes are surrounded with fringing hairs, and the clothing of the included part of the palette consists of fine hairs on the basal portion and of transverse series of palettes on the outer part. The perfection attained by this structure in the *Colymbetides*, is however far inferior to what we find in *Cybistrini*.

Gradations in other important parts of the organization are displayed in the *Colymbetides* ; thus the posterior stigmata, small and almost useless in some of the lower forms, become in *Colymbetes* transverse, and are the seat of development of a beautiful minute anatomical structure.

As highly exceptional characters exhibited by certain members of the family, the following are worthy of note : a dilatation of some of the intermediate joints of

the antenna in *Copelatus politus* ; the display of a file of fine rugæ in some of the species of *Agabus* (group 8) on the third ventral segment ; and the existence of a similar structure on the edge of the second ventral segment in numerous species of *Colymbetes*, and in a few *Rhanti*. The form of the coxal processes in *Agabinus* is very peculiar, reminding one somewhat of *Noterus*. *Hydrotrupes* and *Coptotomus* show peculiar labial palpi. And in *Platambus* we have a remarkable increase in the posterior portion of the epipleuræ, which however is approximated by certain *Agabi*. In *Matus* we have a conspicuous sulcation of the prosternum which is reproduced in *Spencerhydrus*, a genus of *Cybistrini*. While in several genera (*Agametrus*, *Metronectes*, and others) we have the very exceptional occurrence of a complete effacement of the coxal lines. *Colymbetes reticulatus*, (*Lancetes*) shows a difference in the colour of the ventral segments of the two sexes, similar to what exists in certain species of *Bidessus* and *Cœlambus*, in the *Hydroporides*.

The interesting Madeiran species of *Meladema*, (*Dytiscus lanio*) makes an approach to the genus *Dytiscus* in several respects, and it has the suture on the front of the head distinct as is the case in that genus, and the clypeus is coloured yellow as in that genus, while the two pale marks on its vertex seem to indicate the manner in which the angular mark on the front of the head of *Dytiscus* has been developed from the two pale spots so common in the *Colymbetides*.

As regards geographical distribution little can be said, except that the great majority of *Colymbetides* are inhabitants of the northern parts of the Eastern and Western Hemispheres, but one large genus (*Copelatus*) is on the contrary chiefly tropical.

III. 4.—Tribe HYDATICIDES. (*Vide* p. 647.)

This tertiary aggregate consists of about one hundred species arranged in five primary aggregates, plus three isolated species ; and in the second synthesis these are reduced to two aggregates, plus an isolated primary aggregate.

They are all insects of moderately large size—one-third of an inch to two-thirds of an inch in length : the colour of the surface is generally variegate.

The head is short, the eyes are large, the insertion of the antenna is but little protected by the side of the front, and this does not infringe on the circular outline of the eye ; the frontal suture can be detected only at each side ; the antennæ are elongate and slender but to a variable degree. The hind coxæ are large, and the wing of the metasternum has always a slender sub-parallel deflexed band as its terminal portion ; this band is however very variable in its length according to the amount of forward extension of the hind coxa.

The coxal lines are always short, (sometimes quite obliterated) and in front they are very far indeed from attaining the front border of the coxa ; the coxal lobes are never elongate and are always broad in proportion to their length, and when the

coxal lines are not greatly turned outwards towards their termination then the supra-articular border is very broad.

There are no stigmatic rugæ on the first ventral segment, and the terminal two stigmata are small or of moderate size. The swimming legs are highly developed, but vary much in this respect, being in certain forms rather elongate and slender, in others short and thick: their tarsi are always terminated by two very distinct nearly straight claws, which may both be elongate, although the upper or outer one is usually much shorter than the other; the hind margins of the four basal joints of these hind tarsi are furnished with beautiful ciliæ or elongate scales which are set close to one another, and overlap the following joint, to the surface of which they are so extremely closely pressed that they scarcely interfere with the perfect smoothness of the face of the tarsus; their scales vary greatly in the tribe, but they are always conspicuously present, and occur in no other water beetles out of the tribe. In *Eretes* they are short and broad, and form a single series, and as they are easily removed by friction with a hard surface, they may escape detection in it, but even when quite removed by illusage there remains a series of punctures close to and parallel with the hind margin, marking their points of insertion and so indicating their existence in an incontrovertible manner. In the species where they are most highly developed as in *D. vittatus* (No. 1049), they are very conspicuous, and arranged so as to form an arch, and are so extensive so to cover quite one-half of the area of the outer face of the tarsus.

In many other respects there occurs a considerable amount of variation in the structure of the Hydaticides, and the greater part of these exceptional features occur in *Eretes*; some have been noticed in the description of that genus, but others still require mention. In all the *Thermonectini* and *Hydaticini* the anterior and middle legs are separated by a considerable space, but in *Eretes* they are much more contiguous, and this difference is accompanied by some important correlative discrepancies in the structure of the adjacent parts. The front of the prosternum in *Eretes* shows a kind of longitudinal face in the middle, placed nearly at right angles to the plane of the prosternal process (and so simulating to a superficial observation the prothoracic structure of the *Hydroporides*); whereas in *Acilius* and *Hydaticus* there is no trace of this longitudinal thickening of the middle of the front of the prosternum. In *Ethionectes* however, the prosternum is greatly incrassate along the middle and compressed, and a similar structure, though not developed to so great an extent, is approached by some other *Thermonectini*. The prosternal process is acuminate, narrow, and elongate in *Eretes*, whereas in all the other genera it is short and broad and obtuse or rounded: the inter-coxal process of the metasternum is marked with an elongate narrow groove in *Eretes*, and only connects in an imperfect manner with the mesosternal fork, whereas in the other members of the aggregate the connection with the mesosternal fork is intimate and perfect, and the depression for the prosternal process is peculiarly short, broad and

shallow. In the structure of the hind legs *Eretes* shows some interesting peculiarities, they are much more slender than in any of the other Hydati-*cides*; the femora especially are slender, the tarsi are elongate and their basal joint not very greatly shorter than the tibia: on the upper face of the femur close to its posterior edge is a band of pubescence, this band traverses the whole length of the limb, the pubescence at its commencement at the trochanter is quite short but gets longer as it nears the knee, and terminates there in a group of very elongate fine hairs; in *Hydaticus* there is usually an obscure band of very fine short pubescence, homologous to this band of *Eretes*, but placed at a distance from the hind margin; in other Hydati-*cini*, this band is represented only by a series of isolated punctures (*Dytiscus seminiger*, &c.), and in others cannot be detected in any form: the tibia also shows some interesting modifications; it is longer and more slender than in the Hydati-*cini* and Thermonectini: the series of punctures on its upper face bearing elongate furcate setæ is very highly developed, and is placed near the extremity (about five-sixths of the length from the knee), where it forms an obliquely transverse band, starting from the inner margin, and extending half way across the tibia; in the other Hydati-*cides* a very different arrangement prevails, the furcate setæ are either arranged as a series near to and parallel with the outer margin of the tibia, or as a transverse series on the middle of the face, but are never approximate to the inner margin or to the apex as in *Eretes*; it would appear, if this be so, that in the rudimentary stages of development of these furcate setæ their position is as a series parallel with the outer margin, and *Eretes* is of all known Dytiscidæ the one which has most widely departed from the primitive arrangement of these setæ.

The tibial spurs in the Thermonectini are bifid at the apex, this character is however frequently so minute that it requires a careful examination to detect it; these bifid tibial spurs, although wanting in *Eretes* and Hydati-*cini*, reappear in *Laccophilus* and Cybistrini, and there this peculiarity of structure attains a more considerable development than in the Thermonectini.

The straight episternal suture of the Hydati-*cini* is an exceptional feature—a departure from the usual method of structure of the part—for this suture is curvilinear, not only in Thermonectini and *Eretes*, but also in the Colymbetides, Dytiscini and Cybistrini; in these groups however, the curvilinear suture is not so much curved as it is in the Thermonectini, so that as regards this structure we are brought face to face with the interesting fact, that the Hydati-*cini* and Thermonectini are departures in opposite directions from the average or normal Dytiscid type. Such a consideration renders it difficult to imagine that the Hydati-*cides*, in opposition, say, to the Colymbetides, are descended from any common ancestor, but rather disposes us to believe, that both types of the episternal suture existed in the early ancestry of the Hydati-*cides*, and that the distinctions between the two types would not then be so extreme as they are at present. This view is borne out by

Prodaticus pictus, which is the most primitive of existing Hydatiini; in it the episternal suture makes a considerable approximation to the average Dytiscid type, as displayed by, say, *Colymbetes pulverosus*, but still it shows the peculiarity characteristic of the Hydatiini markedly displayed; so if we go to the Thermo-nectini and take their most primitive existing form—*Acilius*—we find the departure from the average type of episternal suture perfectly marked in the opposite direction from Hydatiini, though to a much less extent than it is in the higher Thermo-nectini—*Thermoneetes* for example. Thus, the conformity of structure of the hind tarsi of the Hydatiides, though it justifies us in classifying them together, does not justify us in considering that they are descended from a common ancestor, *qua* episternal suture. If we now turn to the Hydatiides which have the episternal suture of similar structure, viz., *Eretes* and Thermo-nectini, we shall find that this similarity of structure does not warrant any belief in descent from a common ancestor, although at first such a descent is readily suggested, and appears to be confirmed by other peculiarities. Thus for instance, *Thermoneetes* approximates *Eretes*, not only by the condition of the episternal suture, but by the diminished epipleuræ, by the large eyes, by the exposed apex of the metathoracic epimeron, and the small terminal stigmata; they thus appear to be bound together, and these points would be cited as evidence of descent from a common ancestor, and yet in other respects, *Eretes* and *Thermoneetes* thus bound together must be widely separated, and placed on opposite sides of a hypothetical common ancestor; for example, *Eretes* has a wonderfully developed band of pubescence on the upper face of the hind femur, and of this there is no trace in *Thermoneetes*, although in the more distant *Hydaticus* the band is present in a rudimentary form; the tibial spurs too are bifid in *Thermoneetes*, simple in *Eretes* and *Hydaticus*. If we carry this analysis to other points of structure, a similar inconsistency is repeated, and the search for a common ancestor or the endeavour to construct such by imagination becomes more and more bewildering and unsuccessful, in proportion as the facts considered become more extensive and exhaustive.

The tribe is widely distributed over the earth's surface, but does not occur in New Zealand and the Pacific islands.

FOURTH SYNTHESIS (SERIES).

IV. 1.—*Dytisci fragmentati*.

The first aggregate of this synthesis consists of a few more or less fragmentary aggregates, viz., one aggregate of the first degree (*Pelobius*), one aggregate of the third degree (*NOTERIDES*), and two aggregates of the second degree (*VATELLINI* and *LACCOPHILINI*); these together form the first series ***Dytisci fragmentati***.

A single point of structure binds together these aggregates into a series, viz., that the metathoracic episternum does not penetrate to the middle coxal cavity, this part being formed externally by only three species—a portion of the middle piece of the mesosternum, the extremity of the mesothoracic epimeron and the most anterior portion of the side of the metasternum.

In other respects these four unequal aggregates are extremely different *inter se*; and it is therefore doubtful whether the arrangement of them together into a single series is a really correct procedure, for the components have no other bond of union than the one mentioned, and this it will be seen, is a negative as much as a positive one. Moreover they do not really agree on this one point, for in *Pelobius*, *NOTERIDES*, and *VATELLINI*, the apex of the metathoracic episternum is broadly separated from the coxal cavity, whereas in the *LACCOPHILINI* this part very nearly reaches the cavity—so nearly indeed that it requires a rather careful examination to assure oneself on the point. At the same time these forms are all of them quite different from any of those which compose the second series, or ***Dytisci Complicati***, and in this sense the series is truly a natural one; it is indeed the case that the *VATELLINI*, approximate, by the structure of their anterior and middle tarsi, the tribe *HYDROPORIDES* of the second series, but the approximation is only a general not a special one, and the whole of the *VATELLINI* have in common a most peculiar point of structure (the termination of the prosternal process in front of the middle legs) which is only found in one or two widely separated members of the *HYDROPORIDES*. And I have, therefore, felt justified in establishing the ***Dytisci fragmentati*** as a distinct and natural series.

The first of the four aggregates of the series—*Pelobius*—is an altogether isolated form, and in a natural classification should probably be placed among the *Carabidæ* rather than in the *Dytiscidæ*.

The *Noterides* I have already alluded to as being evidently the fragmentary remains of an assemblage formerly more extensive than it is at present, some of its components are of low organization, while others have attained a great degree of perfection in some of their special structures.

The group *Vatellini* is an aggregate remarkable among the *Dytiscidæ* from the fact that the prosternal process does not connect with the metasternum, this is an imperfection of structure found only elsewhere in a few of the *Hydroporides*. There are only about a dozen species known, distributed in three genera peculiar to South America.

The *Laccophilini* differ curiously from the other *Dytisci fragmentati* inasmuch as the numerous species form a single genus, and this, plus a single autogeneric species, forms the entire aggregate; the aggregate is a very highly evolved one, the *Laccophilini* being in fact amongst the most perfect of the *Dytiscidæ*; we have then in this group a very highly evolved form of which no less evolved forms are known to exist, but as such must have existed formerly, it appears probable that the primitive *Laccophilini* were amongst the earliest organized *Dytiscidæ*, that their organization was inferior to that of more modern competitors, but that when these arose the higher *Laccophilini* in possession were able to hold their own, but that the more inferior forms became extinct.

It is worthy of remark that in the *Laccophilini* the process of the epimeron that separates the metathoracic episternum from the coxal cavity is very small and the cavities are very perfectly formed; and also that in it the epimeron is largely developed at the episternal angle so as to be triangular in shape, whereas in the *Noterides* and *Pelobius* it is sublinear.

The *Dytisci fragmentati* are distributed over all the warm and temperate parts of the world except the *Polynesian* islands and *New Zealand*, whence none are known.

IV. 2.—*Dytisci complicati*.

This extensive aggregate consists of about one thousand species, arranged so as to form three complex aggregates of the third, plus two aggregates of the second degree, and two isolated genera. These insects are united into one whole by the fact that the metathoracic episternum penetrates as far as the middle coxal cavity and so intervenes between the extremity of the mesothoracic epimeron and the side wing of the metasternum and prevents any actual contact between these two parts. This character is one of extreme importance, for it is only in these beetles that, so far as is known, such a structure occurs; in all the vast mass of species forming the order *Coleoptera* these are the only ones, so far as is at present known, possessing this peculiarity.

The character too is of complete constancy in the series; I have not been able to detect any exception to it, and in certain cases where it at first sight appears doubtful whether the front side piece of the metasternum does reach the cavity or not, a more careful examination settles the point very decidedly; a remarkable instance of this is afforded by *Colymbetes*. The part of the episternum which in the *Dytisci complicati* reaches the cavity is its peculiar, exposed and thickened anterior edge;

now in Colymbetes, at a distance of about 1 or 2 m.m. from the cavity, this edge is completely overwrapped and concealed by the mesothoracic epimeron; a little nearer to the cavity the epimeron however again diverges and exposes a part of the episternal edge, but close to the cavity the epimeron gives off a process which appears to unite with the side wing of the metasternum by a minute point, and thus to exclude the episternum from the cavity; this is not however really the case for if the sutures be forced open so that the minute relations of the parts can be clearly seen, it will be perceived that, by the growth of the process of the epimeron just alluded to, the edge of the episternum has been twisted to one side and forced into the cavity in such a way as to leave only a thin lamina of the episternal edge visibly interposed between it and the metasternum; this apparent exception therefore shows actually how remarkably pertinacious is the point of structure I have alluded to. The varied aggregates composing the Dytisci complicati are connected together in an intricate manner by numerous other points of structure, no one of which however is constantly present; except that the posterior coxæ possess a characteristic but variable form, their greatest anterior extension being near to the epipleura and far from the mesial line of the body (longitudinally). The remarkable Amphizoa forms however quite an exception to this integration of the Dytisci complicati; it possesses certain peculiarities found in no other member of the aggregate, and it lacks the peculiar form of the hind coxæ, and some other less persistent points of the other Dytisci complicati; it is in fact quite isolated, and should perhaps not be united with the aggregate in the same synthesis as that in which the other component members are associated, but a special more distant (viz. 5th.) synthesis should be used for this purpose.

Putting Amphizoa on one side, the aggregate is a very natural one, and although at first sight its tetramerous section appears very different from the pentamerous one, yet there exist some intermediate forms of the highest interest; such an one is *Celina* of the Hydroporides, and still more the genus *Methles*, which cannot be associated in any of the larger syntheses, but remains an isolated form and a remarkable synthetic type.

Although this is the case, yet careful examination fails to confirm any suspicion of genetic relationship between any of the components of the aggregate. For instance the Hydaticides are distinguished from the Colymbetides by the presence of a peculiar ciliation of the hind margins of the swimming feet; this is a specialization of high interest, and it might for several different reasons be suggested that the Colymbetides stood in the relation of an ancestral group to the Hydaticides, that in fact Hydaticides were merely Colymbetides that had gained the said ciliation. There exists however a Hydaticid in which this ciliation appears in a rudimentary form. I allude to the genus *Eretes*. Here then we should expect the connecting link, at any rate, or evidences of a former connection between the Hydaticides and Colymbetides to be found; yet so far from this being the case *Eretes* is a most

isolated form, and of all the Hydraticides is I think the one that is most removed from the Colymbetides.

The question whether the tetramerous aggregates (Hydroporides) of the Dytisci complicati, should be classed as higher or lower than the aggregates possessing five joints to the tarsi, although a complicated and difficult one, can I believe, be answered with some certainty. There can be no doubt, but that the families of Coleoptera possessing five-jointed tarsi, are—other things equal—higher than those possessing only four, or a less number of joints in the feet. But on the other hand, there are in the higher of the pentamerous families—the Carabidæ and Cicindelidæ and Dytiscidæ—certain members which depart in a greater or less degree from the type of foot structure usually found in the Pentamera, and approach in this respect to the tetramerous or vegetable-feeding Coleoptera: now in Cicindelidæ and Carabidæ those aberrant-footed forms which frequent trees are, I believe, higher than their purely terrestrial-footed allies; and we might therefore suppose that also in the Dytiscidæ this should be the case, and that those members which have feet of the phytophagous type are higher than those having feet of the more purely predaceous type. But it is clear, on further consideration, that this would be incorrect. The plant-frequenting Cicindelidæ and Carabidæ only attain the vegetable-frequenting tarsal structure in some of the details (those being variable according to the genus), but retain always the number of joints characteristic of the carnivori, and as is clear from their general structure frequent plants only for the sake of carrying out their predaceous activities thereupon, instead of on the surface of the earth: they are thus extreme differentiations of the predaceous type. In the Dytiscidæ, on the contrary, those members which possess the plant-frequenting foot do so to a very much greater extent—to such an extent that as regards both the number of the tarsal joints and the details of their structure they are truly tetramerous. Taking it then as probable, that the order Coleoptera at a very early period of their evolution were divided into (1), plant-eaters and frequenters, and (2), carnivorous and predaceous creatures, operating more particularly on the earth, and that the tarsal structure has been developed in conformity with these habits, we are led to conclude that the plant-frequenting Carabidæ and Cicindelidæ have only assumed these habits at a comparatively late period of their evolutionary record, but that the phytophagous-footed Dytiscidæ have been so over an enormously longer period of their history, and probably have many of them never been purely pentamerous, predaceous, terrestrial Coleoptera: and we are fully justified by the tarsal structure as well as by other points in classing them as less advanced than the Colymbetides and the following still higher group. I cannot forbear here from pointing out that these phytophagous-footed Dytiscidæ show us how very diffident we ought to be in interpreting similarity of even important structures as evidence of community of descent; thus although the tarsal structure is one of the most important and trustworthy of

characters in classifying the Coleoptera, and although the Hydroporides in the Dytiscidæ, agree in this respect with the tetramerous Coleoptera, yet it is perfectly clear that this similarity of structure has been arrived at by perfectly distinct lines of descent ; and if we are not justified in considering this point of similarity in the Dytiscidæ and Tetramera as evidence of community of descent between them, on what logical grounds is it that we may consider it as being such in the case of the various members of the Phytophaga?

The Dytisci complicati are found in all parts of the world, but in New Zealand and the Polynesian islands they are, so far as is yet known, very poorly represented, although Australia and Tasmania are very rich in species and genera. They appear to be remarkably tolerant of cold, the proportion of species found in high latitudes in the Northern hemisphere being remarkable : the series in this respect offers therefore a great contrast to the Dytisci fragmentati, where the vast majority of the species are found in the warmer regions of the earth, and very few indeed, if any, penetrate to near the Arctic regions or are alpine in their habits.

FIFTH SYNTHESIS.

The Family DYTISCIDÆ.

The family as comprised in this work consists of the two unequal series, Dytisci fragmentati, and Dytisci complicati, the former consisting of only 175, the latter of about one thousand species.

A detailed account of the external structure of the family has been given at the commencement of the work (pp. 190 *et seq.*), and the definition of the family generalized from those details at p. 257. To complete the account it is necessary for me to make some remarks on the points of approximation or similarity between the Dytiscidæ and other families of the order Coleoptera.

