NEW ZEALAND BEETLES

AND THEIR LARVAE.

AN ELEMENTARY INTRODUCTION TO THE STUDY OF OUR NATIVE COLEOPTERA.

WITH SEVENTEEN COLOURED PLATES.

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NEW ZEALAND:
FERGUSON & OSBORN, LIMITED,
PRINTERS AND PUBLISHERS, WELLINGTON.
1934

"I feel like an old war-horse at the sound of the trumpet when I read about the capturing of rare beetles . . . . It really almost makes me long to begin collecting again."

—CHARLES DARWIN.

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PREFACE.

THIS book is an attempt to provide the general nature lover, and the young collector, with an elementary guide to the study of many of the more conspicuous types of Beetles and their larvae, which are to be met with in our forests and river valleys, amongst our mountains, and on our plains and sea coasts.

Although over 4000 species of New Zealand beetles have already been described by systematists, very little has so far been recorded as to their habits and life-histories, and nothing has yet been done to present the subject in a form attractive to beginners. The present volume is designed to supply this want, and it is hoped that its issue will result in an increased interest in beetle lore amongst our embryo naturalists. Moreover, various circumstances seem to indicate that many years are likely to elapse before a really comprehensive treatise on our Coleoptera will be available, and for this reason the publication of an elementary work is all the more desirable at the present time.

For the section in Chapter I, dealing with the history of beetle discovery in New Zealand, and for general inspiration and encouragement, I am much indebted to my friend Commander J. J. Walker. The extremely clear account of general structure which follows, is taken from an introduction, by Mr. W. Egmont Kirby, in Dr. Hoffman's "Young Beetle Collector's Handbook," as well as many of the preliminary remarks on the families, and I have much pleasure in acknowledging the value of these contributions. Indispensable aid in the identification of New Zealand species was freely given, for over thirty years, by the late Major Broun. Since his death Mr. K. G. Blair, Sir Guy Marshall, and other members of the Imperial Institute of Entomology and the British Museum staffs, have given invaluable assistance in the same direction—to all of whom I desire to tender my most sincere thanks.

G. V. HUDSON.

"Hillview," Karori.
1933.

CHAPTER I.

BEETLES IN GENERAL.

I. HISTORICAL.

The earliest collection of New Zealand beetles was made by the naturalists who accompanied Captain Cook in his first and second voyages round the world (1769-70 and 1773-4). This collection naturally included several of the largest and most interesting species, and many of them, described by Fabricius, still exist in the Banksian collection of the British Museum. In 1841 some beetles were collected at Akaroa, Port Chalmers, and the Auckland Islands by the French Expedition under Captain Dumont d'Urville. These were subsequently described by Blanchard, in a publication called "Voyage au Pole Sud," issued between 1841 and 1846, the types being still in the Paris Museum. In the same year, 1841, H.M.S. "Erebus" and "Terror," under the command of Sir James Ross, visited Campbell Island, the Auckland Islands, and the Bay of Islands, and the beetles then obtained, together with a few others from other entomologists, including amongst them some from Charles Darwin of the "Beagle," were described in 1846, by Adam White of the British Museum, in the "Zoology of the Voyage of the Erebus and Terror." Up to that time only about 150 species of New Zealand Coleoptera were known. In 1859 the Austrian frigate "Novara" visited New Zealand, and the beetles then collected were described by Redtenbacher in the "Reise der Novara" the types, it is believed, are still preserved in the Museum at Vienna. A small collection of New Zealand beetles from Canterbury, was sent home by Mr. R. W. Fereday, in 1867, and was described in the Entomologists' Monthly Magazine for that year by Mr. H. W. Bates. By this time local naturalists had developed great activity and between 1873 and 1884 valuable papers on N.Z. Coleoptera, by Captain Hutton, Major Broun, Mr. C. M. Wakefield, Mr. F. P. Pascoe, Dr. Sharp and others, were published mostly in the "Transactions of the New Zealand Institute." In 1885 Dr. Sharp published a very