The points of community between the Carabidæ and Dytiscidæ are so numerous and important, that it is not possible to point to any one character as an absolute test of distinction between the two families ; and although several peculiarities may be pointed out as being especially characteristic of the Dytiscidæ, yet all of them when taken seriatim disappear within the bounds of the family or are found in one or more members of the Carabidæ. These characters may be enumerated as follows : 1, the peculiar, continuous outline and solid compact form ; 2, the short broad head, immersed in the thorax as far as the back of the eyes and not narrowed behind the eyes ; 3, the glabrous antennæ, free from setæ and sensitive pubescence ; 4, the constant existence of a prosternal process ; 5, the fact that this prosternal process articulates, or rather connects with the metasternum ; 6, the extremely large external lamina of the hind coxa ; 7, the accurate adaptation

between the two internal laminæ of the hind coxæ ; 8, the ciliation of the posterior tibiæ and tarsi ; and 9, the change of form in the hind legs by which they are adapted for swimming. Of these characters, No. 1 is quite as marked in many Pseudomorphini of the Carabidæ and in *Cyclosomus* as it is in many Dytiscidæ and more so than in a few Dytiscidæ. No. 2, the structure of the Dytiscid head is greatly approximated by the Pseudomorphini. 3, the antennæ in several members of the Pseudomorphini, Scaritini, and Trachypachini are more or less completely deprived of sensitive pubescence ; in other cases (as in *Anthia*) the exerted setæ are but little developed. 4, a prosternal process always exists in the Dytiscidæ, but is also found in some Carabidæ, especially *Cyclosomus*, Trachypachini and *Omophron*. 5, the prosternal process in the Dytiscidæ does not always reach the metasternum, it fails to do so in the *Vatellini*, in *Tyndalhydrus*, and in *Andex* ; while on the other hand in *Cyclosomus* of the Carabidæ, the prosternal process reaches the metasternum. 6, the external lamina of the hind coxæ is always much larger in the Dytiscidæ than it is in the Carabidæ, it varies, however, extremely in size in the former family, so that from this character alone it would not be easy to say where the line of demarcation between the two families should be drawn. 7, this, like the preceding character, is constant in the Dytiscidæ, but the hind coxæ are likewise co-adapted in some Carabidæ (Trachypachini and other members of the first series of Carabidæ), so that here again the Dytiscid character is only an exaggeration of what it is in some Carabidæ. 8, the hind tibiæ and tarsi are in some Dytiscidæ but feebly ciliated, and in some members of the Scaritini group of Carabidæ the hind tibiæ are strongly ciliate externally. 9, in some of the Dytiscidæ there is so little difference from the Carabidæ in the form of the swimming leg, that the character cannot be relied on as diagnostic of the family.

We see then that the relations between the two families are very intimate, so intimate that it may be, I believe, stated with correctness, that the Dytiscidæ are modified Carabidæ. By which I mean to say that there is reason to believe that the remote ancestors of the Dytiscidæ, had before they inhabited the waters acquired to a considerable extent an organization similar in many respects to that which some Carabidæ still possess. In the genus *Pelobius* we have clearly an altered Carabid ; and the frequent persistence in other Dytiscidæ of traces of a Carabid-like structure of the hind tarsus, and other similar facts makes one believe that what is clearly true of *Pelobius*, is probably true of other Dytiscidæ.

Herr Kolbe in the *Deutsche Entomologische Zeitschrift*, 1880, pp. 258, *et seq.*, has published a new, and from many points, very interesting classification of the Carabidæ, Dytiscidæ, Cicindelidæ, Haliplidæ and Gyrinidæ, based on the theory that the land beetles are descendants of the water beetles. This is, however, most certainly an erroneous conclusion ; it is, as I have said above, possible to believe that the Dytiscidæ are modified Carabidæ, but it is quite incredible to me

that the Carabidæ in whole or part are modified Dytiscidæ. Indeed Herr Kolbe's theory and classification are so evidently based on a false premise that it is not, I think, necessary to point out in detail their unsatisfactory character.

The close approximation existing between the Carabidæ and Dytiscidæ does not, in my opinion, at all bear out the theory that it is the result of descent from a common ancestor. It is quite certain if the approximation is due to heredity, that the most primitive forms of the two families should bear a resemblance to one another, not only in one special point but more or less in other points; for it is clear that as we go back in the genealogy and approach the common ancestor so must the descendants become alike in more than one point: there must be as it were an approximation on all points, not only on some special point. This is not, however, what we find to be actually the case: on the contrary, if we take the most primitive forms, such as *Pelobius*, *Amphizoa*, *Methles*, *Hydrovatus*, *Suphis*, and compare them together we are struck with the fact that we have before us some of the most dissimilar of the Dytiscidæ. The same fact is true of those Carabidæ to which the Dytiscidæ approximate; *Trachypachini*, *Pseudomorphini*, *Scaritini*, and *Cyclosomus* are in fact about as dissimilar Carabidæ as could be selected from the whole of that enormous family.

If we approach this interesting question from another point of view, that of the structure of any one part, we are brought to a similar conclusion: for instance, if the highly developed prosternal process of the Dytiscidæ and of certain Carabidæ is an indication of genetic community, then it is clear that it is one of the most ancient and fixed features of the Dytiscidæ, and as it is a great advantage to its aquatic possessors, we ought to find it absolutely constant amongst them; but this is not the case, the prosternal process remains comparatively rudimentary in several widely separated Dytiscidæ (*Vatellini*, *Tyndallhydrus*, *Andex*); and it is clear that if the Dytiscidæ and *Cyclosomus* possess this structure in common because their primitive ancestor possessed it, then *Vatellini*, &c., must have separated from this common Dytiscid-Carabid ancestral stock before this part was developed; a conclusion which is absurd; or that the *Vatellini* have lost by degeneration a character which they formerly possessed, and whose possession was advantageous to them; a conclusion which there is not the least reason for believing, and of whose truth it would require very weighty evidence to convince us: and which is in opposition to the law of survival of the fittest. It is in fact quite clear that the highly developed prosternal process in *Cyclosomus* and the Dytiscidæ is not the result of genetic community, but has been separately acquired. As regards *Pelobius* which is truly a "connecting link" between the Carabidæ and Dytiscidæ, there is not the least reason too for supposing that it is ancestral to any Dytiscidæ or any Carabidæ, and there do not appear to me to be any grounds for supposing that the Carabidæ are the ancestors of the Dytiscidæ, or the Dytiscidæ of the Carabidæ. If however, under the term "Carabidæ" we include not only the known existing

forms to which we give this collective name, but a vast number of more imperfect forms which there is reason to suppose may have existed in remote geological periods, it is quite possible—I think I may say probable—that among such forms would be found the true ancestors of the present Dytiscidæ. But the term “Carabidæ” has only real scientific value inasmuch as it expresses certain creatures whose organization is known to us, and is expressed by a certain definition drawn from, and generalizing this known structure, and to apply the term Carabidæ to include these distant and different creatures, is to alter its meaning and cannot but lead to logical bewilderments and mazes of a quite perplexing nature. I conclude therefore, that in no correct manner can the Carabidæ and Dytiscidæ be placed in a genetic relation to one another on any genealogical chart.

On the other hand it seems quite probable that if we knew a great deal more than we do know about the functional values of the structures we discuss, we should be able to comprehend some of, if not all, the intricate affinities exhibited by the two families as being the result of, or correlative with, approximations in the mode in which function is or has been performed, and to be quite independent of genetic community. Thus the elongation and amalgamation of the internal laminae of the hind coxæ along the mesial line, might be found to be connected with the fact that the hind legs have had to use an increased degree of force, and take a more than usually large share in the process of locomotion, and to act in a more directly horizontal direction; this would be the case with the Dytiscidæ moving through the water, and probably with the Pseudomorphini dwellers under the bark of trees.

There is another question in connection with the classification of the Dytiscidæ and Carabidæ, which I may briefly allude to, although only to show the complex and difficult nature of the problems with which classification has to deal. It is this; is it—keeping in view the intimate relation existing between these two aggregates—a correct course to keep them separate or should they not be in some way or other united? To answer this requires a valuation of structural characters of a most difficult nature. I will give an instance. We have in the Dytiscidæ two series, *Dytisci fragmentati* and *Dytisci complicati*, of these the latter is distinguished by all its members possessing a character which is completely wanting not only to the other series, but to the Carabidæ and all the other beetles: I allude to the fact that four principal pieces of the body form the walls of the middle coxal cavities; while the other series, *Dytisci fragmentati*, have these cavities formed by only three pieces. Now the Carabidæ also consist of two series distinguished by the structure of these cavities, the first series having, like the *Dytisci fragmentati*, three pieces forming the coxal cavity, while the second series has only two pieces entering into the composition of these parts. Thus we have four series, viz., (1), Carabici second series, with coxal cavities formed by two pieces; (2) and (3) Carabici first series and *Dytisci fragmentati*, with coxal cavities formed by three pieces; and (4), *Dytisci complicati* with coxal cavities formed by four pieces. Now if we bear in mind the fact that

the Dytisci fragmentati have but little connection with the Dytisci complicati (only the variable swimming leg and bare antennæ), that the distinctions between the Carabidæ and Dytiscidæ are not very important, and that on the other hand the Dytisci complicati are distinguished by a character absolutely peculiar to them among the whole enormous mass of Coleoptera, the question arises would it not be a more natural classification to follow the structure of the coxal cavity, treating it as of superior importance to the hind coxa and swimming leg; and thus massing together the Dytiscidæ and Carabidæ into one whole comprising three series determined by the number of pieces entering into the structure of the coxal cavities. I think it is probable that this would be an improvement, and content myself with pointing it out to naturalists who may be inclined to discuss the very difficult question of the classification of the families of Coleoptera. There is no harm in mentioning that in the Mammalia the water-frequenting members are not classed together because of the similarity in their forms and in their apparatus for locomotion, but are distributed in different families on account of other peculiarities.

If this view were adopted, and the modifications in the structure of the middle coxal cavities were considered as of predominant importance over the structure of the hind coxæ, we would, before long, have to discuss as to which of the three forms of structure of the middle coxal cavities is the higher and which the lower. The facts as generalized are very peculiar; thus we find that the greater part of the Carabidæ have the coxal cavities formed by only two pieces; that the smaller first or fragmentary series of the Carabidæ, together with the first or smaller and fragmentary series of the Dytiscidæ, and the whole (?) of the Cicindelidæ have these cavities formed by three pieces; while the greater part of the mass of the Dytiscidæ, including the higher forms of the family, have four pieces entering into the formation of these parts. Now, as the Cicindelidæ are, on the whole, the highest of the families of predaceous Coleoptera, as they have fewer pieces to form the cavities than have the Dytisci complicati, it would appear that cavities formed by a small number of pieces were characteristic of a higher grade of organization than those with more pieces in their composition; but against this must be set the fact, that the higher Dytiscidæ have more pieces in these cavities than have the lower Dytiscidæ. It would thus appear that however important may be the structure of these cavities as a means of classification, it is not at present in relation with general perfection of the organization. And the explanation of the anomaly may probably be found in the fact that the mode of formation of these parts was determined at a very early period of the development, and when the present gradations as to higher and lower did not exist. That the primitive condition of these parts of the thorax and legs may possibly have been extremely different to what we find it at present, may be inferred by an examination of *Blatta* in the Orthoptera, where we find the coxæ to be enormous in size, while the thoracic pieces are correspondingly reduced; now, although this is a very

different condition to what we find existing in the predaceous Coleoptera, yet there is reason to think that the coxæ of these beetles are now smaller than they were formerly, and that the condition of these parts in the insects we now call Carabidæ and Dytiscidæ may in far distant periods have been more similar to what still exists in *Blatta* than is at present the case, and this will afford a clue to the modes of growth that have preceded the present structural conditions: and ultimately enable us to determine which of these are higher, which lower.

The Haliplidæ were formerly included among the Dytiscidæ, but their separation was suggested by Leconte, and has been effected by C. J. Thomson. Schaum included them again in the Dytiscidæ, remarking however (*Insect. Deutsch.* I, pt. 2, pp. 9 and 10), "that their legs are not swimming legs in shape, but only by ciliation, and that they differ so much from the true Dytiscidæ in the insertion of the antennæ and the number of their joints that they could be erected into a peculiar family, were it not for the fact that *Pelobius* existed to unite the two groups together." This latter remark of Schaum's I fail to understand: There is no sense in which *Pelobius* can be correctly said to unite (or be a connecting link between) the Haliplidæ and Dytiscidæ. It is true that it is doubtful whether *Pelobius* should be included in the Dytiscidæ at all, but it does not approximate in the slightest degree to any of the special peculiarities of the Haliplidæ; and it does not follow that because neither of them is Dytiscidæ therefore they are allied. To include the Haliplidæ in one family with the Dytiscidæ, while these latter are kept separate from the Carabidæ is certainly an erroneous course, for the Haliplidæ not only fail to possess the peculiar coxa of Dytiscidæ, but have in fact that part modified from the Carabideous type of structure in a totally different direction from what the Dytiscidæ have, and cannot therefore be classed with these. It is true they exhibit the important peculiarity of glabrous antennæ, and that they share this in common with the Dytiscidæ, but this, although it may be a sufficient reason for separating them from the Carabidæ, is not of itself enough to warrant their union with the Dytiscidæ. While should the glabrous antennæ be considered insufficient (when this part has been sufficiently studied in the Carabidæ), to warrant their isolation, then they must be classed as a group of Carabidæ,* but not with the Dytiscidæ.

The Dytiscidæ show but little approximation to any other beetles, besides those already alluded to. The other two families of water beetles, Gyrinidæ and Hydrophilidæ, are so distinct that no one in later times thinks of classifying them together.

* I may here notice, though foreign to my immediate subject, that the Haliplidæ differ from the Carabidæ, in the structure of the front of the head, and in the insertion of the antennæ, and approach in these respects to the Cicindelidæ.

NOTES ADDED IN PRESS.

Hydroporus niger, Say (No. 622), and *Hydroporus dichrous*, Melsh. (No. 620).—There is considerable doubt whether I have correctly identified these two species, and it will be found an advantage therefore that the original descriptions are also reproduced, (Nos. 1491 and 1361, respectively.)

Hydroporus orientalis, Clk. (No. 287).—The identification of the species described under this No. with Clark's description is an error: the insect Clark had in view was a species of *Hydrovatus*; Clark's description is given in the Appendix, No. 1411. The name of No. 287 should therefore read "*Bidessus orientalis*, n.sp.," and "*Clk., M.C.*," should be deleted.

Hydrovatus maculatus.—This name occurs in the appendix of unrecognized descriptions (No. 1452), as well as in the body of the memoir (No. 182); although this is the result of negligence on my part, I do not think it necessary at present to propose an alteration in the name of No. 182, for it appears to me possible that the two descriptions may really pertain to the same species.

Dytiscus obscurus.—This name is twice used, viz., for Nos. 130, and 782; priority gives the name to No. 130, and No. 782 will therefore take the name of *Colymbetes quadriguttatus*, Lac. (*Faun. Ent. Par.*, p. 316.)

Dytiscus interruptus.—This name also is twice used, viz., for Nos. 128, and 1066; for the latter species therefore the name "*Aedius interruptus*, Aubé," may be adopted.

Kaltenbach (Reise Novara, II, p. 23), records the occurrence of *Eristes* (*Eumetis* Redt.) in New Zealand. This, if correct, would be of considerable interest; but as errors so frequently occur from the fact that voyaging collectors visit Australia and New Zealand in one voyage, the record must be corroborated before being relied on.

Since my paper was read to the Society, I have received from Dr. John Sahlberg a copy of his important memoir on Siberian Coleoptera, "*Bidrag till Nordvestra Sibiriens Insektfauna*, Kongl. Svenska vetak. handl.," vol. 17, No. 4. (The extract bears date 1880, but I believe was not published till the middle of 1881.) This work records a considerable number of species of *Dytiscidae* found by the author during his travels in these regions in 1876 and 1877. A considerable portion of these are recorded in my paper, Dr. Sahlberg having been so kind as to forward me beforehand a list for the purpose. Several new species are described in the memoir, viz., *Ciclambus unguicularis*, *Hydroporus intermedius*, *Hydroporus punctipennis*, *Hydroporus anescens*, *Hydroporus pectoralis* (*nec* Motsch.), *Hydroporus obovatus*, *Hydroporus sibiricus*, *Gaurodytes punctipennis*, *Gaurodytes nigripalpis*, *Gaurodytes amnicola*, and *Gaurodytes slozovi*. . . . Of these *Ciclambus unguicularis*=*C. sahlbergi*, No. 407, *huj. op.* Sahlberg's name

having to sink in consequence of its prior use by Crotch. *Hydroporus sibiricus* is described by me under the same name (No. 583), and *Gaurodytes nigripalpis* is I believe the species I have characterized as *Agabus borealis* (No. 707), in this case, Dr. Sahlberg's name has the priority. The rest of the Scandinavian describer's new species are unknown to me. He also treats *Hydroporus nigritarsis* (No. 543), as a variety of *H. bilineatus*, which, as already suggested by me, is probably correct.

In my remarks on *Hydroporini* (p. 928), I have stated that in this aggregate it is only in the genus *Hydroporus* that the intercoxal process of the metasternum connects with the mesosternal fork. I have, however, found by dissection of *Hyphidrus decoratus* (No. 388), that the connexion in question also exists in this species, which must therefore be separated from the *Cœlambii*. The contact is however of the most minute and imperfect character, and would not justify (even if other characters were left out of consideration) the location of the species in *Hydroporus*. As there are several American species I have not been able to examine, that may possibly present an approximate structure, I shall not formally propose a new generic name for this insect till more thorough investigation has been made.

Dr. Horn has just published in the *Trans. Am. Ent. Soc.*, July, 1881, pp. 91 to 196, an important paper on the genera of Carabidae, in which he moreover discusses the classification of the families of Carnivorous Coleoptera. I am very glad to find that he is in accord with the views I have expressed here and previously (in *Compt. rend. Soc. Belg.*, XXIII, p. cxlvii.), as to the removal of the *Halipini* and *Pelobius* from the *Dytiscidae*. The talented American entomologist does not, however, agree with me as to locating *Amphizoa* in the *Dytiscidae*, and he has made known to us a striking observation that has an important bearing on this point, viz., that in the wonderful Carabideous genus *Mormolyce* the intermediate coxal cavities are formed as they are in the series *Dytisei complicati*. When I exposed (*ante*, p. 846, *et seq.*), my reasons for placing *Amphizoa* at the head of the series just named, I concluded with saying, "as there are no Carabidae having the middle coxal cavities formed as they are in *Amphizoa*;" Dr. Horn's unexpected discovery has rendered this premiss incorrect, and greatly invalidated the most important of the facts to which I appealed, and I think therefore at present it would be better to remove *Amphizoa* from the *Dytiscidae*, and treat it in the same manner as *Pelobius*. I do not agree however with the elevation of these isolated intermediate forms into families equivalent with such a vast complex as the Carabidae, but as I am about to dilate on this elsewhere, it is here only necessary for me to make known the modification of my views that Dr. Horn's discovery has necessitated.

TABLE
OF
CLASSIFICATION.

		Dytisci fragmentati.	
3	Species = Pelobius.	NOTERINI.	NOTERIDÆ.
1	Species = Notoniterus.		
5	Species = Hydrocoptus.		
1	Species = Pronoterus.		
6	Species = Synchorus.		
6	Species = Noterus.		
1	Species = Colpinus.	SERPINSI.	
3	Species = Suphis.		
11	Species = Canthidrus.	HYDROANTHINI.	
12	Species = Hydrocanthus.		
1	Species = Macrovelinus.	VATEINI.	
1	Species = Vateilus.		
1	Species = Derovatellus.		
83	Species = Laccophilus.	LACCOPHINI.	
1	Species = Neptosternus.		
3	Species = Amphizoa.		
13	Species = Hydrovatus.	HYDROVATINI.	
1	Species = Quela.		
1	Species = Heterhydrus.	BIDESSINI.	
5	Species = Pachydrus.		
13	Species = Desmopacharia.		
84	Species = Bidessus.		
1	Species = Huxellhydrus.		
1	Species = Tyndallhydrus.		
1	Species = Andes.		
1	Species = Hydropeplus.		
1	Species = Trinosque.		
1	Species = Coelhydrus.	HYDRIINI.	
1	Species = Darwinhydrus.		
26	Species = Hyphidrus.	HYDROPORIDÆ.	
10	Species = Sternoprisus.		
3	Species = Hyphoporus.		
3	Species = Paroset.		
6	Species = Heterhydrus.		
43	Species = Culembus.		
1	Species = Chostonectes.		
8	Species = Antiporus.		
8	Species = Neeterisoma.		
6	Species = Macroporus.		
45	Species = Dromoctes.		
155	Species = Hydroporus.		

CLASSIFICATION.

Dytisci
complicati.

1 Species == Hydrotripes.			
1 Species == Metronectes.			
96 Species == Agabus.			
1 Species == Hyblonomia.			
13 Species == Platynectes.			
2 Species == Leuconectes.			
3 Species == Agamocerus.			
1 Species == Agabinus.			
3 Species == Platambus.			
24 Species == Hybius.			
92 Species == Copelatus.			
7 Species == Aglymbus.			
2 Species == Laconectes.			
1 Species == Agabetes.			
3 Species == Matus.			
3 Species == Coptotomus.			
5 Species == Laucetes.			
2 Species == Scutopterus.			
40 Species == Rhantus.			
18 Species == Colymbetes.			
2 Species == Meladema.			
			COLYMBETINI.
3 Species == Hydrophes.			
22 Species == Dytiscus.			
			DYTISCI.
1 Species == Procladius.			
46 Species == Hydraticus.			
			HYDRATICI.
6 Species == Acilius.			
14 Species == Thermonectes.			
4 Species == Ethionectes.			
10 Species == Soudracottus.			
1 Species == Rhantatus.			
11 Species == Graphoderes.			
			THERMONECTINI.
2 Species == Erytes.			
5 Species == Spenceihydrus.			
3 Species == Boncodytes.			
16 Species == Megadytes.			
53 Species == Cylister.			
			CYLISTERI.
			HYDRATICIDÆ.

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EXPLANATION OF PLATES.

PLATE VII.

- Fig. 1. Uppersurface of head of *Cybister* (*Dytiscus ræselii*, Fab.)
- Fig. 2. Undersurface of head of *Cybister* (*Dytiscus ræselii*, Fab.): *a*, inflexed angle of epieranium, bearing the antennal cavity; *b*, eye; *c*, maxillary cleft; *d*, gula; *e*, suture between proto-cranium and epieranium. (The artist in endeavouring to make the drawing of this figure look less diagrammatic has diminished its anatomical value; the curved line extending across the front of gula, and also the second transverse line behind the eye, indicate not sutures but merely depressions of the surface).
- Fig. 3. Anterior portion of body of *Pelobius*: (after Regimbart).
- Fig. 4. Anterior portion of body of the *Dytiscidae*: (after Regimbart).
- Fig. 5. Inner face of labrum of *Dytiscus* (*D. marginalis*, L.), after Schödte, Dan., El., Table XXI, c.; (showing conical prominences and commencement of œsophageal membrane).
- Fig. 6. Right mandible of *Dytiscus* (*D. marginalis*, L.), after Schödte, Dan., El., Table XXI, a, b.; *a*, upper face; *b*, under face.
- Fig. 7. Left maxilla of *Dytiscus* (*D. marginalis*, L.), „ „ „ „ c, d; the right hand fig. is as seen from beneath; the left hand fig. as seen from above, with maxillary fringe omitted; *a*, leathery basal portion of inner lobe; *β*, squama; *γ*, stipes; *δ*, hollow for palpus: (in these figs. the extremity of the inner lobe should be more abruptly curved).
- Fig. 8. Labium (outer face) of *Dytiscus* (*D. marginalis*, L.), after Schödte, Dan., El., Tab. XXI, f.; (in this fig. the supports of the labial palpi should be emarginate).
- Fig. 9. Labium (outer face) of *Cybister* (*D. ræselii*, Fab.)
- Fig. 10. Labium of *Dytiscus* (*D. marginalis*, L.), after Schödte, Dan., El. XXI, g, h. Right-hand fig., inner face, *a*, œsophageal piece uniting by a curve with its fellow of opposite side; *β*, fulcrum or support; *γ*, stipes or stem; *ξ*, paraglossa. Left-hand fig., right side of ligula, removed with labial palpus, and seen externally; *a*, œsophageal piece; *β*, fulcrum; *γ*, stipes, (this and the preceding seen without cilia); *δ*, support of palpus; *ε*, membranous piece connecting *γ* and *δ*; *ξ*, paraglossa.
- Fig. 11. Antenna of *Cybister* (*D. ræselii*).
- Fig. 12. Antenna of *Hydrovatus aristidis* ♂.
- Fig. 13. Antenna of *Noterus levis* ♂ (after Mignaux, the joints are rather too elongate).
- Fig. 14. Lateral aspect of undersurface of prothorax of *Cybister* (*D. ræselii*); *a*, medisternum; *b*, prosternal process; *c*, episternum; *d*, epimeron; *e*, inflexed portion of pronotum; *f*, depression for reception of front coxa.
- Fig. 15. Lateral aspect of undersurface of prothorax of *Hyphydrus* (*Dytiscus ovatus*, L.), lettering as in Fig. 14.
- Fig. 16. Middle of prosternum of *Hyphydrus* (*Dytiscus ovatus*, L.); *a*, medisternum; *b*, prosternal process; *c*, coxal depression.
- Fig. 17. Prosternal process of *Hydrocanthus*, (*H. atripennis*).

- Fig. 18. Prosternal process of Canthydrus, (*C. grammicus*).
- Fig. 19. Prosternal process of Hydrovatus.
- Fig. 20. Prosternal process of Platyneetes.
- Fig. 21. Prosternal process of Neptosternus.
- Fig. 22. Prosternal process of Laccophilus (*Dytiscus maculosus*, Germ.)
- Fig. 23. Mesosternum of *Dytiscus* (*D. marginalis*, L.): *a*, episternum; *b*, epimeron; *c*, portion of margin of middle coxal cavity; *d*, medisternum.
- Fig. 24. Mesosternum of *Hydrocanthus* (*H. atripennis*), one side removed; lettering as in fig. 23.
- Fig. 25. Middle coxal cavity looked into, and seen laterally, of *Eretes*: *a*, mesosternum; *b*, metasternum; *c*, vacant space forming a foramen of communication with the cavity of other side of body.
- Fig. 26. Same parts in *Hydaticus rimosus*.
- Fig. 27. Same parts in *Deroneetes* (*Dytiscus assimilis*, Payk.)
- Fig. 28. Same parts in *Deroneetes* (*Hydroporus luctuosus*, Aubé).
- Fig. 29. Same parts in *Hydroporus* (*Hyphydrus memnonius*, Nic.)
- Fig. 30. Diagram of pieces surrounding middle coxal cavity in *Hydrocanthus* (*Dytisci fragmenti*); *a*, mesosternum (medisternum); *b*, its episternum; *c*, its epimeron; *d*, episternum of metasternum, with exposed and thickened anterior margin simulating an additional piece; *e*, metasternum; *f*, coxal cavity.
- Fig. 31. Similar diagram of *Laccophilus* (also *Dytisci fragmenti*).
- Fig. 32. Similar diagram of *Colymbetes* (*Dytisci complicati*), but with epipleura represented; *a*, mesosternum; *b*, its episternum; *c*, epipleura; *d*, metathoracic episternum with incrassate and exposed anterior border; *e*, metasternum; *f*, coxal cavity; *g*, mesothoracic epimeron.
- Fig. 33. Diagram of the middle of undersurface in *Silphomorpha* (*Carabidae*, *Pseudomorphiini*); *a*, mesosternum proper (medisternum); *b*, its episternum; *c*, its epimeron; *d*, metasternum; *e*, its episternum; *f*, its epimeron; *g*, internal lamina of hind coxa; *h*, external lamina of hind coxa; *i*, first ventral segment; *k*, middle coxal cavity.
- Fig. 34. Diagram of same parts in *Procrustes* (*Carabidae*, *Carabini*); in this the parts of the side pieces usually covered by the wingcases are introduced; and *f* indicates the external portion of the metathoracic episternum to which the membranous epimeron is attached, the suture between these two pieces being really placed on the inner face of the episternum and thus concealed; otherwise lettering as in fig. 33.
- Fig. 35. Diagram of same parts in *Cylobister* (*Dytiscus roseii*); the lateral portions are covered by the wingcase when this is closed; lettering as in fig. 33.
- Fig. 36. Metasternum and hind coxæ of *Amphizoa*.
- Fig. 37. *Idem* „ *Pelobius*.
- Fig. 38. *Idem* „ *Suphis*.
- Fig. 39. *Idem* „ *Noterus*.
- Fig. 40. *Idem* „ *Hydrovatus*.
- Fig. 41. *Idem* „ *Queda*.
- Fig. 42. *Idem* „ *Laccophilus*.
- Fig. 43. *Idem* „ *Hyphydrus*, on the right side of this figure, the first ventral segment, and the external parts of the pieces usually concealed by the wingcase are introduced.
- Fig. 44. Metasternum and hind coxæ of *Methles*.
- Fig. 45. One side of metasternum and hind coxa of *Cœlaubus*.
- Fig. 46. Hind coxa of *Hydroporus*.
- Fig. 47. *Idem* of *Paroster*.

- Fig. 48. Internal laminae of hind coxae of *Hydroporus diversicornis*.
 Fig. 49. *Idem* „ „ *Hydroporus oblongus*.
 Fig. 50. *Idem* „ „ *Agabus* (*Dytiscus brunneus*).
 Fig. 51. *Idem* „ „ *Agabus* (*Dytiscus bipustulatus*).
 Fig. 52. *Idem* „ „ *Platambus* (*Dytiscus maculatus*).
 Fig. 53. *Idem* „ „ *Agabinus*.
 Fig. 54. *Idem* „ „ *Copelatus*.
 Fig. 55. *Idem* „ „ *Agabetes*.
 Fig. 56. External lamina and wing of metasternum of *Agabus* (*Dytiscus uliginosus*).
 Fig. 57. „ „ „ „ *Agabus* (*Dytiscus abbreviatus*).
 Fig. 58. „ „ „ „ *Platambus* (*Dytiscus maculatus*).
 Fig. 59. „ „ „ „ *Copelatus*.
 Fig. 60. Hind coxa and one side of metasternum of *Prodatiscus*.
 Fig. 61. „ „ „ „ *Hydatiscus*.
 Fig. 62. „ „ „ „ *Thermonectes*.
 Fig. 63. „ „ „ „ *Aeilius*.
 Fig. 64. „ „ „ „ *Eretes*.

PLATE VIII.

- Fig. 65. Lateral view of articulations at side of breast of *Eretes*; *a*, metathoracic episternum; *b*, metathoracic epimeron; *c*, 1st ventral segment; *d*, hind coxa; *e*, wing of metasternum: in this fig. and in fig. 66, the portion on the left of the dotted line is covered by the wing-case in the condition of repose.
- Fig. 66. Lateral view of articulations at side of breast of *Cybister* (*Dytiscus reselii*, Fab.); lettering as in preceding fig.
- Fig. 67. Ventral segments of *Dytiscus* (*D. marginalis*).
- Fig. 68. *Idem* „ „ *Pelobius* (*Dytiscus tardus*.)
- Fig. 69. Dorsal aspect of middle and hind body of *Cybister* (*Dytiscus reselii*, Fab.), with the left wing-case and wing removed; *a*, right wing-case; *b*, scutellum; *c*, mesonotum; *d*, point of articulation of wing-case; *e*, angle of mesothoracic episternum; *f*, upper edge of mesothoracic epimeron; *g*, upper (semicorneous) portion of metathoracic episternum; *h*, idem of metathoracic epimeron; *i*, line of attachment of wing; *k*, pieces of metanotum; *l*, trochanter of articulation between various pieces; *m*, hind border of metanotum, where is situate the metathoracic breathing aperture; 1 to 8, dorsal plates of hind-body or abdomen; 1* to 6*, upper edges of ventral plates of hind-body; *s*¹ to *s*, abdominal stigmata or breathing apertures.
- Fig. 70. Superior oblique lateral view of right side of hind-body, and metasterno-coxal articulation of *Dytiscus latissimus*; *a*, portions of metanotum; *b*, metathoracic epimeron; *c*, angle of hind-coxa; *d*, metathoracic stigma; *e*, side piece of first ventral segment; *f*, stigmatic rugae; *g*, first abdominal stigma; 1 to 8, dorsal plates of hind-body: this diagram is made from a specimen distended by stuffing with cotton-wool, so that the membranous portions are shown as fully as the corneous.
- Fig. 71. Outline of front foot of *Ulyphidrus* ♂. (*Dytiscus ovatus*, L.)
- Fig. 72. Outline of front foot of *Hydroporus* ♂.
- Fig. 73. Outline of front foot of *Necterosoma*.
- Fig. 74. Anterior tibia and tarsus of *Noterus* ♂ (after Schödlte, Dan. El. XVIII, k).

- Fig. 75. Anterior tarsus seen laterally of *Noterus* ♂ (after Schiödte, Dan. El. XVIII, i).
- Fig. 76. Under surface of front tarsus ♂ of *Laccophilus* (after Schiödte, Dan. El. XVIII, t).
- Fig. 77. Front tarsus ♂ of *Agabus* (*Dytiscus chalconotus*), (after Schiödte, Dan. El. XIX, a*).
- Fig. 78. Upper surface of front tarsus of *Eretes* ♂.
- Fig. 79. Under surface " *idem*.
- Fig. 80. Right front tibia and tarsus of *Eretes* ♀.
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PLATES IX TO XVIII.

These Plates represent figures of one or more species of each genus of the Dytiscidæ; as the figures are all numbered, and the numbers with the names are given at the foot of each plate, it is not necessary to repeat the names here.

INDEX.

This index contains an alphabetical reference to the species descriptions included in the previous Memoir, and also a set of references to complete a connection between the nomenclature of the Munich Catalogue of Coleoptera, of Aubé's *Species générale des Hydrocanthares*, and that of this Memoir. It also includes certain other synonyms, such as some of date subsequent to the Munich Catalogue, &c. Synonyms are indicated by the sign =. The names used by me in the Memoir for species I have characterised *ex visu* have no author's name suffixed; but in the case of the names of species whose descriptions are here merely reproduced, the author's name is appended. The reference number in all these cases is not that of the page, but the ordinal number of the description. The names used in the synthetical portion of the work are also included in the index, and in their case the reference is made to the page where they are dealt with, and the letter "p." is prefixed to the number to indicate this.

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Agabus magellanicus, Mun. Cat. =	1238	Agabus taeniatus, Aubé =	701
Agabus marginalis	684	Agabus taeniolatus, Mun. Cat. =	701
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Copelatus duodecimstriatus	837	Copelatus striatulus	852
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<i>Cybister prolixus</i>	1125	<i>Dytiscus alpinus</i>	529
<i>Cybister prosterno viridis</i> , Orm.	1282	<i>Dytiscus angustior</i>	791
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<i>Dytiscus brunneus</i>	688	<i>Dytiscus inaequalis</i>	381
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<i>Dytiscus capricornis</i>	21	<i>Dytiscus interruptus</i> Sturm (v. p. 973) =	1066
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<i>Dytiscus chalconotus</i>	739	<i>Dytiscus levigatus</i>	1106
<i>Dytiscus cicurus</i>	956	<i>Dytiscus lauro</i>	979
<i>Dytiscus cinereus</i>	1088	<i>Dytiscus lapponicus</i>	1002
<i>Dytiscus circumcinctus</i>	995	<i>Dytiscus latissimus</i>	1003
<i>Dytiscus circumflexus</i>	1001	<i>Dytiscus latro</i>	999
<i>Dytiscus circumscriptus</i>	1061	<i>Dytiscus latus</i>	1105
<i>Dytiscus clavicornis</i>	20	<i>Dytiscus leander</i>	1032
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<i>Dytiscus confusus</i> , Motsch.	1287	<i>Dytiscus maculatus</i>	778
<i>Dytiscus congener</i>	706	<i>Dytiscus maculosus</i>	92
<i>Dytiscus conspersus</i>	714	<i>Dytiscus marginalis</i>	994
<i>Dytiscus cordieri</i> , Aubé	1288	<i>Dytiscus marginatus</i>	582
<i>Dytiscus costalis</i> , Fab. =	1116	<i>Dytiscus marginicollis</i>	989
<i>Dytiscus crux</i>	549	<i>Dytiscus mediatus</i>	1057
<i>Dytiscus dauricus</i>	998	<i>Dytiscus nebulosus</i>	713
<i>Dytiscus decempunctatus</i>	763	<i>Dytiscus nigrita</i>	561
<i>Dytiscus depressus</i>	472	<i>Dytiscus notatus</i>	917
<i>Dytiscus didymus</i>	705	<i>Dytiscus obscurus</i>	130
<i>Dytiscus difinis</i> , Lec. =	998	<i>Dytiscus obscurus</i> , Marsh. (v. p. 973) =	782
<i>Dytiscus dimidiatus</i>	991	<i>Dytiscus octopustulatus</i> , Fab.	1294
<i>Dytiscus dolabratus</i>	971	<i>Dytiscus ovatus</i>	347
<i>Dytiscus dorsalis</i>	630	<i>Dytiscus paludosus</i>	680
<i>Dytiscus duodecimpustulatus</i>	462	<i>Dytiscus palustris</i>	612
<i>Dytiscus elongatus</i>	728	<i>Dytiscus parallelogrammus</i>	416
<i>Dytiscus erythrocephalus</i>	614	<i>Dytiscus parvulus</i>	996
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<i>Dytiscus extenuans</i> , Walk.	1289	<i>Dytiscus persicus</i>	993
<i>Dytiscus fasciatus</i>	1053	<i>Dytiscus piccatus</i>	1000
<i>Dytiscus fasciatus</i> , Fab. =	1073	<i>Dytiscus picipes</i> , Fab. =	409
<i>Dytiscus fasciatocollis</i>	1086	<i>Dytiscus pictus</i>	548
<i>Dytiscus fasciventris</i>	985	<i>Dytiscus pisum</i>	992
<i>Dytiscus femoralis</i>	726	<i>Dytiscus planus</i>	575
<i>Dytiscus feuestratus</i>	802	<i>Dytiscus posticatus</i>	875
<i>Dytiscus festivus</i>	1074	<i>Dytiscus punctulatus</i>	983
<i>Dytiscus fibriolatus</i>	1119	<i>Dytiscus pustulatus</i>	945
<i>Dytiscus flavipes</i>	547	<i>Dytiscus reticulatus</i> , Fab. =	386
<i>Dytiscus flavocinctus</i> , Guer.	1290	<i>Dytiscus roselii</i>	1169
<i>Dytiscus fraternus</i>	1055	<i>Dytiscus ruficollis</i> , Fab. =	1020
<i>Dytiscus frontalis</i> , Motsch.	1291	<i>Dytiscus rufifrons</i>	615
<i>Dytiscus fuliginosus</i>	792	<i>Dytiscus seminiger</i>	1006
<i>Dytiscus fuscipennis</i>	752	<i>Dytiscus septentrionalis</i> , Aubé =	1002
<i>Dytiscus fusco-striatus</i> , Motsch.	1292	<i>Dytiscus serricornis</i>	755
<i>Dytiscus fuscus</i>	973	<i>Dytiscus sharpi</i>	984
<i>Dytiscus geminus</i>	269	<i>Dytiscus signatus</i>	926
<i>Dytiscus grammicus</i>	1028	<i>Dytiscus stagnalis</i>	1071
<i>Dytiscus granularis</i>	541	<i>Dytiscus sticticus</i>	1095
<i>Dytiscus grapii</i>	943	<i>Dytiscus striatus</i>	972
<i>Dytiscus griseostriatus</i>	493	<i>Dytiscus striolatus</i>	716
<i>Dytiscus guttatus</i>	670	<i>Dytiscus sturmi</i>	737
<i>Dytiscus guttiger</i>	788	<i>Dytiscus sublimbatus</i>	990
<i>Dytiscus habilis</i>	986	<i>Dytiscus sulcatus</i>	1052
<i>Dytiscus halensis</i>	528	<i>Dytiscus tardus</i>	1
<i>Dytiscus hamatus</i> , Montr. =	1140		

<i>Dytiscus tataricus</i> , Gobl.	1295	<i>Herophydrus verticalis</i>	376
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<i>Dytiscus vexatus</i>	997	<i>Hydaticus agaboides</i>	1034
<i>Dytiscus vittatus</i>	1049	<i>Hydaticus amazonicus</i>	1018
<i>Dytiscus vittiger</i>	741	<i>Hydaticus americanus</i>	1009
<i>Dytiscus wasastjerna</i>	720	<i>Hydaticus apicalis</i> , Boh.	1305
<i>Dytiscus zonatus</i>	1091	<i>Hydaticus aruspex</i> , Clk.	1306
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<i>Eriglenus unguicularis</i> , Th. =	700	<i>Hydaticus bakewelli</i>	1077
<i>Eumectes australis</i> , Mun. Cat. =	1096	<i>Hydaticus bilamatus</i>	1021
<i>Eumectes conicollis</i> , Woll. =	1095	<i>Hydaticus bilineatus</i> , Aubé =	1091
<i>Eumectes griseus</i> , Aubé =	1095	<i>Hydaticus bimarginatus</i> , Aubé =	1015
<i>Eumectes helvolicus</i> , Klug. =	1095	<i>Hydaticus bipunctatus</i> , Wehncke =	1049
<i>Eumectes occidentalis</i> , Er. =	1095	<i>Hydaticus bivittatus</i>	1045
<i>Eumectes punctatus</i> , Zoub. =	1095	<i>Hydaticus bowringi</i>	1048
<i>Eumectes punctipennis</i> , Mael. =	1095	<i>Hydaticus brunnipennis</i> , Aubé =	1084
<i>Eumectes sticticus</i> , Mun. Cat. =	1095	<i>Hydaticus caffer</i> , Boh.	1308
<i>Eumectes subcoriaceus</i> , Woll. =	1095	<i>Hydaticus capicola</i>	1043
<i>Eumectes subdiaphanus</i> , Woll. =	1095	<i>Hydaticus chevrolati</i> , Aubé =	1073
<i>Eumectes succinctus</i> , Kl. =	1095	<i>Hydaticus cinetipennis</i>	1008
<i>Gaurodytes zeneolus</i> , Cr. =	696	<i>Hydaticus cinereus</i> , Aubé =	1088
<i>Gaurodytes angusticollis</i> , Sahl.	1297	<i>Hydaticus concolor</i>	1031
<i>Gaurodytes biguttulus</i> , Th. =	697	<i>Hydaticus congestus</i> , Klug	1309
<i>Gaurodytes boreellus</i> , Sahl. =	697	<i>Hydaticus consanguineus</i>	1037
<i>Gaurodytes clypealis</i> , Th. =	712	<i>Hydaticus daemeli</i>	1044
<i>Gaurodytes coriaceus</i> , Sahl. =	706	<i>Hydaticus decorus</i>	1025
<i>Gaurodytes disintegratus</i> , Crotch =	702	<i>Hydaticus dejeani</i>	1075
<i>Gaurodytes dissimilis</i> , Sahl. =	707	<i>Hydaticus dinicutoides</i>	1023
<i>Gaurodytes inscriptus</i> , Crotch =	706	<i>Hydaticus discoidalis</i> , Hope	1310
<i>Gaurodytes intersectus</i> , Crotch =	667	<i>Hydaticus discoidens</i> , Walk. =	1021
<i>Gaurodytes lecontei</i> , Crotch =	731	<i>Hydaticus dorsiger</i>	1029
<i>Gaurodytes leptopsis</i> , Lec.	1298	<i>Hydaticus dregei</i>	1027
<i>Gaurodytes longulus</i> , Lec.	1299	<i>Hydaticus duplex</i>	1047
<i>Gaurodytes lutosus</i> , Crotch	1300	<i>Hydaticus exclamationis</i>	1050
<i>Gaurodytes minimi</i> , Sahl. =	721	<i>Hydaticus fabricii</i>	1035
<i>Gaurodytes obovatus</i> , Sahl.	1301	<i>Hydaticus fasciatocollis</i> , Mun. Cat. =	1086
<i>Gaurodytes obscuripennis</i> , Sahl.	1302	<i>Hydaticus fasciatus</i> , Mun. Cat. =	1073
<i>Gaurodytes ovalis</i> , Sahl.	1303	<i>Hydaticus festivus</i> , Aubé =	1074
<i>Gaurodytes ovoideus</i> , Crotch =	724	<i>Hydaticus flavocinctus</i> , Mun. Cat. =	1290
<i>Gaurodytes septemscriptus</i> , Sahl. =	670	<i>Hydaticus flavolineatus</i>	1024
<i>Gaurodytes strigulosus</i> , Crotch =	717	<i>Hydaticus fractifer</i> , Walk. =	1021
<i>Gaurodytes suturalis</i> , Crotch	1304	<i>Hydaticus fulvopunctatus</i> , Clk.	1311
<i>Gaurodytes thomsoni</i> , Sahl. =	706	<i>Hydaticus fusciventris</i> , Reiche =	1032
<i>Gaurodytes walsinghami</i> , Crotch =	723	<i>Hydaticus galla</i>	1042
<i>Gaurodytes zetterstedti</i> , Th. =	733	<i>Hydaticus goryi</i>	1020
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<i>Graphoderes perplexus</i>	1089	<i>Hydaticus hylneri</i> , Aubé =	1006
<i>Graphoderes piciventris</i>	1093	<i>Hydaticus incaustus</i> , Aubé =	1040
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<i>Herophydrus obcyrus</i>	379	<i>Hydaticus japonicus</i> , Sharp =	1087
<i>Herophydrus oscillator</i>	380	<i>Hydaticus jucundus</i>	1026