important paper on New Zealand beetles in the Transactions of the Royal Dublin Society, New Series, Vol. III, pp. 351-452, Plates XII and XIII, mainly based on an extensive collection made by Mr. R. Helms at Greymouth. Prior, however, to this date, Major Broun had issued at Wellington, in 1880, the first part of his "Manual of New Zealand Coleoptera" in which 1141 species were enumerated. This descriptive work was continued in six subsequent parts, as well as in numerous contributions to the "Annals and Magazine of Natural History" and "Transactions and Bulletins of the New Zealand Institute" up till his death in 1919. Broun's great work was based on his own collections and on those made by Messrs. A. E. Brookes, S. F. Fulton, A. C. O'Connor, T. Hall, A. Philpott, J. H. Lewis, W. W. Smith and many other local entomologists, whose assistance he always most generously acknowledged. Since Major Broun's death a few additional species have been described by Mr. A. E. Brookes and Sir Guy Marshall.

II. STRUCTURE.*

Beetles are distinguished from other insects by having a pair of hard or leathery wing-cases, or elytra, which cover the true wings, which are membranous. The elytra generally meet in a straight line down the back, known as the suture.

The body of a beetle is divided into head, thorax, and abdomen.

The head is free from the thorax, and only slightly narrowed behind. It is broader laterally than vertically, and is often prolonged into a proboscis, or trunk (as in the Weevils). The top of the head between the eyes, above, is called the vertex, and that behind the eyes, the occiput; whilst the part before the vertex is called the front, or clypeus.

The head is furnished with eyes, antennae, or feelers, and mouth organs.

The eyes are composed of a number of small facets, regularly arranged in a network, and each of these facets may be regarded as a separate eye. The eyes are placed on the sides of the head, and are generally large and

*A detailed account of the anatomy of the Coleoptera, with explanatory figures, may be found in Dr. Imms's Text Book of Entomology, pp. 457-468.

prominent. In some beetles they are nearly divided into two by a process of the side of the head, whilst in some (chiefly water beetles) they are completely divided, so that the beetles have apparently four eyes. In addition to the true eyes, some beetles have two small simple eyes, or ocelli, on the top of the head.

The antennae are situated near the eyes, and have usually eleven joints. Antennae which taper gradually to the end are called setiform (bristle-like); those which are uniform in thickness throughout are filiform (thread-like); if composed of a number of rounded joints, moniliform (bead-like); if with triangular elevations, dentated (toothed) or serrated (saw-like); and if with long processes on the joints, pectinated; if the joints become stouter towards the extremity, clubbed; and if the thickening is abrupt, capitate. In addition, the antennae may be flattened, and, in some species, they end in a number of long, flat processes, and are fan-like (as in the cockchafers). Thus the antennae vary much in form and structure, and are consequently of use in classifying the insects.

The mouth organs are situated beneath the head, and are used to seize, and divide, the food. They consist of the labrum, or upper lip; the labium, or lower lip; mandibles, or upper jaws, which are hard and sharp, and often very large (as in the Stag Beetles); and maxillae, or lower jaws. Two jointed organs, called the labial palpi, are attached to the labium, and two similar organs, the maxillary palpi, belong to the maxillae.

The thorax is the part lying between the head and abdomen. It carries the legs and wings, and is divided into three segments, the pro-, meso-, and meta-thorax. The upper portion of the thorax is divided into pro-, meso-, and metanotum, and the under surface is divided into pro-, meso-, and metasternum. The prothorax is more or less free and its upper surface, the pronotum, is seen in front of the elytra; behind this, and inserted between the base of the elytra, is a small triangular plate, belonging to the mesonotum, called the scutellum. The rest of the meso- and metanotum is hidden by the elytra. Each segment of the sternum bears a pair of legs.

Each of the legs consists of five parts—the coxa, or hinge-plate; the trochanter (a small joint between the coxa and femur); the femur, or thigh; the tibia, or shank; and the tarsus, or foot, which has normally five joints, the last bearing a pair of claws.