<i>Hydaticus levipennis</i>	1010	<i>Hydrocanthus fasciatus</i> , Steud.	1325
<i>Hydaticus lateralis</i> , Cast.	1313	<i>Hydrocanthus flavus</i>	70
<i>Hydaticus leander</i> , Aubé =	1032	<i>Hydrocanthus funebris</i>	79
<i>Hydaticus leveillei</i> , Regt. =	1319	<i>Hydrocanthus grandis</i> , Mun. Cat. =	81
<i>Hydaticus liber</i> , Mun. Cat. =	1084	<i>Hydrocanthus guttula</i>	54
<i>Hydaticus luzonicus</i>	1022	<i>Hydrocanthus haagi</i>	68
<i>Hydaticus maculatus</i>	1082	<i>Hydrocanthus indicus</i>	72
<i>Hydaticus madagascariensis</i> , Aubé	1311	<i>Hydrocanthus iricolor</i>	74
<i>Hydaticus marmoratus</i> , Aubé =	1069	<i>Hydrocanthus lævigatus</i> , Mun. Cat. =	76
<i>Hydaticus matruclis</i>	1030	<i>Hydrocanthus lineatus</i> , Wehm.	1326
<i>Hydaticus mixtus</i> , Blanchd. =	1073	<i>Hydrocanthus luctuosus</i>	60
<i>Hydaticus modestus</i>	1007	<i>Hydrocanthus morsbaebi</i>	57
<i>Hydaticus nauzieli</i> , Fairm.	1315	<i>Hydrocanthus nauulus</i> , Lec.	1327
<i>Hydaticus nigro-marmoratus</i> , Clk.	1316	<i>Hydrocanthus nigrinus</i>	47
<i>Hydaticus nigrovittatus</i> , Clk.	1317	<i>Hydrocanthus notula</i>	55
<i>Hydaticus pacificus</i> , Aubé =	1021	<i>Hydrocanthus oblongus</i>	73
<i>Hydaticus paganus</i> , Clk.	1318	<i>Hydrocanthus orientalis</i> , Wehneke =	62
<i>Hydaticus palliatus</i>	1010	<i>Hydrocanthus politus</i>	69
<i>Hydaticus parallelus</i>	1014	<i>Hydrocanthus quadrivittatus</i>	64
<i>Hydaticus petiti</i>	1051	<i>Hydrocanthus rubripes</i> , Boh.	1328
<i>Hydaticus philippensis</i> , Wehm.	1319	<i>Hydrocanthus rugosopunctatus</i>	19
<i>Hydaticus piceus</i>	1013	<i>Hydrocanthus semperi</i>	52
<i>Hydaticus ponticus</i>	1033	<i>Hydrocanthus socius</i> , Sahl.	1329
<i>Hydaticus punctipennis</i> , Th. =	1012	<i>Hydrocanthus tenuicornis</i>	39
<i>Hydaticus rectangulus</i>	1046	<i>Hydrocanthus testaceus</i> , Boh.	1330
<i>Hydaticus rectus</i>	1017	<i>Hydrocanthus texanus</i>	73
<i>Hydaticus riantoides</i>	1036	<i>Hydrocanthus weisei</i>	63
<i>Hydaticus richli</i> , Wehm.	1320	<i>HYDROCOPTUS</i>	p. 834
<i>Hydaticus rimosus</i>	1016	<i>Hydrocoptus bivittis</i>	12
<i>Hydaticus roehasi</i> , Montr. =	1083	<i>Hydrocoptus dauricus</i> , Motsch.	1331
<i>Hydaticus ruficollis</i> , Mun. Cat. =	1020	<i>Hydrocoptus mixtus</i> , Motsch.	1332
<i>Hydaticus rufulus</i> , Aubé =	1035	<i>Hydrocoptus obscuripes</i> , Motsch.	1333
<i>Hydaticus seminiger</i> , Mun. Cat. =	1006	<i>Hydrocoptus rufulus</i> , Motsch.	1334
<i>Hydaticus servillianus</i>	1039	<i>Hydrocoptus seriatus</i>	11
<i>Hydaticus signatipennis</i>	1083	<i>Hydrocoptus subfasciatus</i>	8
<i>Hydaticus sobrinus</i>	1041	<i>Hydrocoptus vittatus</i>	10
<i>Hydaticus stagnalis</i> , Aubé =	1011	<i>Hydroglyphus flaviculus</i> , Motsch.	1335
<i>Hydaticus subfasciatus</i>	1019	<i>HYDROPEPLUS</i>	p. 855
<i>Hydaticus transversalis</i> , Aubé =	1012	<i>Hydroporomorpha parallela</i> , Bab.	1336
<i>Hydaticus trifasciatus</i> , Mun. Cat. =	1296	<i>HYDROPORIDES</i>	p. 950
<i>Hydaticus usheri</i> , Clk.	1321	<i>HYDROPORINI</i>	p. 928
<i>Hydaticus variegatus</i>	1063	<i>HYDROPORUS</i>	p. 868
<i>Hydaticus verecundus</i> , Clk.	1322	<i>Hydroporus aberrans</i> , Clk.	1337
<i>Hydaticus vittatus</i> , Aubé =	1049	<i>Hydroporus acaroides</i>	389
<i>Hydaticus xanthomelas</i> , Brullé	1323	<i>Hydroporus acuminatellus</i> , Fairm. =	489
<i>Hydaticus zonatus</i> , Aubé =	1091	<i>Hydroporus acutangulus</i>	596
<i>HYDERODES</i>	p. 903	<i>Hydroporus addendus</i>	523
<i>Hyderodes collaris</i>	982	<i>Hydroporus adumbratus</i> , Clk.	1338
<i>Hyderodes crassus</i>	981	<i>Hydroporus advena</i>	649
<i>Hyderodes shuckhardi</i>	980	<i>Hydroporus æquinoctialis</i>	525
<i>Hydrachna australasiae</i> , Mun. Cat. =	2	<i>Hydroporus alpinus</i>	318
<i>Hydrachna nigra</i> , Mun. Cat. =	3	<i>Hydroporus alienus</i> , Sharp =	533
<i>Hydrachna tarda</i> , Mun. Cat. =	1	<i>Hydroporus alpinus</i> , Mun. Cat. =	529
<i>HYDROCANTHINI</i>	p. 920	<i>Hydroporus alticola</i>	590
<i>HYDROCANTHUS</i>	p. 839	<i>Hydroporus amabilis</i>	293
<i>Hydrocanthus advena</i>	80	<i>Hydroporus amandus</i> , Lec.	1339
<i>Hydrocanthus asperatus</i>	18	<i>Hydroporus americanus</i>	619
<i>Hydrocanthus atripennis</i>	77	<i>Hydroporus analis</i>	579
<i>Hydrocanthus auitus</i> , Regt.	1324	<i>Hydroporus angularis</i> , Klug.	1340
<i>Hydrocanthus australasiae</i>	71	<i>Hydroporus angulipennis</i> , Peyr.	1341
<i>Hydrocanthus badenii</i> , Wehneke =	55	<i>Hydroporus angustatus</i>	605
<i>Hydrocanthus buqueti</i> , Mun. Cat. =	42	<i>Hydroporus anticus</i>	509
<i>Hydrocanthus delilii</i>	78	<i>Hydroporus antilotus</i>	572
<i>Hydrocanthus deyrollei</i>	82	<i>Hydroporus apicatus</i>	244

<i>Hydroporus arcticus</i>	628	<i>Hydroporus corpulentus</i>	411
<i>Hydroporus assimilis</i> , Mun. Cat. =	471	<i>Hydroporus corsicus</i>	565
<i>Hydroporus astur</i>	589	<i>Hydroporus costipennis</i>	251
<i>Hydroporus atomus</i> , Regt.	1342	<i>Hydroporus cribratellus</i> , Fairm.	1356
<i>Hydroporus atriceps</i> , Crotch =	598	<i>Hydroporus cribratus</i>	242
<i>Hydroporus aulicus</i>	495	<i>Hydroporus crotchii</i>	477
<i>Hydroporus avunculus</i> , Fairm. =	610	<i>Hydroporus erux</i> , Mun. Cat. =	549
<i>Hydroporus axillaris</i>	626	<i>Hydroporus cuspidatus</i> , Aubé =	180
<i>Hydroporus badius</i> , Clk. =	191	<i>Hydroporus cyrius</i> , Regt.	1357
<i>Hydroporus lacteus</i>	489	<i>Hydroporus darwini</i>	437
<i>Hydroporus bakewellii</i> , Clk.	1343	<i>Hydroporus danicus</i> , Mun. Cat. =	1331
<i>Hydroporus basalis</i>	280	<i>Hydroporus davisii</i>	531
<i>Hydroporus basinotatus</i> , Reiche	1344	<i>Hydroporus decemlineatus</i> , Man. =	409
<i>Hydroporus bellifragi</i>	644	<i>Hydroporus decemsignatus</i> , Clk.	1358
<i>Hydroporus bicarinatus</i>	247	<i>Hydroporus decipiens</i>	580
<i>Hydroporus bicostatus</i>	460	<i>Hydroporus decoratus</i> , Mun. Cat. =	388
<i>Hydroporus bifasciatus</i> , Mael.	1345	<i>Hydroporus delectus</i> , Woll.	1359
<i>Hydroporus bifidus</i> , Say.	1316	<i>Hydroporus delicatulus</i>	268
<i>Hydroporus bilamatus</i> , Chev. =	544	<i>Hydroporus depressicollis</i> , Ros.	1360
<i>Hydroporus bilineatus</i>	542	<i>Hydroporus depressus</i> , Mun. Cat. =	472
<i>Hydroporus bivittis</i> , Mun. Cat. =	12	<i>Hydroporus despectus</i>	584
<i>Hydroporus bistrigatus</i>	299	<i>Hydroporus dichrous</i>	620
<i>Hydroporus blakei</i>	434	<i>Hydroporus dichrous</i> , Melsh.	1361
<i>Hydroporus bombycinus</i>	457	<i>Hydroporus difformis</i>	645
<i>Hydroporus bonariensis</i> , Steidl.	318	<i>Hydroporus dimidiatus</i>	517
<i>Hydroporus bomairei</i> , Fairm. =	576	<i>Hydroporus discedens</i> , Regt. =	611
<i>Hydroporus boristhenicus</i> , Hoch.	1347	<i>Hydroporus discicollis</i> , Say	1362
<i>Hydroporus bramiani</i> , Schauf. =	456	<i>Hydroporus discoideus</i> , Lec.	1363
<i>Hydroporus brevis</i>	562	<i>Hydroporus discretus</i>	564
<i>Hydroporus brucki</i>	577	<i>Hydroporus dispar</i>	410
<i>Hydroporus brunneipennis</i> , Mael. =	447	<i>Hydroporus dispersus</i>	241
<i>Hydroporus bryanstoni</i>	238	<i>Hydroporus diversicornis</i>	496
<i>Hydroporus caliginosus</i> , Lec.	1348	<i>Hydroporus dissimilis</i>	408
<i>Hydroporus canaliculatus</i>	487	<i>Hydroporus distinguendus</i> , Desb. =	610
<i>Hydroporus cantabricus</i>	556	<i>Hydroporus dohrni</i>	250
<i>Hydroporus carabus</i>	309	<i>Hydroporus dorsalis</i> , Mun. Cat. =	630
<i>Hydroporus carbonarius</i> , Clk.	1349	<i>Hydroporus dorsoquadriatus</i> , Fairm.	1364
<i>Hydroporus carinatus</i>	484	<i>Hydroporus dubius</i> , Aubé	1365
<i>Hydroporus caspius</i>	421	<i>Hydroporus duodecimlineatus</i>	550
<i>Hydroporus colatus</i>	632	<i>Hydroporus duodecimmaculatus</i>	463
<i>Hydroporus ceresyi</i>	490	<i>Hydroporus duodecimpustulatus</i> , Mun. Cat. =	462
<i>Hydroporus charlotti</i> , Clk.	1350	<i>Hydroporus duplex</i>	431
<i>Hydroporus chilensis</i>	310	<i>Hydroporus duponti</i>	325
<i>Hydroporus ciniceoides</i>	501	<i>Hydroporus elongatulus</i>	601
<i>Hydroporus ciuctellus</i>	255	<i>Hydroporus elegantulus</i> , Boh.	1366
<i>Hydroporus clarki</i>	469	<i>Hydroporus emilianus</i> , Clk.	1367
<i>Hydroporus cleopatrae</i> , Peyr.	1351	<i>Hydroporus emteagrammus</i>	419
<i>Hydroporus clypealis</i>	508	<i>Hydroporus errans</i>	571
<i>Hydroporus collaris</i>	638	<i>Hydroporus eruditus</i>	511
<i>Hydroporus collaris</i> , Boh. =	1377	<i>Hydroporus erythrocephalus</i> , Mun. Cat. =	614
<i>Hydroporus collaris</i> , Hope	1352	<i>Hydroporus erythrostomus</i> , Mann. =	318
<i>Hydroporus compactus</i>	360	<i>Hydroporus escheri</i>	536
<i>Hydroporus compunctus</i> , Woll.	1353	<i>Hydroporus evanescens</i> , Boh.	1368
<i>Hydroporus concinnus</i>	497	<i>Hydroporus exiguus</i>	251
<i>Hydroporus confluentis</i> , Mun. Cat. =	423	<i>Hydroporus exilis</i> , Boh.	1369
<i>Hydroporus confusus</i>	270	<i>Hydroporus eximius</i>	522
<i>Hydroporus confusus</i> , Luc. =	1395	<i>Hydroporus exornatus</i>	264
<i>Hydroporus conicus</i>	610	<i>Hydroporus fairmairei</i> , Lep.	1370
<i>Hydroporus conoidens</i> , Lec. =	646	<i>Hydroporus faretus</i>	384
<i>Hydroporus consimilis</i>	510	<i>Hydroporus femoralis</i>	428
<i>Hydroporus contractulus</i> , Mann.	1354	<i>Hydroporus fenestratus</i>	467
<i>Hydroporus convexus</i>	237	<i>Hydroporus ferrugineus</i>	636
<i>Hydroporus copelatooides</i>	648	<i>Hydroporus flavicollis</i>	258
<i>Hydroporus coquerelii</i> , Fairm.	1355	<i>Hydroporus flaviculus</i> , Mun. Cat. =	1335

<i>Hydroporus flavofasciatus</i>	311	<i>Hydroporus interpulsus</i> , Walk.	1387
<i>Hydroporus flavipes</i> , Mun. Cat. =	547	<i>Hydroporus interrogationis</i>	429
<i>Hydroporus flaviventris</i>	420	<i>Hydroporus ionicus</i>	610
<i>Hydroporus formosus</i>	535	<i>Hydroporus japonicus</i>	286
<i>Hydroporus fortis</i>	618	<i>Hydroporus jucundus</i>	551
<i>Hydroporus fossulipennis</i> , Macl. =	(♀) 354	<i>Hydroporus kingi</i> , Clk.	1388
<i>Hydroporus foveiceps</i> , Macl. =	444	<i>Hydroporus kolstromi</i>	629
<i>Hydroporus fractilinea</i> , Solsk.	1371	<i>Hydroporus kraatzii</i>	631
<i>Hydroporus fractus</i>	516	<i>Hydroporus laccophilinus</i> , Lec.	1389
<i>Hydroporus fraternus</i>	405	<i>Hydroporus lacustris</i>	319
<i>Hydroporus fryi</i> , Clk.	1372	<i>Hydroporus letabilis</i>	62
<i>Hydroporus funereus</i>	524	<i>Hydroporus laticulcus</i>	545
<i>Hydroporus fuscatus</i>	320	<i>Hydroporus laeviventris</i>	473
<i>Hydroporus fuscipennis</i>	567	<i>Hydroporus lanceolatus</i> , Walk.	1390
<i>Hydroporus gardneri</i>	147	<i>Hydroporus lapponum</i> , Mun. Cat. =	617
<i>Hydroporus gemellus</i>	301	<i>Hydroporus lareynoi</i>	454
<i>Hydroporus geminus</i> , Mun. Cat. =	269	<i>Hydroporus latebrosus</i>	642
<i>Hydroporus genei</i>	539	<i>Hydroporus latebrosus</i> , Lec.	1391
<i>Hydroporus gigas</i>	427	<i>Hydroporus lateralis</i> , Boh.	1392
<i>Hydroporus gilberti</i>	433	<i>Hydroporus latifrons</i>	623
<i>Hydroporus glabriusculus</i>	595	<i>Hydroporus latipes</i> Brullé	1393
<i>Hydroporus goudotii</i>	262	<i>Hydroporus latissimus</i>	240
<i>Hydroporus gracilis</i> , Wehn.	1373	<i>Hydroporus latus</i>	461
<i>Hydroporus granarius</i>	322	<i>Hydroporus lautus</i>	418
<i>Hydroporus granularis</i> , Mun. Cat. =	541	<i>Hydroporus lepidus</i> , Mun. Cat. =	531
<i>Hydroporus granum</i>	235	<i>Hydroporus leprieuri</i> , Reiche =	536
<i>Hydroporus gravidus</i> , Clk.	1374	<i>Hydroporus lemceus</i>	415
<i>Hydroporus griseostriatus</i> , Mun. Cat. =	493	<i>Hydroporus libens</i>	526
<i>Hydroporus gyllenhalli</i>	599	<i>Hydroporus liliputanus</i>	316
<i>Hydroporus habichaunni</i> , Wehn.	1375	<i>Hydroporus limbatus</i>	578
<i>Hydroporus halensis</i> , Mun. Cat. =	528	<i>Hydroporus lineatus</i> , Mun. Cat. =	537
<i>Hydroporus hamatus</i>	445	<i>Hydroporus lineolatus</i>	278
<i>Hydroporus hamulatus</i> , Mun. Cat. =	274	<i>Hydroporus lineolatus</i> , Lec. =	590
<i>Hydroporus hansardii</i> , Clk.	1376	<i>Hydroporus lituratus</i>	569
<i>Hydroporus hardsyi</i>	643	<i>Hydroporus lobatus</i>	504
<i>Hydroporus hirtellus</i>	588	<i>Hydroporus longicornis</i>	554
<i>Hydroporus hispanicus</i> , Rosenh. =	(♀) 455	<i>Hydroporus longiusculus</i>	593
<i>Hydroporus hottentottus</i> , Har.	1377	<i>Hydroporus longulus</i> , Muls.	1394
<i>Hydroporus howitti</i>	444	<i>Hydroporus lucasi</i> , Reiche	1395
<i>Hydroporus humeralis</i>	609	<i>Hydroporus luctuosus</i>	466
<i>Hydroporus humilis</i> , Klug.	1378	<i>Hydroporus lugubris</i>	647
<i>Hydroporus hybridus</i>	549	<i>Hydroporus luridus</i> , Macl. =	299
<i>Hydroporus hydropticus</i>	383	<i>Hydroporus lutulentus</i> , Lec. =	587
<i>Hydroporus hypohydrioides</i> , Perr. =	378	<i>Hydroporus lutescens</i>	398
<i>Hydroporus ignotus</i> , Muls.	1379	<i>Hydroporus lynceus</i>	506
<i>Hydroporus inaequalis</i> , M. C. =	381	<i>Hydroporus macularis</i> , Lec. =	318
<i>Hydroporus incognitus</i>	611	<i>Hydroporus magensis</i> , Clk.	1396
<i>Hydroporus inconspicetus</i> , Lep.	1380	<i>Hydroporus malacca</i> , Clk.	191
<i>Hydroporus inconspicuus</i> , Lec. =	308	<i>Hydroporus marginatus</i> , Mun. Cat. =	582
<i>Hydroporus incrassatus</i> , Th.	1381	<i>Hydroporus marklini</i> , Mun. Cat.	396
<i>Hydroporus inelliciensis</i> , Walk.	1382	<i>Hydroporus martinii</i>	485
<i>Hydroporus ineptus</i>	570	<i>Hydroporus masculinus</i> , Crotch.	1397
<i>Hydroporus infacetus</i> , Clk.	1383	<i>Hydroporus mastersi</i>	284
<i>Hydroporus infaustus</i> , Clk.	1384	<i>Hydroporus maurus</i>	573
<i>Hydroporus infirmus</i> , Boh.	1385	<i>Hydroporus meadfooti</i>	364
<i>Hydroporus inaequalis</i> , Mun. Cat. =	381	<i>Hydroporus medialis</i>	401
<i>Hydroporus inornatus</i>	621	<i>Hydroporus melanarius</i>	555
<i>Hydroporus inquinatus</i> , Boh.	1386	<i>Hydroporus melancholicus</i> , Motsch.	1398
<i>Hydroporus insignis</i>	474	<i>Hydroporus melanocephalus</i> , Mun. Cat. =	598
<i>Hydroporus insectus</i>	574	<i>Hydroporus mollitus</i>	502
<i>Hydroporus insculptilis</i>	374	<i>Hydroporus monnionis</i> , Mun. Cat. =	558
<i>Hydroporus insularis</i>	557	<i>Hydroporus meridionalis</i>	540
<i>Hydroporus integer</i>	499	<i>Hydroporus mexicanus</i>	527
<i>Hydroporus intermixtus</i>	289	<i>Hydroporus miersi</i> , Mun. Cat. =	313