The elytra, or wing-cases, are attached to the mesonotum, and, in most beetles, overlap the whole of the abdomen. They may be pitted or punctured, grooved or striated, ridged or carinated, and are frequently spotted or striped, and sometimes hairy. Under the elytra are the true wings (springing from the metanotum), which are folded when not in use. The wings alone are used in flight, the elytra being raised to allow them to have full play. In some beetles the true wings are quite wanting, whilst a few are completely apterous, having neither elytra nor wings.

The abdomen consists generally of nine rings, or segments, overlapping one another in a telescopic manner, so as to allow of free movement. As a rule only five segments are visible on the under surface. The abdomen is usually broad at the base, and somewhat flattened. On the sides is a row of spiracles, or breathing-holes, situated between the segments of the thorax and abdomen.

III. **METAMORPHOSIS.**

The eggs of beetles are usually ovoid in shape with a plain surface, rarely exhibiting any marked sculpture, or diversity of form, such as we find in the Lepidoptera. They are deposited by the female insect, either under bark, in holes in the wood, or amongst other substances forming the food of the larva.

The larvae of Coleoptera are popularly termed grubs. They have a well-developed head, the organs of the mouth closely resembling those of the perfect insect, but usually more simple in structure. The antennae are sometimes highly developed, but more generally somewhat rudimentary, often composed of only three small joints, and in the case of the weevils reduced to a single jointed vestige. Six pairs of legs are nearly always present, one pair on each of the segments, which following the head answer to the pro-, meso- and metathorax of the perfect insect. The legs are very variable in size and, in the weevils, usually entirely absent. The abdomen consists of 10 segments and at its termination there are, in very many larvae, special appendages, the structure of which often enables us to identify larvae belonging to closely allied species which are difficult to separate as perfect insects. This is especially the case with the larvae of the Click beetles and many species of Heteromera. It is probable that in most cases these

special armatures, which are nearly always horny and of the nature of sharp spines, are defensive weapons, directed against an enemy attacking the larva from the rear, whilst in its burrow. An anal proleg is very commonly situated on the lower surface of the terminal segment, thus materially assisting the larva in locomotion. The larvae of beetles have been assumed to belong to two distinct types:—

(1) The Campodeiform type with long well developed antennae and legs, the tarsi bearing a double claw. This type of larva is characteristic of the tiger-beetles, ground beetles, many Brachelytra, and of the first stage only in a few other abnormal forms of larvae.

(2) The Eruciform type characteristic of the Phytophaga, Longicornia, weevils, stag beetles, and chafers. Legless larvae of the eruciform type are met with almost universally in the weevils, amongst many longicorns, and in the Buprestidae. In many other groups the larvae are of a somewhat intermediate type, combining more or less the essential characters of both types.

The time occupied by beetle larvae in attaining full growth is extremely varied, but all shed their skin, or moult, several times during their growth. Whilst the Chrysomelidae pass through their metamorphosis in a few weeks some beetles, such as Longicorns, Chafers, and certain Heteromera, take three or more years to attain maturity. When the larvae are full grown they become quiescent for some time, again moult, and become pupae.

The pupa is usually white in colour, extremely soft, with partially formed elytra, wings, and legs folded around the body. It is incapable of any movement, save a slight twirling of the abdomen. In the great majority of cases the pupa is protected by a cocoon, or special chamber, constructed by the larva prior to pupation, but in some cases the pupa remains attached to the old larval skin by its terminal segments and hangs suspended by the tail like a butterfly pupa.

IV. PUPATION AND HYBERNATION.

In the case of beetles whose larvae are internal feeders, or of subterranean habit, (by far the majority) the phenomena of pupation and hybernation appear to be very intimately associated. The cocoon, or pupal chamber, constructed by the larva, is much larger than in most other insects, and this allows the inmate to

expand wings and elytra before leaving its shelter, a totally different state of affairs to that obtaining in the Lepidoptera, Neuroptera and many other winged insects, which invariably leave, or partially extrude themselves from their protective cocoon before emergence. The process of wing expansion is very much slower in the Coleoptera, and the integument of the imago is, in most cases, not fully hardened for a period of 10 days, or a fortnight, after the pupa has started to transform. There is thus a prolonged period of comatose helplessness after the close of actual pupal life, and the capacious pupal chamber provides the insect with much needed protection during this critical stage of its existence. During the late autumn and early winter many woodboring beetles may be found in their pupal chambers, nearly hardened and almost fully developed, and it is clear that they do not leave this retreat until aroused by the warmth of the following spring or early summer. This method of hybernation has many obvious advantages. It enables the insect to successfully withstand all weather vicissitudes during the winter, and at the same time absolutely protects it from birds and other insectivorous animals which, at that season, are hard pressed by hunger and at their keenest in hunting for insect food. The use of the roomy pupal chamber as a means of dispersal of the species must also be taken into account. Beetles esconced in logs of wood are readily carried down rivers by floods, and even transported over arms of the sea by wind and tide, and when finally cast ashore, under more genial conditions, will be in a suitable condition to emerge, pair, and propagate their kind.

V. CLASSIFICATION AND NOMENCLATURE.

The classification of beetles is a most intricate subject and can only be very slightly touched upon in a book like the present. Moreover, both classification and nomenclature are always under revision and we are no doubt a very long way from hearing the last word concerning either. These are, however, matters that cannot be ignored, even in an elementary popular work, and certain changes in the general arrangement of the Coleoptera have been followed which, although not departing very greatly from the old style, still approach pretty closely to the new.

Beetles are now subdivided into two sub-orders—(1) The ADEPHAGA and (2) The POLYPHAGA.

The ADEPHAGA are active predaceous beetles, with the antennae usually long and threadlike, and the tarsi five jointed. The larvae are active, predaceous and carnivorous, usually of the campodeiform type, with definite tarsi and paired claws present.

The ADEPHAGA comprises a single group only—the CARABOIDEA which includes the tiger beetles, ground beetles, water beetles and a few other small families.

The POLYPHAGA comprise all the rest of the beetles and is a most heterogeneous division in every respect. It includes the following groups:—

I. The BRACHELYTRA, a very extensive group of beetles, mostly very small in size, having the antennae simple, or clavate, rarely irregular; the tarsal joints variable; the elytra usually not covering the entire abdomen. The larvae are campodeiform, or not widely divergent therefrom.

II. The CLAVICORNIA: This is a very large and comprehensive group of which it is practically impossible to find characters common to all its members. In nearly every case the antennae terminate in a more or less distinct club. The larvae are sometimes campodeiform, but more frequently of an intermediate type, or eruciform.

III. The SERRICORNIA: In most of the members of this group the antennae are serrate (or toothed like a saw) on their inner face. In other respects its members are polymorphic and have little in common. Many systematists now regard the Clavicornia and the Serricornia as constituting a single group which they call the DIVERSICORNIA. This new series, however, is of necessity, even more heterogeneous than either of its older components.

IV. The HETEROMERA: In this group the front and middle pair of legs have five tarsal joints, but the hind legs only four, such joints being complete and visible and not rudimentary as in some other groups. The eyes are usually kidney shaped. In other respects the Heteromera are exceedingly diverse in form, size and habits, presenting affinities, more or less pronounced, with most of the other groups.

V. The PHYTOPHAGA: The members of this group are mostly small convex insects with the tarsi apparently four jointed, the fourth joint being very small and united with the fifth. The antennae are moderately long, thread like, or with the joints like minute beads strung on a central string, and sometimes slightly thickened at the extremity. The larvae are eruciform and feed on plants.