<i>Hydroporus minutissimus</i>	267	<i>Hydroporus piceus</i> , Steph.	1414
<i>Hydroporus mixtus</i>	520	<i>Hydroporus picicornis</i>	637
<i>Hydroporus mixtus</i> (Motsch.) Mun. Cat. =	1332	<i>Hydroporus picipes</i> , Mun. Cat.	409
<i>Hydroporus modestus</i>	627	<i>Hydroporus pictodes</i>	256
<i>Hydroporus moestus</i>	456	<i>Hydroporus pictus</i> , Mun. Cat. =	548
<i>Hydroporus moestus</i> , Walk.	1399	<i>Hydroporus piochardi</i> , Regt.	1415
<i>Hydroporus monilicornis</i> Sahl.	1400	<i>Hydroporus planatus</i> , Mann.	1416
<i>Hydroporus monticola</i> , Sharp =	555	<i>Hydroporus planus</i> , Mun. Cat. =	575
<i>Hydroporus morio</i>	598	<i>Hydroporus platynotus</i>	459
<i>Hydroporus multiguttatus</i> , Regt.	1401	<i>Hydroporus pleipennis</i>	257
<i>Hydroporus multimaculatus</i>	365	<i>Hydroporus politus</i> , Mael.	1417
<i>Hydroporus musicus</i>	390	<i>Hydroporus polonicus</i>	406
<i>Hydroporus mutatus</i> , Har.	1102	<i>Hydroporus poreatus</i>	249
<i>Hydroporus nicobaricus</i> , Redt.	1403	<i>Hydroporus portmanni</i> , Clk.	1418
<i>Hydroporus nebulosus</i>	426	<i>Hydroporus productus</i> Fairm.	1119
<i>Hydroporus neglectus</i>	603	<i>Hydroporus proximus</i>	513
<i>Hydroporus neuter</i>	566	<i>Hydroporus pseudogenimus</i> , Regt.	1420
<i>Hydroporus nevadensis</i>	633	<i>Hydroporus puberulus</i> , Lec.	1421
<i>Hydroporus nigellus</i> , Mann. =	597	<i>Hydroporus pubescens</i> , Mun. Cat. =	568
<i>Hydroporus niger</i>	622	<i>Hydroporus pudicus</i> , Clk.	1422
<i>Hydroporus niger</i> , Say	1404	<i>Hydroporus pulcher</i>	498
<i>Hydroporus nigriceps</i>	576	<i>Hydroporus pulcher</i> , Motsch.	1423
<i>Hydroporus nigricollis</i> , Fairm. =	569	<i>Hydroporus pulcherrimus</i>	308
<i>Hydroporus nigrita</i> , Mun. Cat. =	561	<i>Hydroporus pullus</i>	321
<i>Hydroporus nigritarsis</i>	543	<i>Hydroporus pumilus</i>	263
<i>Hydroporus nigroadumbratus</i>	372	<i>Hydroporus punctatus</i>	382
<i>Hydroporus nigrolineatus</i> , Mun. Cat. =	419	<i>Hydroporus pustulatus</i>	186
<i>Hydroporus nivalis</i>	591	<i>Hydroporus pyrenaicus</i>	594
<i>Hydroporus notabilis</i> , Lec.	1405	<i>Hydroporus quinquelineatus</i> , Mun. Cat. =	387
<i>Hydroporus notatus</i>	600	<i>Hydroporus regularis</i>	634
<i>Hydroporus novemlineatus</i>	417	<i>Hydroporus republicanus</i>	512
<i>Hydroporus nubilis</i>	403	<i>Hydroporus reticulatus</i> , Mun. Cat. =	386
<i>Hydroporus nudatus</i> , Say	1406	<i>Hydroporus revelieri</i>	559
<i>Hydroporus obesus</i> , Lec. =	533	<i>Hydroporus rivalis</i> , Mun. Cat. =	583
<i>Hydroporus oblitus</i>	639	<i>Hydroporus roffi</i> , Clk.	1424
<i>Hydroporus oblongus</i>	646	<i>Hydroporus rotundatus</i> , Lec.	472
<i>Hydroporus obscurellus</i> , Lec. =	318	<i>Hydroporus rubescens</i>	9
<i>Hydroporus obscuripes</i> , Mun. Cat. =	1333	<i>Hydroporus rubripes</i>	616
<i>Hydroporus obscurus</i>	563	<i>Hydroporus ruficeps</i>	625
<i>Hydroporus obscurus</i> , Bab.	1407	<i>Hydroporus ruficeps</i> , Boh. =	1402
<i>Hydroporus obsoleteus</i>	635	<i>Hydroporus rufifrons</i> , Mun. Cat. =	615
<i>Hydroporus obtusipennis</i> , Sahl.	1408	<i>Hydroporus rufilabris</i>	624
<i>Hydroporus occidentalis</i>	553	<i>Hydroporus rufinasus</i> , Mann.	1425
<i>Hydroporus ocellatus</i>	552	<i>Hydroporus rufipes</i> , Moraw. =	616
<i>Hydroporus octopustulatus</i> , Mun. Cat. =	1294	<i>Hydroporus rufinus</i> , Aubé =	534
<i>Hydroporus opacus</i> , Welhcke.	1409	<i>Hydroporus rufulus</i> (Motsch.) Mun. Cat. =	1344
<i>Hydroporus opatrimus</i>	455	<i>Hydroporus rusticus</i>	586
<i>Hydroporus oppositus</i> , Say	1410	<i>Hydroporus sabaudus</i> , Fauv.	1426
<i>Hydroporus orientalis</i> (v. p. 973)	287	<i>Hydroporus saginatus</i>	412
<i>Hydroporus orientalis</i> , Clk.	1411	<i>Hydroporus sammarki</i> , Sahl. =	533
<i>Hydroporus ovoideus</i>	402	<i>Hydroporus sausi</i> , Aubé.	1427
<i>Hydroporus pallidulus</i>	422	<i>Hydroporus sardus</i>	486
<i>Hydroporus palustris</i> , Mun. Cat. =	612	<i>Hydroporus sancius</i>	266
<i>Hydroporus parallelogrammus</i> , Mun. Cat. =	416	<i>Hydroporus scalesianus</i>	604
<i>Hydroporus parallelus</i> , Sharp =	554	<i>Hydroporus scitulus</i> , Lec.	532
<i>Hydroporus parvicollis</i>	452	<i>Hydroporus scrutator</i>	505
<i>Hydroporus patruelis</i>	399	<i>Hydroporus scythus</i> , Schaum	488
<i>Hydroporus pectoralis</i> , Motsch.	1412	<i>Hydroporus sedilloti</i> , Regt.	1428
<i>Hydroporus peltatus</i>	507	<i>Hydroporus sellatus</i> , Lec.	1429
<i>Hydroporus penicillatus</i>	436	<i>Hydroporus semicellus</i> Walk.	1430
<i>Hydroporus pentagrammus</i>	271	<i>Hydroporus semimulum</i> , Lec.	1431
<i>Hydroporus perplexus</i>	385	<i>Hydroporus semirufus</i>	458
<i>Hydroporus persimilis</i> , Crotch	1413	<i>Hydroporus septentrionalis</i> , Mun. Cat. =	532
<i>Hydroporus picatus</i> , Kirb.	409	<i>Hydroporus sericatus</i> , Say	1432

<i>Hydroporus sericeus</i>	516	<i>Hydroporus wakefieldi</i>	430
<i>Hydroporus sexguttatus</i>	550	<i>Hydroporus wardii</i>	395
<i>Hydroporus sluckhardi</i>	298	<i>Hydroporus wollastoni</i>	441
<i>Hydroporus sibericus</i>	583	HYDROTRUPES	p. 875
<i>Hydroporus signatellus</i> , Klug =	272	<i>Hydrotrupes palpalis</i>	660
<i>Hydroporus signatus</i>	592	HYDROVATINI	p. 924
<i>Hydroporus similis</i> , Kirb. =	409	HYDROVATUS	p. 848
<i>Hydroporus sinuaticollis</i> , Clk. =	365	<i>Hydrovatus acuminatus</i>	191
<i>Hydroporus solieri</i>	371	<i>Hydrovatus acutus</i>	204
<i>Hydroporus solitarius</i>	521	<i>Hydrovatus aristilis</i>	190
<i>Hydroporus spadiceus</i>	377	<i>Hydrovatus badeni</i>	214
<i>Hydroporus stagnalis</i> , M.C. =	638	<i>Hydrovatus bonvouloirii</i>	220
<i>Hydroporus stearinus</i> , Kol.	1433	<i>Hydrovatus brevipes</i>	187
<i>Hydroporus steppensis</i>	488	<i>Hydrovatus carabus</i>	189
<i>Hydroporus striatellus</i>	494	<i>Hydrovatus castaneus</i>	217
<i>Hydroporus striatopunctatus</i>	518	<i>Hydrovatus clypealis</i>	179
<i>Hydroporus striola</i> , Mun. Cat. =	607	<i>Hydrovatus compactus</i>	215
<i>Hydroporus strigicollis</i>	276	<i>Hydrovatus compressus</i>	188
<i>Hydroporus strobili</i> , Steidl. =	318	<i>Hydrovatus confertus</i>	202
<i>Hydroporus subalpinus</i> , Th.	1434	<i>Hydrovatus crassulus</i>	206
<i>Hydroporus submonticus</i> , Th.	1435	<i>Hydrovatus cribratus</i>	201
<i>Hydroporus subtilis</i> , Lec.	1436	<i>Hydrovatus elevatus</i>	199
<i>Hydroporus subtonsus</i> , Lec.	1437	<i>Hydrovatus fasciatus</i>	194
<i>Hydroporus subtruncatus</i> , Fairm.	1438	<i>Hydrovatus ferrugatus</i> , Regt.	1450
<i>Hydroporus suturalis</i>	400	<i>Hydrovatus flammulatus</i>	181
<i>Hydroporus tarsatus</i>	90	<i>Hydrovatus fractus</i>	205
<i>Hydroporus tartaricus</i>	597	<i>Hydrovatus fulvescens</i>	192
<i>Hydroporus tauricus</i> , Motsch.	1439	<i>Hydrovatus fusculus</i>	193
<i>Hydroporus tenebrosus</i>	587	<i>Hydrovatus hornii</i> , Crotch	1451
<i>Hydroporus tenellus</i> , Clk.	1440	<i>Hydrovatus humilis</i>	198
<i>Hydroporus teres</i>	560	<i>Hydrovatus longicornis</i>	184
<i>Hydroporus terminalis</i>	640	<i>Hydrovatus maculatus</i>	182
<i>Hydroporus tessellatus</i>	464	<i>Hydrovatus maculatus</i> , Motsch.	1452
<i>Hydroporus tetragrammus</i> , Hoch.	1441	<i>Hydrovatus major</i>	221
<i>Hydroporus thermalis</i>	272	<i>Hydrovatus nigricans</i>	212
<i>Hydroporus thoreyi</i> , Clk.	1442	<i>Hydrovatus nigrita</i>	216
<i>Hydroporus tinctus</i> , Clk.	1443	<i>Hydrovatus obscurus</i> , Motsch.	1453
<i>Hydroporus trimaculatus</i>	329	<i>Hydrovatus obtusus</i>	210
<i>Hydroporus tristis</i> , Mun. Cat. =	602	<i>Hydrovatus opacus</i>	209
<i>Hydroporus truncatus</i> , Mann.	1444	<i>Hydrovatus ovalis</i>	196
<i>Hydroporus turbidus</i>	394	<i>Hydrovatus parallelus</i>	207
<i>Hydroporus turgidus</i> , Er. =	378	<i>Hydrovatus picipennis</i>	219
<i>Hydroporus umbrosus</i> , Mun. Cat. =	600	<i>Hydrovatus pictulus</i>	185
<i>Hydroporus unceifer</i>	432	<i>Hydrovatus politus</i>	211
<i>Hydroporus undecimlineatus</i>	439	<i>Hydrovatus pumilus</i>	208
<i>Hydroporus undecimlineatus</i> , Fairm.	1445	<i>Hydrovatus punctipennis</i> , Motsch.	1454
<i>Hydroporus undecimmaculatus</i> , Clk.	1446	<i>Hydrovatus rufescens</i> , Motsch.	1455
<i>Hydroporus undulatus</i>	503	<i>Hydrovatus seminarius</i> , Motsch.	1456
<i>Hydroporus unguicularis</i> , Crotch	1447	<i>Hydrovatus simplex</i>	183
<i>Hydroporus unistriatus</i> , Mun. Cat. =	261	<i>Hydrovatus sordidus</i>	197
<i>Hydroporus vagepictus</i>	613	<i>Hydrovatus subrotundatus</i> , Motsch.	1457
<i>Hydroporus variegatus</i>	481	<i>Hydrovatus subtilis</i>	203
<i>Hydroporus varius</i>	544	<i>Hydrovatus sumatrensis</i>	195
<i>Hydroporus venator</i>	581	<i>Hydrovatus tinctus</i>	200
<i>Hydroporus venustus</i> , Lec. =	519	<i>Hygrotus impressifrons</i> , Motsch.	1458
<i>Hydroporus vestitus</i> , Gebl.	1448	HYPHOPORUS	p. 859
<i>Hydroporus vicinus</i>	538	<i>Hyphoporus aper</i>	370
<i>Hydroporus vigilans</i>	465	<i>Hyphoporus elevatus</i>	369
<i>Hydroporus vilis</i>	641	HYPHYDRINI	p. 927
<i>Hydroporus vitiosus</i>	514	HYPHYDRUS	p. 857
<i>Hydroporus vittatipennis</i>	500	<i>Hyphydrus acuminatus</i>	246
<i>Hydroporus vittatus</i>	515	<i>Hyphydrus africanus</i>	337
<i>Hydroporus vitticollis</i> , Boh.	1449	<i>Hyphydrus australis</i>	358
<i>Hydroporus vittula</i>	608	<i>Hyphydrus austrocaledonicus</i> , Perr.	1459

<i>Hyphydrus bisulcatus</i> , Clk. =	354	<i>Hybius senescens</i>	790
<i>Hyphydrus blanchardi</i> , Clk. =	358	<i>Hybius apicalis</i>	804
<i>Hyphydrus caffer</i> , Boh.	1460	<i>Hybius badeni</i> , Wehn.	1470
<i>Hyphydrus caledoniæ</i> , Clk. =	358	<i>Hybius biguttulus</i> , Aubé =	797
<i>Hyphydrus cayennensis</i> , Cast.	1461	<i>Hybius cinctus</i>	803
<i>Hyphydrus circumflexus</i> , Klug	1462	<i>Hybius confusus</i>	800
<i>Hyphydrus contiguus</i>	357	<i>Hybius crassus</i>	787
<i>Hyphydrus crassus</i>	338	<i>Hybius discedens</i>	795
<i>Hyphydrus cuspidatus</i>	180	<i>Hybius fraterculus</i> , Mun. Cat. =	1228
<i>Hyphydrus decemmaculatus</i>	356	<i>Hybius hispanicus</i> , Sharp =	793
<i>Hyphydrus decoratus</i>	388	<i>Hybius ignarus</i>	789
<i>Hyphydrus distinctus</i>	341	<i>Hybius inversus</i>	785
<i>Hyphydrus eximius</i> , Clk. =	352	<i>Hybius kiesenwetteri</i> , Wehn.	1471
<i>Hyphydrus frontalis</i>	350	<i>Hybius laramæus</i>	799
<i>Hyphydrus globosus</i> , Aubé	1463	<i>Hybius limbatus</i>	794
<i>Hyphydrus grandis</i>	333	<i>Hybius meridionalis</i>	793
<i>Hyphydrus grossus</i>	342	<i>Hybius oblitus</i>	801
<i>Hyphydrus guineensis</i>	378	<i>Hybius oblongus</i> , Motsch. =	758
<i>Hyphydrus hamulatus</i>	274	<i>Hybius obtusus</i>	796
<i>Hyphydrus humeralis</i> , Clk. =	427	<i>Hybius ovatus</i> , Hoch.	1472
<i>Hyphydrus hyperboreus</i> , Gyll.	1461	<i>Hybius pleuriticus</i>	784
<i>Hyphydrus illigeri</i> , Perv.	1465	<i>Hybius quadrimaculatus</i>	786
<i>Hyphydrus impressus</i>	346	<i>Hybius sexdentatus</i> , Schiodte =	782
<i>Hyphydrus indicus</i>	353	<i>Hybius similis</i>	798
<i>Hyphydrus japonicus</i>	349	<i>Hybius suffusus</i> , Crotch	1473
<i>Hyphydrus johnsonii</i> , Clk.	1466	<i>Hybius subaneus</i>	783
<i>Hyphydrus leviventris</i>	351	<i>Hybius unguularis</i> , Mun. Cat. =	1256
<i>Hyphydrus lapponum</i>	617	<i>Hybius viridiæneus</i> , Crotch =	783
<i>Hyphydrus lugubris</i> de Borre	1467	HYBIUS M. C. = HYBIUS	
<i>Hyphydrus lyratus</i>	354	<i>Hyobius ater</i> , Mun. Cat. =	781
<i>Hyphydrus maculatus</i> , Barb.	1468	<i>Hyobius angustior</i> , Mun. Cat. =	791
<i>Hyphydrus madagascariensis</i>	345	<i>Hyobius fenestratis</i> , Mun. Cat. =	797
<i>Hyphydrus major</i>	334	<i>Hyobius fenestratus</i> , Mun. Cat. =	802
<i>Hyphydrus marklini</i>	396	<i>Hyobius fuliginosus</i> , Mun. Cat. =	792
<i>Hyphydrus menomonius</i>	558	<i>Hyobius guttiger</i> , Mun. Cat. =	788
<i>Hyphydrus mendozanus</i>	239	<i>Hyobius obscurus</i> , Mun. Cat. =	782
<i>Hyphydrus nigro-notatus</i> , Clk. =	354	<i>Hyobius picipes</i> , Mun. Cat. =	1244
<i>Hyphydrus rivalis</i>	533	LACCOECTUS	p. 894
<i>Hyphydrus obniger</i>	226	<i>Laccoeetus basalis</i>	904
<i>Hyphydrus orientalis</i>	352	<i>Laccoeetus fulvescens</i>	905
<i>Hyphydrus ovatus</i> , Mun. Cat. =	347	LACOPHILINI	p. 923
<i>Hyphydrus parvicollis</i>	335	LACOPHILUS	p. 841
<i>Hyphydrus pictus</i>	336	<i>Laccophilus addendus</i>	174
<i>Hyphydrus pubescens</i>	568	<i>Laccophilus adpersus</i> , Boh.	1474
<i>Hyphydrus pulchellus</i> , Clk. =	352	<i>Laccophilus americanus</i>	401
<i>Hyphydrus puncticollis</i>	344	<i>Laccophilus apicalis</i>	99
<i>Hyphydrus quinquelineatus</i>	387	<i>Laccophilus atristernalis</i>	104
<i>Hyphydrus rivalis</i>	533	<i>Laccophilus badeni</i>	108
<i>Hyphydrus rufoniger</i>	218	<i>Laccophilus baeri</i> , Regt.	1175
<i>Hyphydrus rufus</i> , Clk.	1469	<i>Laccophilus basalis</i>	168
<i>Hyphydrus scriptus</i>	310	<i>Laccophilus bicolor</i>	122
<i>Hyphydrus senegalensis</i>	223	<i>Laccophilus bifasciatus</i>	111
<i>Hyphydrus septentrionalis</i> ,	532	<i>Laccophilus brevicollis</i>	147
<i>Hyphydrus signatus</i>	345	<i>Laccophilus cayennensis</i> , Aubé	1476
<i>Hyphydrus stipes</i>	339	<i>Laccophilus chilensis</i>	165
<i>Hyphydrus strola</i>	607	<i>Laccophilus chinensis</i>	169
<i>Hyphydrus umbrinus</i>	606	<i>Laccophilus cingulatus</i>	167
<i>Hyphydrus ulfoanis</i>	213	<i>Laccophilus clarki</i>	163
<i>Hyphydrus variegatus</i>	348	<i>Laccophilus cognatus</i>	172
<i>Hyphydrus xanthomelas</i>	355	<i>Laccophilus complicatus</i>	151
HYBOSOMA	p. 886	<i>Laccophilus confusus</i>	102
<i>Hybosoma bifidus</i> , Crotch. =	757	<i>Laccophilus cyclepis</i>	150
<i>Hybosoma regularis</i> , Crotch. =	758	<i>Laccophilus decipiens</i>	93
HYBIUS	p. 890	<i>Laccophilus decoratus</i> , Boh.	1477

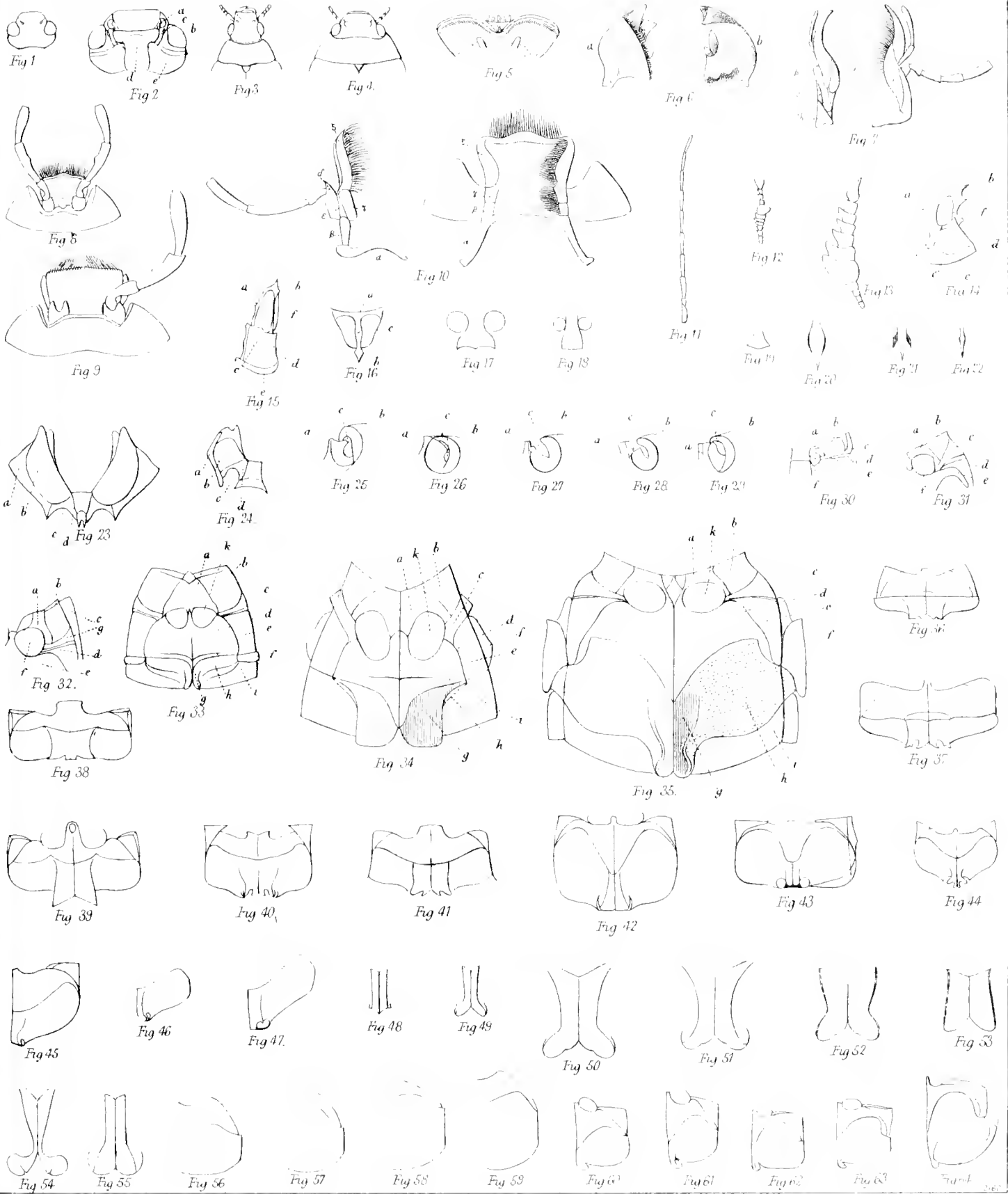
<i>Laccophilus derasus</i>	159	<i>Laccophilus solutus</i>	171
<i>Laccophilus difficilis</i>	131	<i>Laccophilus sordidus</i>	133
<i>Laccophilus discretus</i>	143	<i>Laccophilus strœhmi</i> , Th.	1489
<i>Laccophilus dispersus</i>	161	<i>Laccophilus sublineatus</i>	141
<i>Laccophilus elegans</i>	134	<i>Laccophilus subsignatus</i>	116
<i>Laccophilus fasciatus</i>	98	<i>Laccophilus suffusus</i>	107
<i>Laccophilus flavescens</i> , Motsch.	1478	<i>Laccophilus tarsalis</i>	106
<i>Laccophilus flexuosus</i>	156	<i>Laccophilus terminalis</i>	103
<i>Laccophilus fractus</i>	119	<i>Laccophilus testaceus</i> , Aubé =	128
<i>Laccophilus fumatus</i>	118	<i>Laccophilus traili</i>	114
<i>Laccophilus fusculus</i>	95	<i>Laccophilus transversalis</i> , Regt.	1490
<i>Laccophilus gentilis</i>	127	<i>Laccophilus transversus</i> , Motsch.	1191
<i>Laccophilus grammicus</i>	146	<i>Laccophilus truncatus</i> , Mann. =	93
<i>Laccophilus hyalinus</i> , Mun. Cat. =	130	<i>Laccophilus umbrinus</i> , Motsch.	1492
<i>Laccophilus hydaticoides</i> , Regt.	1479	<i>Laccophilus undatus</i>	123
<i>Laccophilus immundus</i>	140	<i>Laccophilus undulifer</i>	162
<i>Laccophilus inflatus</i> , Woll. =	128	<i>Laccophilus unifasciatus</i>	135
<i>Laccophilus insignis</i>	97	<i>Laccophilus uniformis</i> , Motsch.	1493
<i>Laccophilus interruptus</i> , Aubé =	128	<i>Laccophilus vagepictus</i>	120
<i>Laccophilus irroratus</i>	153	<i>Laccophilus variegatus</i> , Mun. Cat. =	155
<i>Laccophilus kobensis</i>	132	<i>Laccophilus venustus</i>	115
<i>Laccophilus lateralis</i>	148	<i>Laccophilus vermiculosus</i> , Gerst.	1494
<i>Laccophilus latifrons</i>	136	<i>Laccophilus wehnckeï</i>	114
<i>Laccophilus latipes</i>	125	<i>Laccophilus yvictæ</i> , Le Guil.	1495
<i>Laccophilus lewisius</i>	129	LANCETES	p. 897
<i>Laccophilus lineatus</i> , Aubé	1480	<i>Lancetes unguicularis</i>	914
<i>Laccophilus lituratus</i>	165	LEURONECTES	p. 887
<i>Laccophilus luctuosus</i>	149	<i>Leuronectes parallelus</i>	772
<i>Laccophilus luridus</i>	139	<i>Liopterus agilis</i> , Mun. Cat. =	825
<i>Laccophilus maculosus</i> , Mun. Cat. =	92	<i>Liopterus oblongus</i> , Aubé =	825
<i>Laccophilus mediælis</i>	154	MACROPORUS	p. 865
<i>Laccophilus mexicanus</i> , Aubé	1481	<i>Macroporus lateralis</i>	446
<i>Laccophilus minutus</i> , Mun. Cat. =	128	<i>Macroporus ruficeps</i>	449
<i>Laccophilus minutus</i> , Aubé	130	<i>Macroporus solidus</i>	448
<i>Laccophilus nigricans</i>	109	MACROVATELLUS	p. 840
<i>Laccophilus notatus</i>	117	<i>Macrovatellus lateralis</i>	83
<i>Laccophilus obesus</i>	124	<i>Macrovatellus marginalis</i>	86
<i>Laccophilus obtusus</i>	158	<i>Macrovatellus mexicanus</i>	87
<i>Laccophilus orientalis</i> , Aubé	1482	<i>Macrovatellus rudis</i>	84
<i>Laccophilus ornatus</i> , Aubé	1483	<i>Macrovatellus sahlbergi</i>	85
<i>Laccophilus ovatus</i>	137	<i>Macrovatellus ventralis</i>	89
<i>Laccophilus parvulus</i>	160	MATUS	p. 895
<i>Laccophilus pellucidus</i>	138	<i>Matus bicarinatus</i> , Mun. Cat. =	907
<i>Laccophilus pictipennis</i>	142	<i>Matus daemeli</i>	909
<i>Laccophilus pictus</i>	96	<i>Matus wingi</i>	908
<i>Laccophilus pœcilus</i> , Klug	1484	MEGADYTES	p. 917
<i>Laccophilus ponticus</i>	157	<i>Megadytes ducalis</i>	1118
<i>Laccophilus posticus</i>	132	<i>Megadytes expositus</i>	1103
<i>Laccophilus proteus</i> , Regt.	1485	<i>Megadytes flobri</i>	1169
<i>Laccophilus proximus</i>	94	<i>Megadytes fraternus</i>	1107
<i>Laccophilus pulicarius</i>	166	<i>Megadytes gravidus</i>	1115
<i>Laccophilus pumilio</i> , Lec.	1486	<i>Megadytes obesus</i>	1112
<i>Laccophilus quadrilineatus</i>	110	<i>Megadytes perplexus</i>	1114
<i>Laccophilus quadrimaculatus</i>	164	<i>Megadytes steinhelli</i>	1108
<i>Laccophilus quadrisignatus</i> , Aubé	1487	MELADEMA	p. 902
<i>Laccophilus quadrivittatus</i>	126	<i>Meladema coriacea</i>	978
<i>Laccophilus religatus</i>	173	METHLES	p. 873
<i>Laccophilus remator</i>	113	<i>Methles punctipennis</i>	659
<i>Laccophilus restrictus</i>	170	<i>Methles rectus</i>	658
<i>Laccophilus rivulosus</i> , Aubé	1488	<i>Methles spinosus</i>	657
<i>Laccophilus rotundatus</i>	121	METRONECTES	p. 875
<i>Laccophilus salvini</i>	100	NECTEROSOMA	p. 864
<i>Laccophilus siamensis</i>	145	<i>Necterosoma arcuatum</i>	443
<i>Laccophilus simplex</i>	112	<i>Necterosoma flavicolle</i> , Macl.	1496

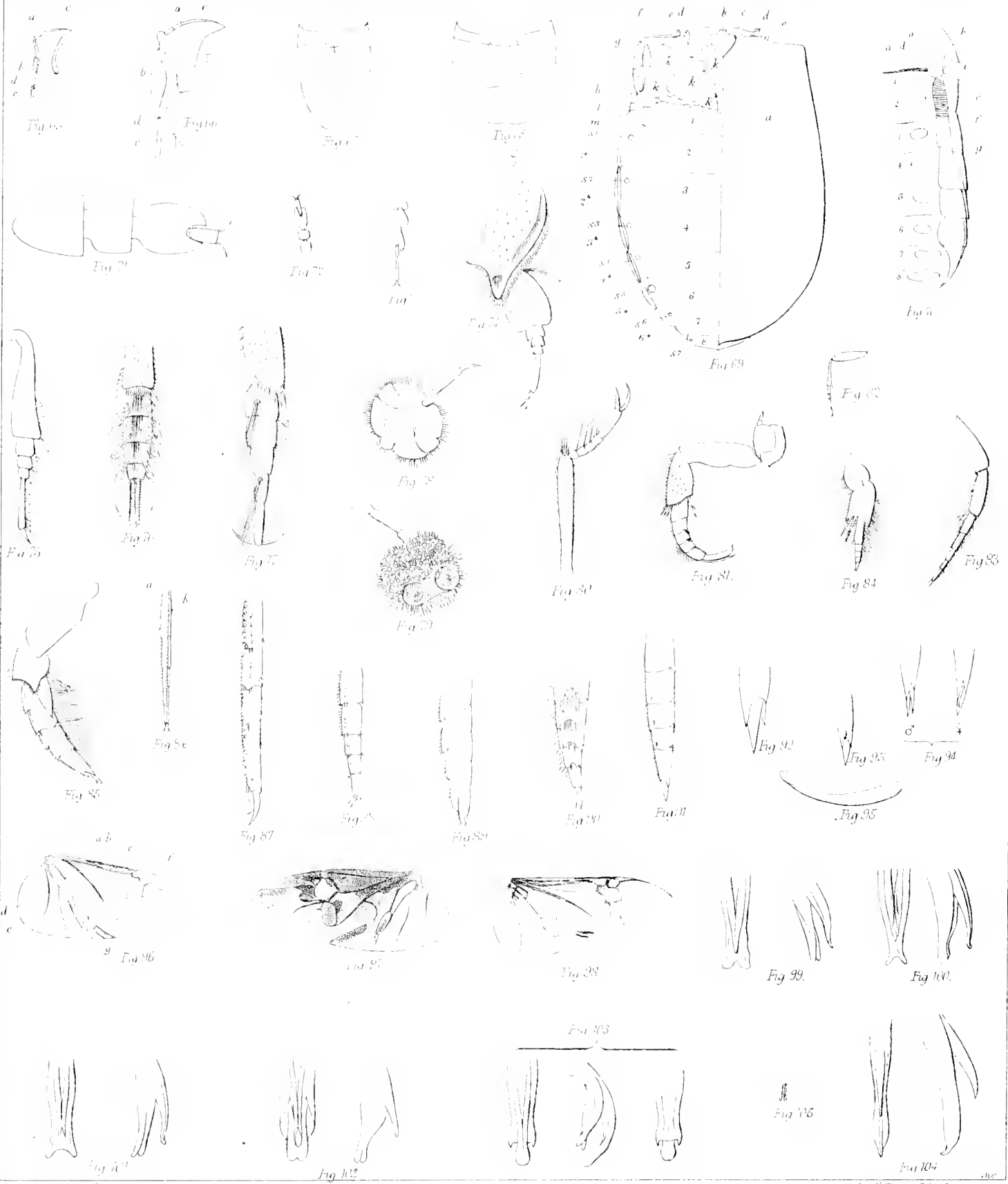
<i>Neeterosoma regulare</i>	442	<i>Rhantus angusticollis</i> , Mun. Cat. =	1211
<i>Neeterosoma schmeltzi</i>	438	<i>Rhantus binotatus</i> , Mun. Cat. =	935
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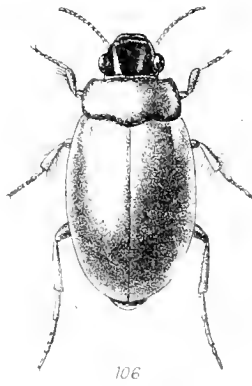
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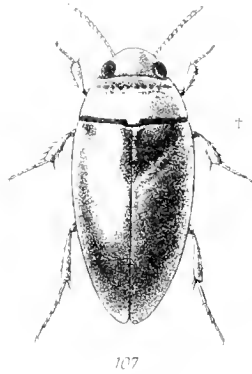
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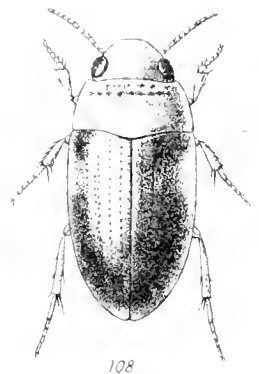




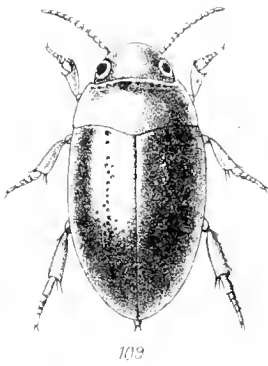
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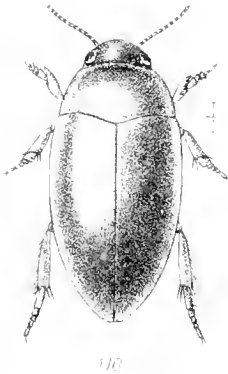
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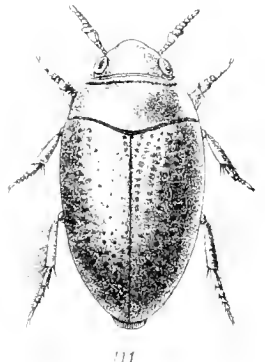
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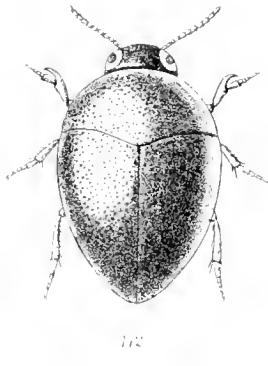
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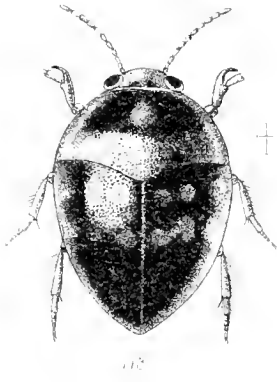
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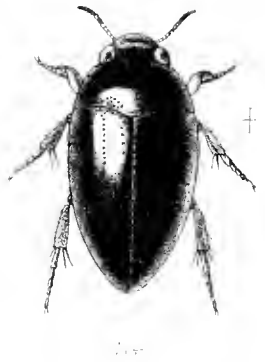
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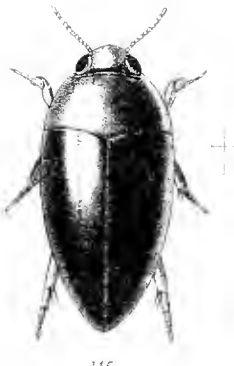
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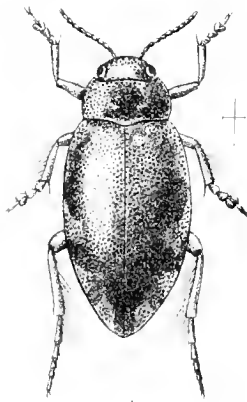
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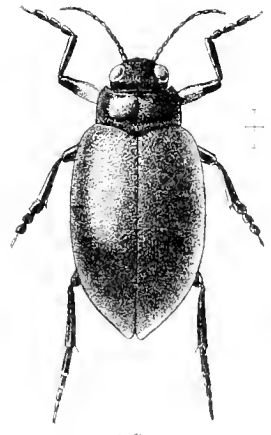
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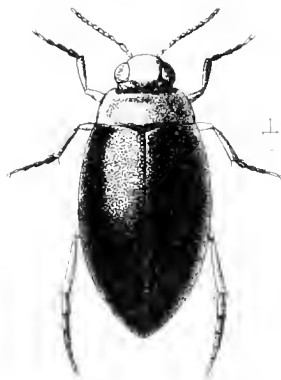


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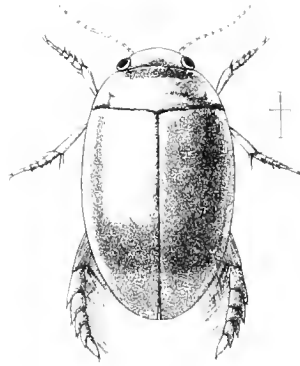
- 106 PELOBIUS (*Paustralis* Th.)
- 109 PRONOTERUS (*P. punctatus* !)
- 112 COLPIUS (*C. varians* Lec.)
- 115 HYDROCANTHUS (*Noterus grandis* Lap.)

- 107 NOTOMICRUS (*N. brevis* Gyll.)
- 110 SYNCHORUS (*S. dispar* Gyll.)
- 113 SUPHIS (*S. nitens* Gyll.)
- 116 MACROVATELLUS (*M. lateralis* Gyll.)

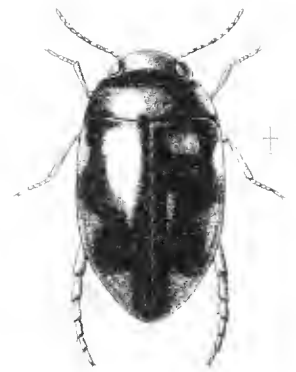
- 108 HYDROCYPTUS (*H. subbracatus* Gyll.)
- 111 NOTERUS (*N. distinctus* de Geer)
- 114 CANTHODRUS (*Hydrocanthus nigrinus* nudi)
- 117 VATELLUS (*Hydroporus tarsatus* Lap.)



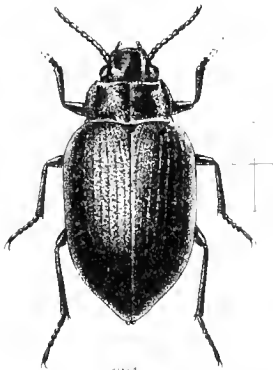
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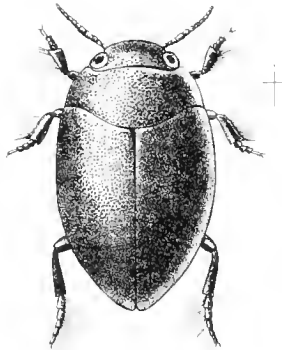
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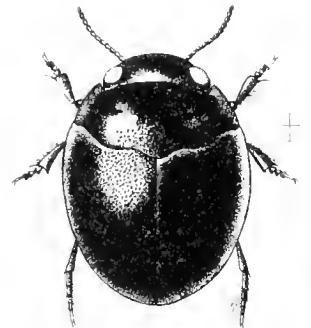
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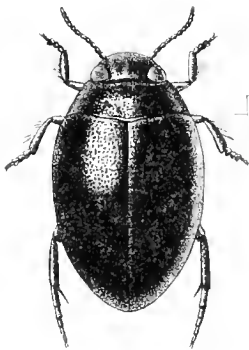
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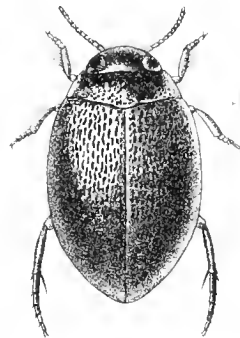
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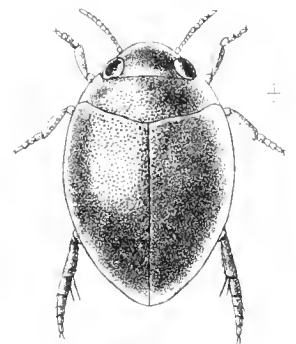
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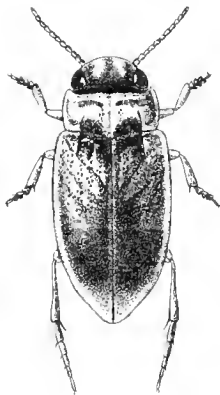
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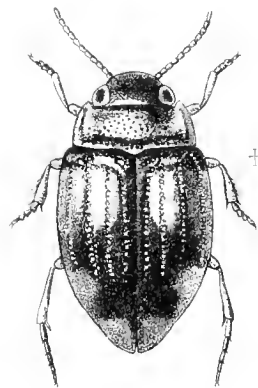
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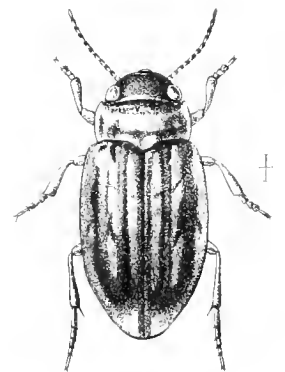
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118 DEROVATELLUS (*Vatellus lentus* Er.)