VI. The LONGICORNIA: The beetles included in this group are elongate, with long legs, and very long antennae. The tarsi are five jointed, but the fourth joint is very small and hidden. The larvae are cylindrical grubs, sometimes rather flattened; they are broadest about the prothorax, thence tapering to the posterior extremity; their legs are rudimentary. The *Longicornia* are included with the *Phytophaga* by most modern systematists and there is no doubt that the two groups have much in common.

VII. The RHYNCOPHORA, or weevils, are readily distinguished by the head being produced into a snout, or rostrum, bearing at its extremity the organs of the mouth, and near its extremity the antennae. The antennae often have the first joint very long forming, with the other joints, an elbow. The tarsi are apparently 4-jointed. The larvae are eruciform and usually without legs.

VIII. The LAMELLICORNIA: The best defined major group of the Coleoptera, including Stag beetles, Chafers, Dung beetles, and allied forms. Generally large in size and convex, they may be distinguished by their antennae having the terminal joints lamellated. These joints, when extended, resemble the leaves of a fan, but in repose they are so co-adapted as to appear like one terminal club. The larvae are fleshy and crescentic with rather long legs. They are very easily recognised and almost always lie on their side in a curved position.

Each of the above groups is divided into a number of families, the families in turn being subdivided into genera. A genus includes a number of closely allied species (or kinds) possessing one or more characters in common.

The scientific name of every beetle includes the name of the genus and that of the species, together with the name of the author. Thus our common tiger beetle is referred to as *Cicindela tuberculata,* Fabricius, the generic name being "Cicindela," the specific name "tuberculata," and the entomologist who first described the insect having been named "Fabricius." In popular books, or in works dealing with well-known insects, the author's name is frequently omitted. In cases where an insect is mentioned more than once, the generic name is usually indicated by an initial thus: *C. tuberculata.*

When the same insect has been described under different names the first name given to it stands and the later name, or names, are sunk as synonyms.

VI. NUMBER OF SPECIES.

Considering its highly insular position there is no doubt that the number of species of beetles indigenous to New Zealand must be very great. Nevertheless, it is practically certain that the total of some 4500 described forms—enumerated in the systematic catalogue at the end of this book—is in excess of the number of true species at present known, and possibly in excess of the number which actually exist. The works of Major Broun, from which this catalogue has been compiled, indicate, that although that author revised several families, and described an enormous number of forms he believed to be new species, he was not in the habit of periodically making a critical survey of either his own species, or those of other authors, in order to eliminate "synonyms," or identical species described more than once under two or more different names. As an example of what is meant, the large and abundant weevil known as *Rhynchodes ursus* may be referred to. Four species of *Rhynchodes* are described by Major Broun, i.e. *R. ursus, R. saundersi, R. atra* and *R. squameus.* As the result of a critical examination of a long series of specimens of *Rhynchodes,* submitted by the author to Sir Guy Marshall, that eminent authority on the Curculionidae of the world has satisfied himself that the four "forms," described as distinct species by Major Broun, really constitute only one variable species, which must in future be known as *R. ursus,* the earliest name given to it by Fabricius. Similar results were obtained by a critical examination of a long series of *Eugnomus aenescens,* two varieties of which were described by Major Broun as distinct species under the names of *E. cyaneus* and *E. tarsalis.* Furthermore a great number of Major Broun's species were described from single specimens and the question of sexual and individual variation cannot therefore have been taken into account, neither can the possibility of intermediate forms between the so-called species have been fully considered, the necessary material for such investigations not being available. Again it is admitted by Major Broun that in many cases he has never had the opportunity of seeing species described by other authors, notably some of those described by Dr. Sharp, and many by the old time naturalists who described species collected in New Zealand during the very early days of the Colony. Hence it is almost certain that descriptions have been duplicated and many synonyms have arisen as a result.