121 AMPHIZOA (*A. insulensis* Lec)

124 HETERHYDRUS (*H. senegalensis* Aube)

127 BIDESSUS (*B. plicatus*)

119 LACCOPHILUS (*L. pellicadus*)

122 QUEDA (*Q. compressa*)

125 PACHYDRUS (*P. punctatus*)

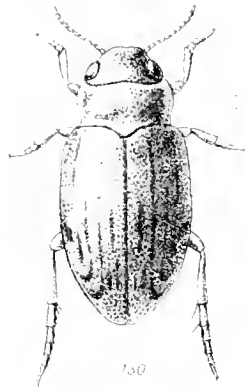
128 BIDESSUS (*B. insignis*)

120 HYDROVATUS (*H. major*)

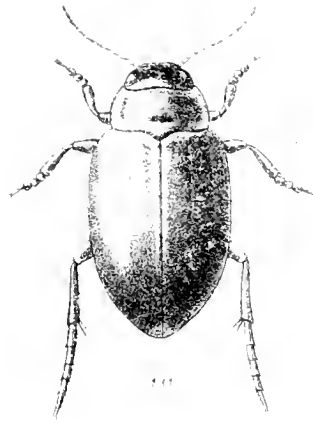
123 HYDROVATUS (*H. major*)

126 DESMOPACHRIA (*D. ovalis*)

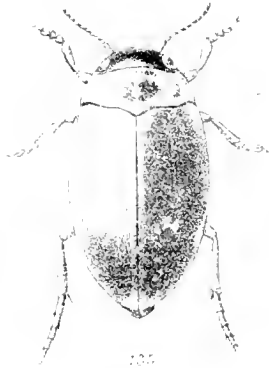
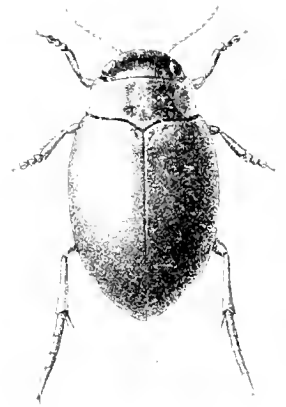
129 HUXELHYDRUS (*H. syntheticus*)



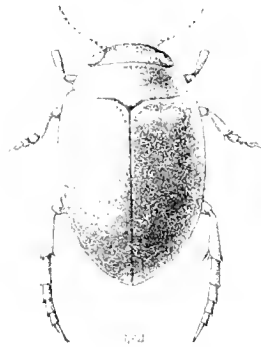
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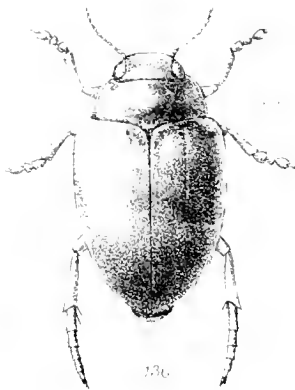
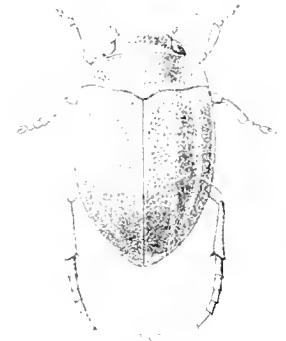
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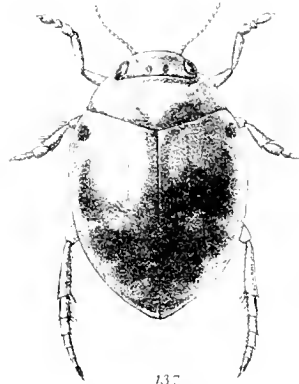
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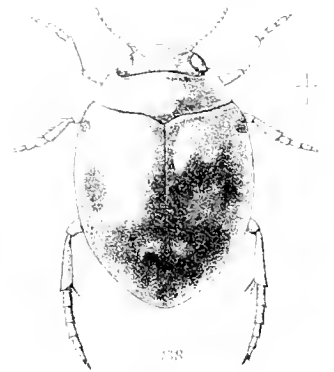
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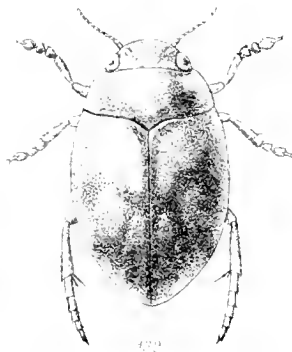
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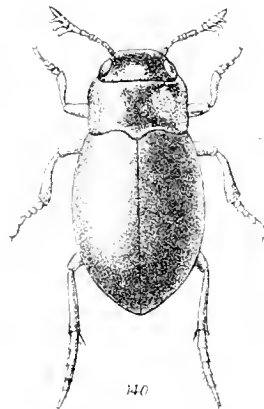
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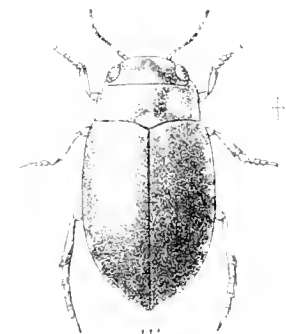
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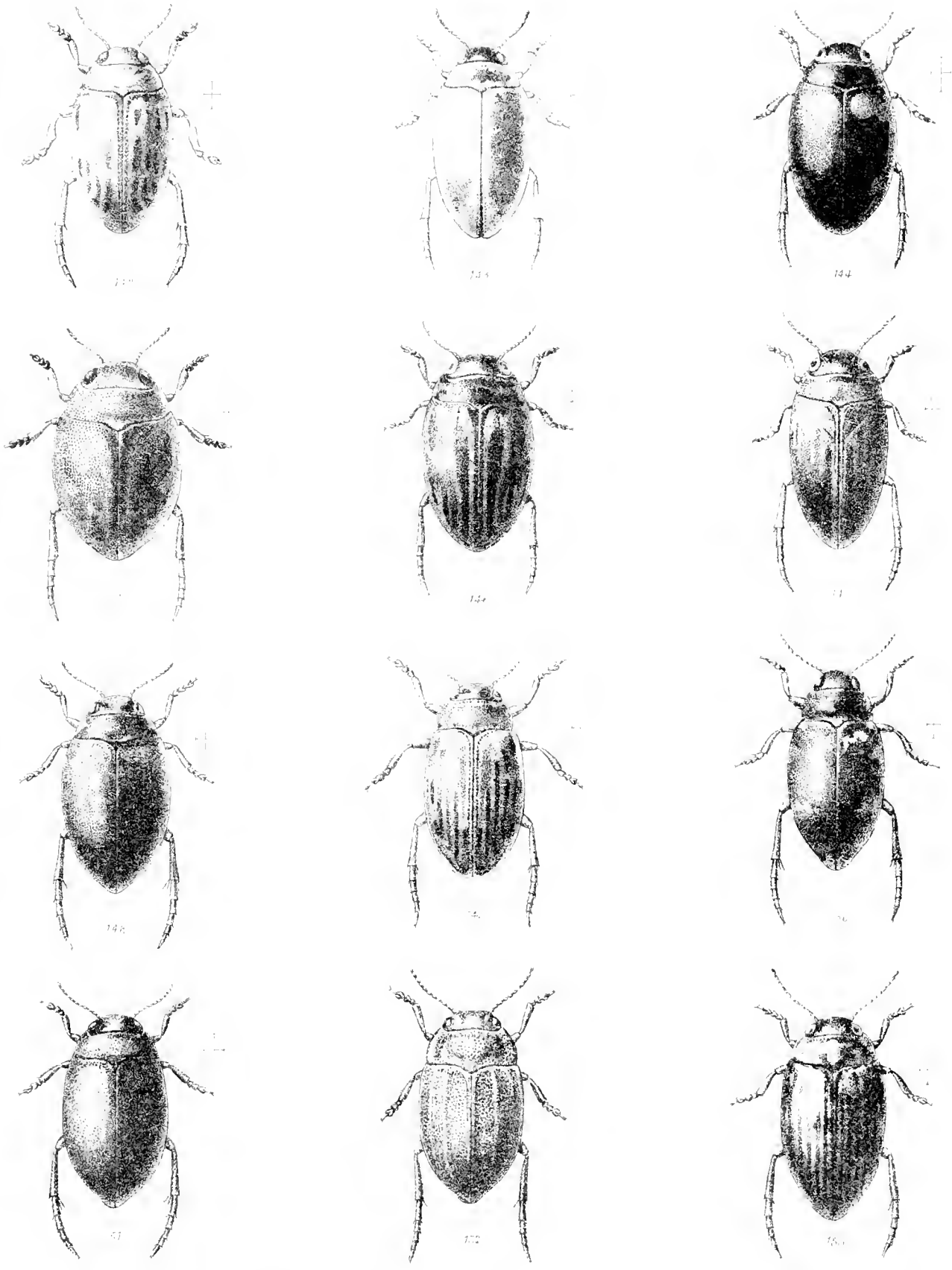


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- 130 TYNDALLHYDRUS (*T. caraboides*)
 133. PRIMOSPES (*P. fiducialis*)
 136. HYPHYDRUS (*H. major*)
 139. HYPHYDRUS (*H. australis* ♂)

- 131 ANAX (*A. rufus*)
 134. CELHYDRUS (*C. irroratus*)
 137. HYPHYDRUS (*H. japonicus* ♂)
 140. STERNOPRISCUS (*S. browni* ♂)

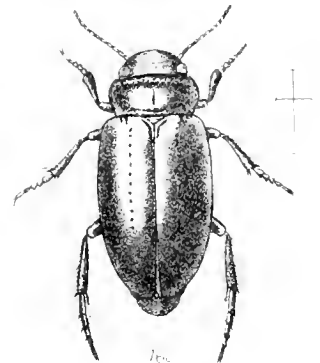
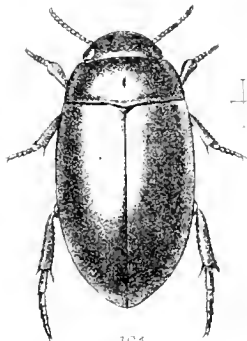
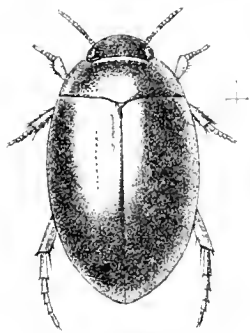
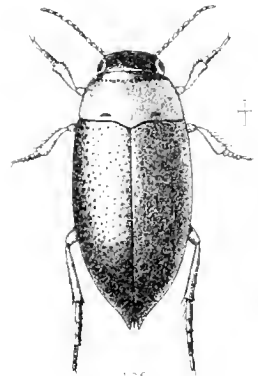
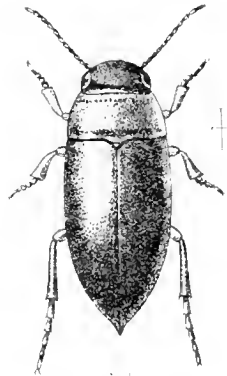
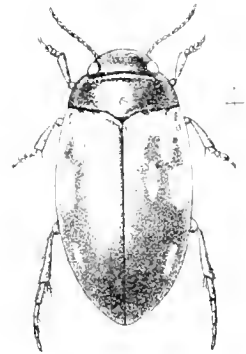
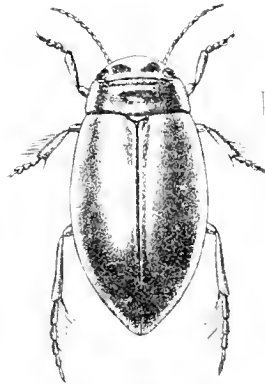
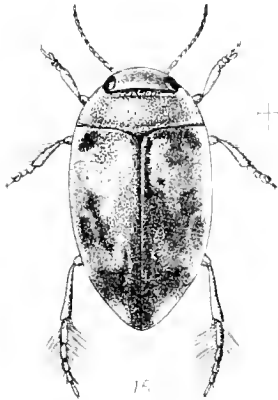
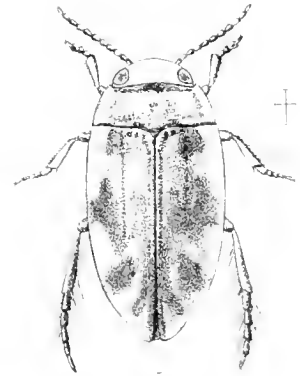
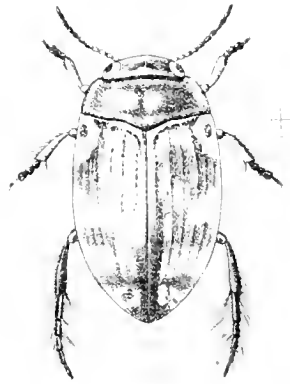
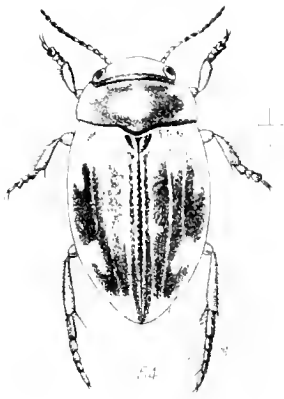
- 132 HYDROPEPLUS (*H. japonicus*)
 135 DARWINHYDRUS (*D. solinus*)
 138. HYPHYDRUS (*H. japonicus* ♀)
 141. STERNOPRISCUS (*S. browni* ♀)



142 HYPHOPORUS (*Hydroporus cheni* subn.)
 145 CŒLAMBUS (*Hydroporus curvatus* Lec.)
 148 CHOSTONECTES (*Hydroporus ussurius* Sch.)
 151 MACROPORUS (*Hydroporus macronus* Ch.)

143 PAROSTER (*Psalisopus*)
 146 CŒLAMBUS (*C. ruficornis*)
 149 ANTIPORUS (*Hydroporus arvensis*)
 152 DEPONECTES (*Hydroporus brevicornis* Sch.)

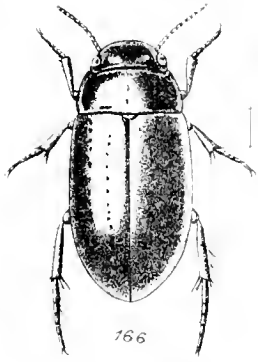
144 PEROPHYDRUS (*P. ruficornis*)
 147 CŒLAMBUS (*C. ruficornis* var. *nitidus*)
 150 NECTEROSOMA (*N. schultzei*)
 153 DEPONECTES (*D. abyssinica*)



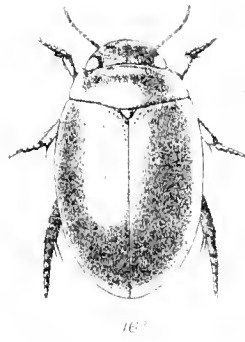
154 DERONECTES (*Hydroporus varinatus* A. b. c.)
 157. HYDROPORUS (*H. undulatus* Gyll.)
 160 HYDROPORUS (*H. addendus* Croch.)
 163. HYDROTRUPES (*H. palpalis*)
 W. Parkes del.

155 DERONECTES (*Hydroporus muricatus* L.)
 58 HYDROPORUS (*Hydroporus lapponum* Gyll.)
 161 CELINA (*C. acedra* Stål.)
 164 METRONECTES (*Agabus umbra* Parry)

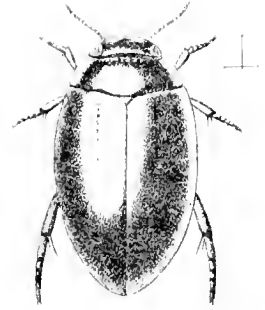
156 HYDROPORUS (*H. discoloratus*)
 159 HYDROPORUS (*H. nigricornis* Schaum.)
 162 METHILES (*M. pumilio*)
 165. ACABUS (*Enicometes variata* Gyll.)
 Gyll. Catalogue of the Swedish Insects



166



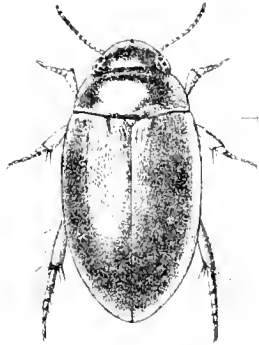
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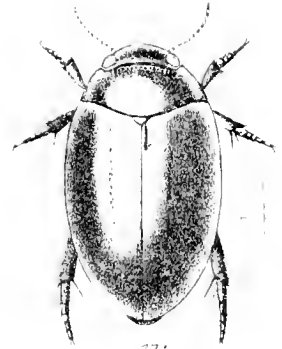
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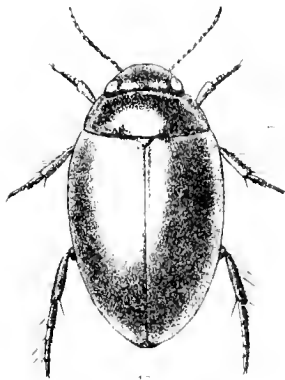
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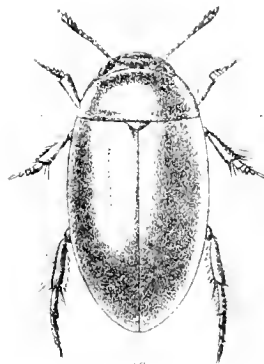
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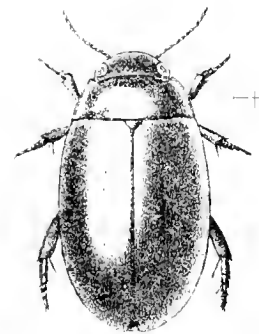
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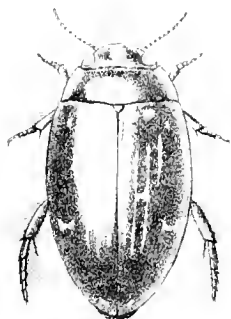
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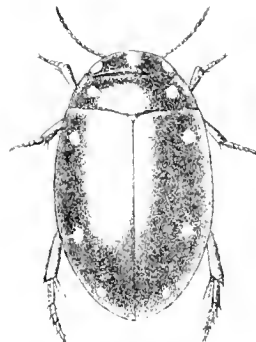
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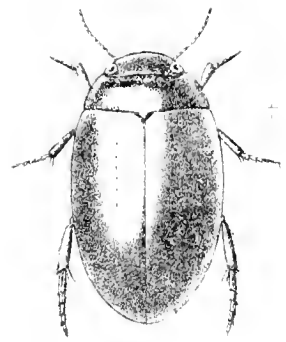
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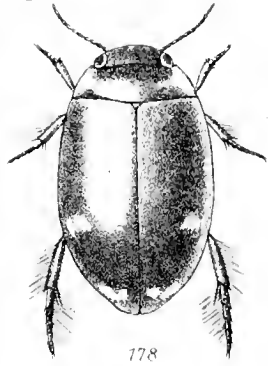


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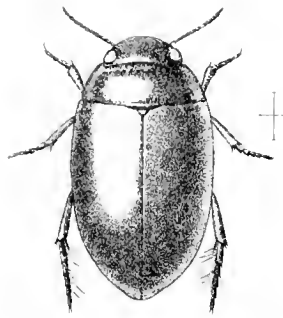


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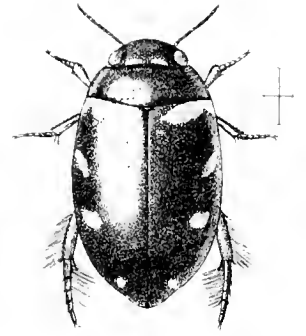
- | | | |
|---|---|---|
| 166 AGABUS (<i>A. cephalotes</i> Reiche) | 170 AGABUS (<i>Colymbetes bitarsus</i> Harb) | 174 HYPUSOMA (<i>Hypusoma tricolor</i> Lec) |
| 169 AGABUS (<i>Adiantogratus</i>) | 173 AGABUS (<i>Dytiscus cornutus</i> Fuz) | 177 LEURONECTES (<i>Agonites quadriceps</i> J. Trj.) |
| 172 AGABUS (<i>Dytiscus fuscipennis</i> Fuz) | 176 PLATYNELTES (<i>Agabus stans</i> Fuz) | |
| 175 PLATYNELTES (<i>Dytiscus decompositus</i> Harb var.) | | |
- H. Parkes del.