In this connection it is interesting to compare the number of known species of Lepidoptera and Coleoptera in Great Britain and New Zealand respectively. In Great Britain there are 2,143 species of Lepidoptera and about 3,300 species of Coleoptera. In New Zealand the number of known species of Lepidoptera is now about 1,400 species and of Coleoptera (according to Major Broun), about 4,500. The species of New Zealand Lepidoptera have certainly been submitted to much more searching criticism by many more investigators than the species of Coleoptera and, on the basis of the English species of both orders, which are known with a large degree of certainty, our total number of beetles should not be greatly in excess of 2,150 species, or less than half the number indicated by Major Broun. Such estimates of species, based on mere comparisons, are of course of no real scientific value, and it remains for future collectors and systematists to determine the actual number of species of beetles which exist in New Zealand.

VII. GENERAL CHARACTERISTICS AND GEOGRAPHICAL AFFINITIES OF NEW ZEALAND BEETLES.

The following outstanding features of our New Zealand beetles will appeal to the observant collector. 1. The presence of many conspicuous species of ground beetles of large size. 2. The relatively diminutive size and small number of our water beetles. 3. The great development of the very remarkable and highly cryptic beetles included in the family Colydiidae. 4. The large size of many of the species of Elateridae, or Click beetles. 5. The presence of many large and interesting Longicorns, some of which are unusually abundant. 6. The large size, *bizarre* appearance, and great number of striking species of weevils. 7. The almost complete absence of true dung beetles, as might have been expected in a country which in all probability has never supported any large terrestrial mamalia.

New Zealand beetles exhibit affinities with those of Australia and South America, but to what relative extent is probably hardly known at present. Many prominent families are well represented both in Australia and New Zealand, but owing to the very much larger size of Australia, its greater climatic range, and relative proximity

to other lands, its species are, of course, much more numerous than those of New Zealand. Exceptions, however, occur in the following families, where the New Zealand species are more numerous than the Australian, the numbers of the latter being given in brackets:—Colydiidae 206 (123); Cryptophagidae 28 (8); Cioidae 23 (13); Lathridiidae 54 (34); Byrrhidae 51 (46); Silphidae 43 (38); Dascyllidae 121 (34); Anthribidae 81 (51); Aglycyderidae 2 (0). Of the Buprestidae New Zealand has only two species as against 766 in Australia, and of the Gyrinidae there is only one New Zealand species as against 28 Australian. Although represented in Australia no New Zealand species belonging to the following families have yet been discovered:—Hygrobiidae, Haliplidae, Paussidae, Cupidae, Phalacridae, Georyssidae, Lyctidae, Heteroceridae, Endomychidae, Lymexylidae, Rhipidoceridae, Throscidae, Cebrionidae, Monommatidae, Cantharidae, Passalidae, Trogidae, and Bruchidae.*

Unfortunately, a similar comparison to the foregoing cannot yet be given in respect of the Coleoptera of the southern part of South America, but, judging from various affinities already known, the beetles from that region may be found to exhibit the same close relationship with New Zealand species, as that already observed between New Zealand and South American Lepidoptera. Mr. Gilbert J. Arrow, of the British Museum has kindly informed me that *Lissotes* is common to New Zealand and Australia, and *Pristoderus* (*Ulonotus*) occurs both in Australia and Chili. The genera *Sagola, Thoramus, Somatidia, Tigones, Catoptes Lyperobius, Eugnomus,* and *Odontria* are all endemic, as well as such genera as *Saphobius, Enarsus, Platyomida* and *Scolopterus. Saprosites* is distributed throughout the tropics, and *Euplectus* is world wide. In the opinion of modern systematists, many of the New Zealand beetles now placed in well known and widely distributed genera will ultimately have to be removed therefrom.