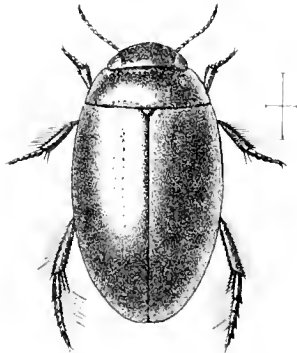
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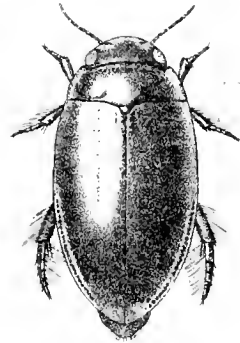
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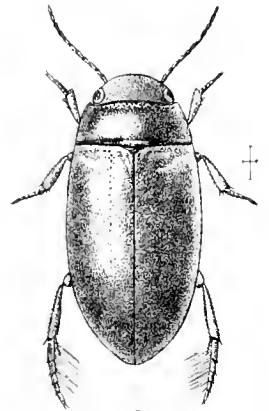
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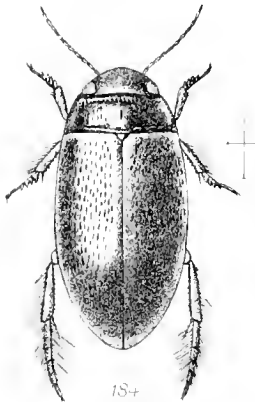
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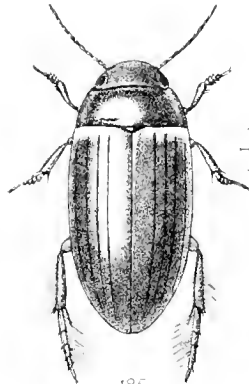
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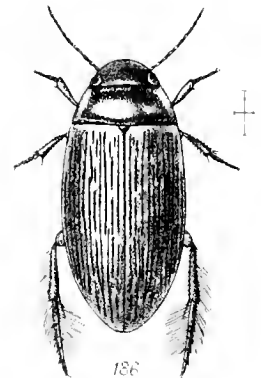
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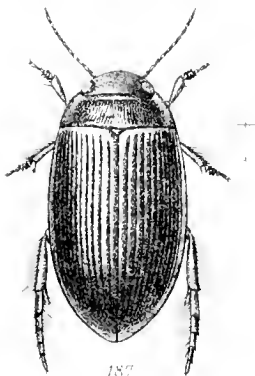
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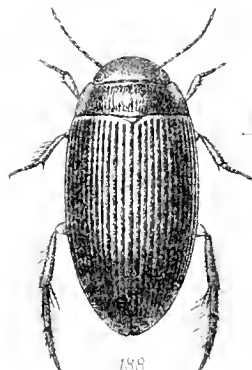
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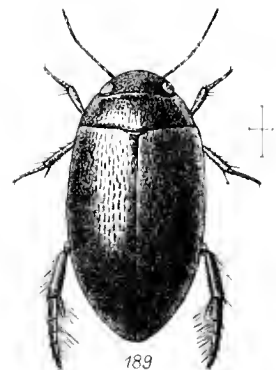
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187



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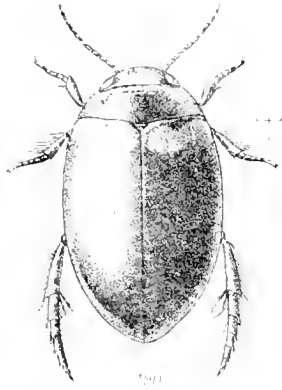


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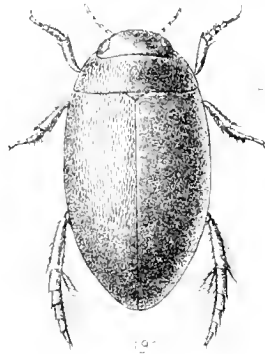
178. ACAMETRUS (*Colymbetes rerusmanni* Guér.)
 181. ILYBIUS (*I. desmansi*)
 184. COPELATUS (*C. nigritulus*)
 187. COPELATUS (*Colymbetes silvaticus* Guér.)
 W. Perks del.

180. ACABINUS (*Colymbetes f. albicollis* M.-S.)
 182. ILYBIUS (*I. punctatus*)
 185. COPELATUS (*C. punctulatus*)
 188. COPELATUS (*Colymbetes subre* Mont)

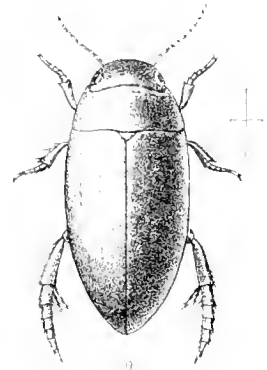
186. PLATAMBUS (*Asabus veteris* Sharp)
 183. COPELATUS (*C. gracilis*)
 186. COPELATUS (*C. interruptus*)
 189. AGLYMBUS (*Asabus* *legnieri* Aubé)



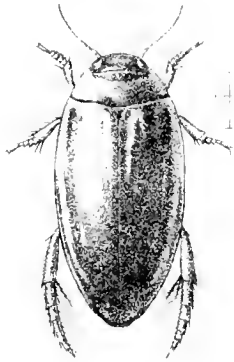
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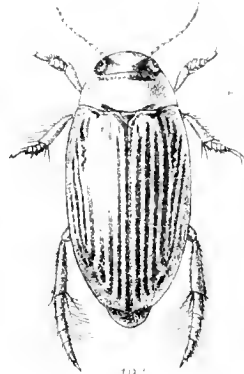
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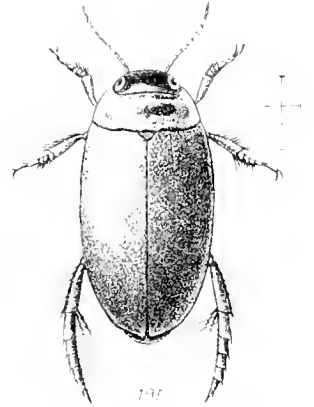
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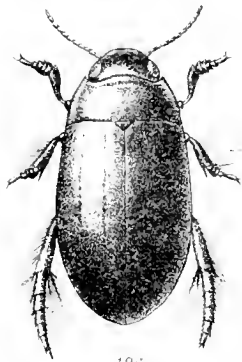
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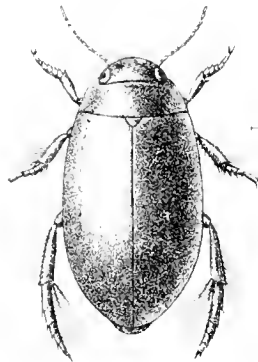
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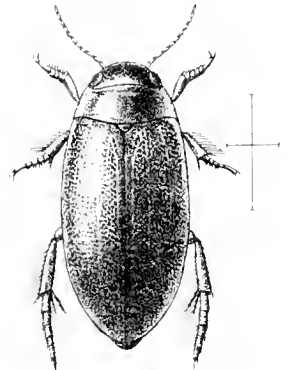
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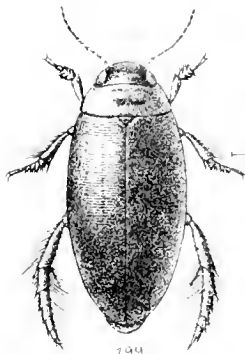
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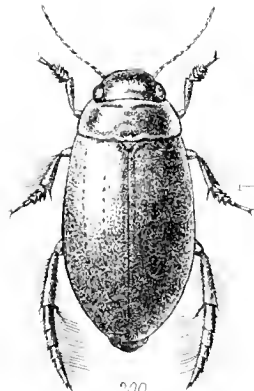
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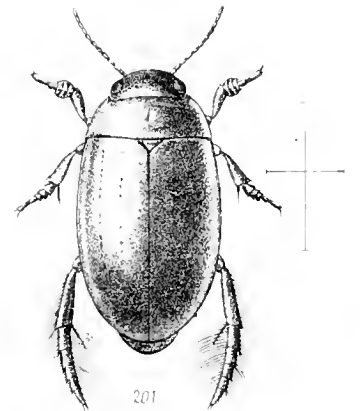
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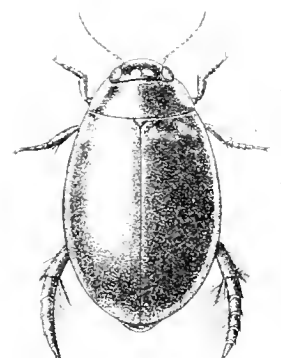
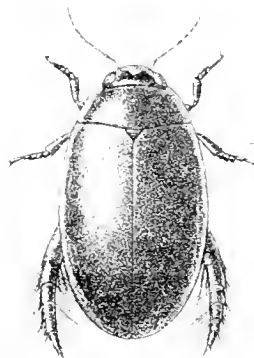
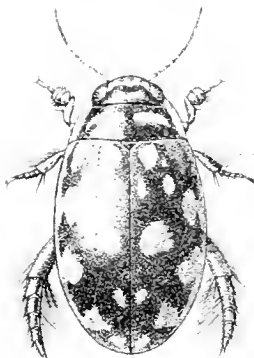
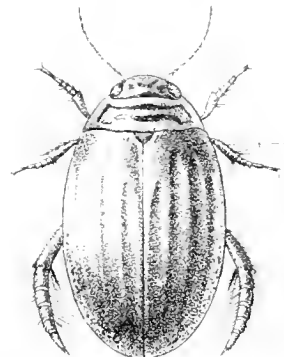
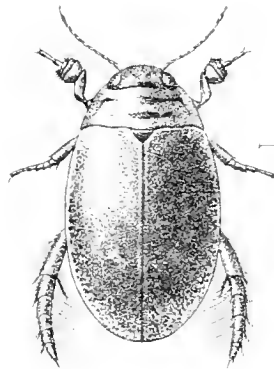
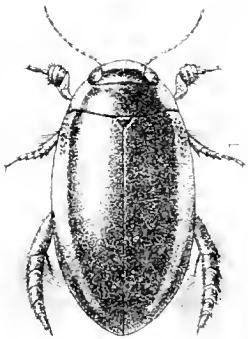
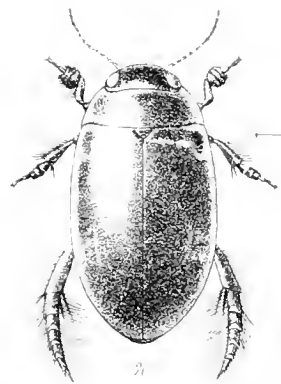
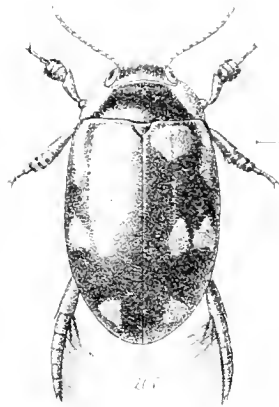
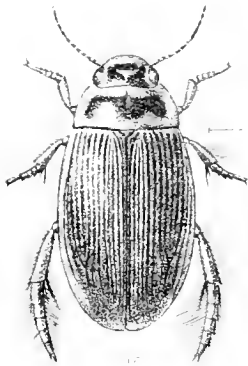
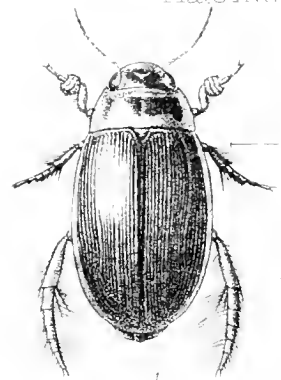
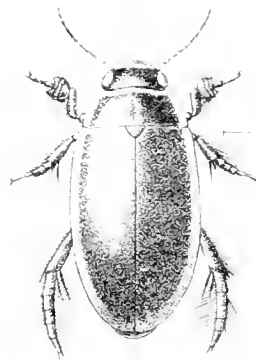
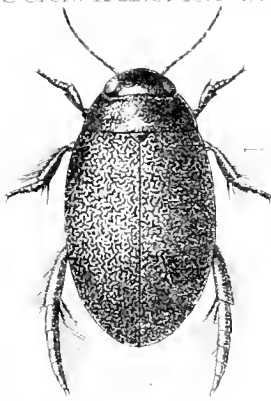


201

- 190 LACONECTUS (*L. basalis* Motsch.)
- 193 COPTOTOMUS (*Dytiscus internotatus* Fab.)
- 196 SCUTOPTERUS (*S. horri* Cratch.)
- 199 COLYMBETES (*C. sculptus* Bur. W. Pursh del.)

- 191 AGABETES (*Colymbetes aculeatus* Esch.)
- 194 LANCETES (*Colymbetes lanceolatus* Ah.)
- 197 RHANTUS (*R. remota*)
- 200 MELADEMA (*Dytiscus lanus* Fab.)

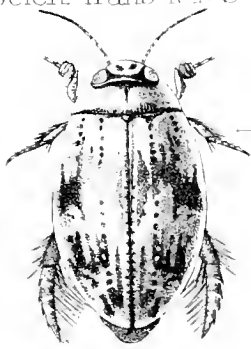
- 192 MATUS (*Colymbetes bicarinatus* Say)
- 195 ANCETES (*Colymbetes marceus* Fr.)
- 198 RHANTUS (*Dytiscus ozeurus* Fab.)
- 201 HYDEPODES (*Hydrophilus* Hope)



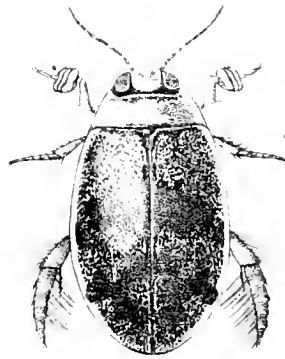
- | | | |
|--|--|--|
| 202 HYDERODES (<i>H. buckhursti</i> A. S. ♀ var.) | 203 DYTISCUS (<i>D. hybridus</i> Aube) | 204 DYTISCUS (<i>D. lapponicus</i> Gyll ♂) |
| 205 DYTISCUS (<i>D. lapponicus</i> Gyll ♀) | 206 PRODATICUS (<i>P. pictus</i>) | 207 HYDATICUS (<i>H. bifasciatus</i> Aube) |
| 208 HYDATICUS (<i>H. petra</i> Aube) | 209 ACILIUS (<i>A. semisulcatus</i> Aube ♂) | 210 ACILIUS (<i>A. semisulcatus</i> Aube ♀) |
| 211 THERMONECTES (<i>T. marmoratus</i> Hope) | 2 ? THERMONECTES (<i>T. bicolaris</i> Herr ♀) | 213 LETHONECTES (<i>L. optatus</i>) |

W. Parkes del.

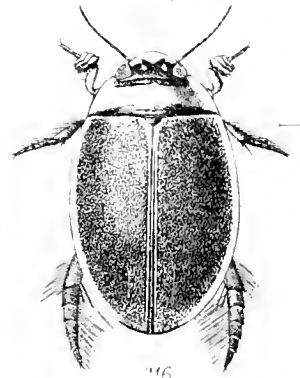
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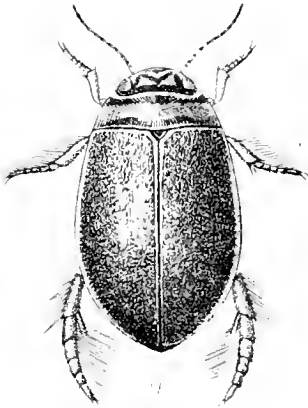
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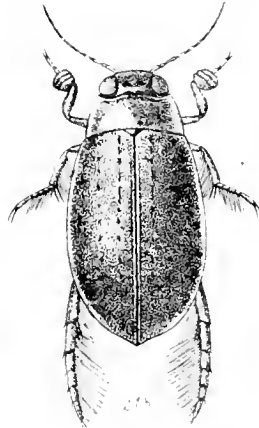
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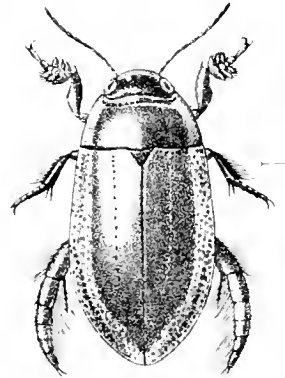
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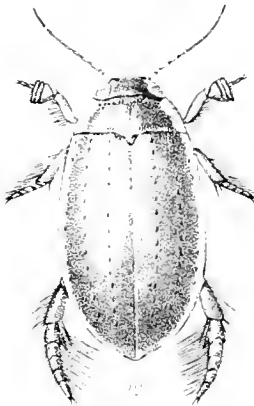
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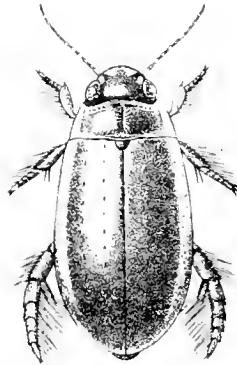
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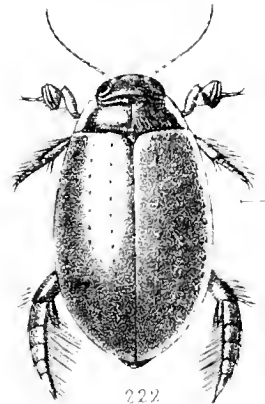
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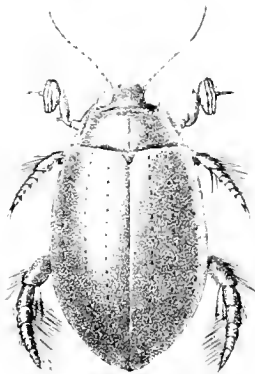
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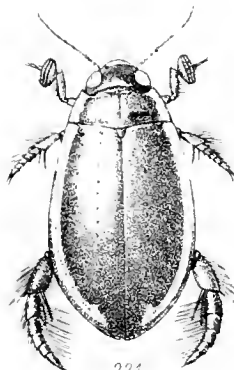
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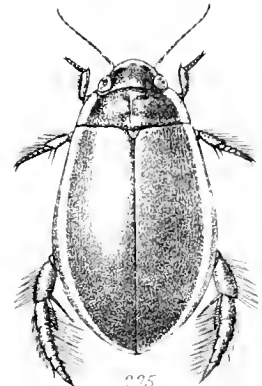
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223



224



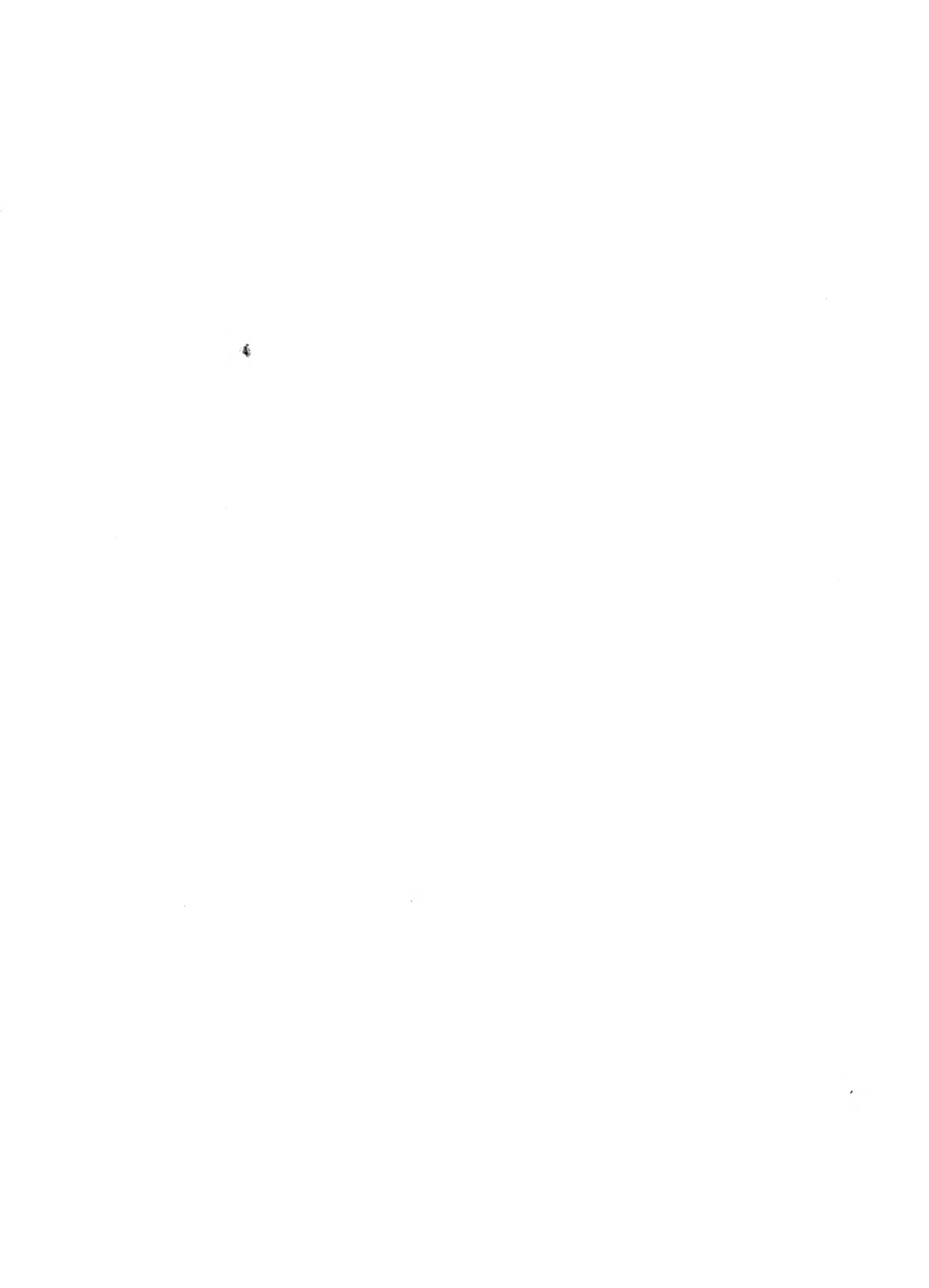
225

214 SANDRACOTTUS (*S. hirtus* var. *chokolati*)
 217 GRAPHODERES (*Dytiscus verrucosus* Sahlb. ♀)
 220. HOMŒODYTES (*Cybister hookeri* White)
 223. CYBISTER (*C. mus* Cast.)
 W. Parkes del.

215 RHANTATICUS (*Hylotus canaliculatus* Cast.)
 218 ERETES (*E. australis*)
 221 MEGADYTES (*M. expositus* ♀)
 224. CYBISTER (*Dytiscus viridulus* Lat.)

216. GRAPHODEFES (*Hylotus rasilis* Clk.)
 219 SPENCERHYDRUS (*S. luteocinctus*)
 222 MEGADYTES (*M. ferrugineus*)
 225 CYBISTER (*C. pronovus* ♀)
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