VIII. GEOLOGICAL RECORD.

At the present time it is estimated that, in respect of the whole world, no less than 195,000 species of beetles are known to science. This is considerably in excess of

*These particulars have been taken from a census of Australian and New Zealand Coleoptera, compiled by Messrs. T. Sloane, H. J. Carter, A. M. Lea and A. E. Brookes. See "Insects of Australia and New Zealand," pp. 187, 188.

the number of known species in any other order of insects, the nearest approach being the Lepidoptera with 92,000 known species. It will thus be seen that as regards species, the Coleoptera is the dominant order of insects. When, however, *individuals* are considered the first place must probably be given to the Diptera. Notwithstanding their present specific pre-eminence, beetles are an extremely ancient order of insects. Fossil Coleoptera, with perfectly formed elytra, and apparently not differing very greatly from some of our present day beetles, (Hydrophilidae) have been found in the Upper Permian of Belmont and Newcastle, N.S.W., a formation estimated by modern geologists to have been deposited some 200 million years ago. The evolution of the beetle from some more primitive winged insect, probably a Neuropteron, must therefore have taken place prior to the Upper Permian. Beetles are also found abundantly in the upper Trias of Ipswich, and in the Liassic and Upper Jurassic strata in Europe as well as in various Tertiary beds of North America. With a larva capable of occupying a habitat distinct from that of the perfect insect, and with wing covers enabling them to combine all the advantages of a terrestrial and winged animal, beetles are amongst the most successful of land organisms. There is also every reason to suppose that this ascendancy has been maintained during the vast period which has elapsed since their first appearance on the earth.

CHAPTER II.

Beetle Collecting in New Zealand.

There are probably very few objects of Natural History which can be collected and preserved as easily as beetles. Their ubiquitous habits, hard integument, and easy manipulation after death combine to make them most attractive to the amateur naturalist. With the exception of shells, which of course really only represent a portion of the animal, it is, perhaps, doubtful whether there are any other natural history specimens which can be preserved so effectively, or for so long a period, as beetles.

It will be more convenient to consider first the various methods of collecting beetles, and then to pass on to the best methods of mounting and preserving them for the cabinet.

The apparatus required for the collection of beetles in the field is both simple and inexpensive. The essentials are:—

(1) A very strong umbrella, the frame preferably covered with very stout white or pale buff-coloured material.

(2) A strong, rather flat, wide mouthed glass bottle, fitted with a cork bung, having a glass tube projecting about 1½ inches each way through the bung, an ordinary cork closing the glass tube on the outside of the bottle. Excellent bottles of this type, with bung and tube complete, can be purchased from all dealers in entomological apparatus. The bottom third of this bottle should be filled with well bruised, *young*, laurel shoots (obtainable in October), pressed tightly down, and secured by means of a piece of card cut a little larger than the inside dimension of the bottle. A piece of crumpled tissue paper should be placed in the bottle above the card retaining the laurel, but should not touch the lower end of the tube projecting from the bung. As they are collected, beetles are put into the bottle, through the glass tube, and great care should be exercised to see that the bung fits tightly, and that the cork does not come out of the glass tube too easily. The laurel

will completely stupify the most ferocious beetle in two or three minutes, that is, if the bottle is kept well corked, and the laurel renewed every season. Nearly all the beetles interesting to the collector are harmless insects, and those not actually required for the collection should be liberated alive. The practice of placing all and sundry in the killing bottle, and sorting out the defunct beetles at home, cannot be too strongly condemned.

(3) A chisel, or better still a proper "bark ripper," which may be obtained from the aforesaid dealers.

(4) A strong tomahawk, or small axe; the best are those having a spring metal protector for the cutting edge. This may be obtained from dealers in requisites for "camping out."

(5) Some sheets of strong brown paper.

(6) A very strong, stout walking stick. A manuka stick about four feet long is the most suitable.

During the summer months, say from October till March, the umbrella is most serviceable. It is opened and inverted under bushes, blossoms, branches of trees, dead or living, or in fact, under any vegetable growth whatsoever. The collector will give the branch several sharp taps with his beating stick, and any beetles lurking amongst the leaves, or on the bark of the branch, will fall into the umbrella where the specimens required can easily be taken up by means of the tube affixed to the collecting bottle. Minute specimens are best transferred from the umbrella to the collecting bottle by means of a moistened finger tip. When both hands are occupied, the cork may often be conveniently removed from the tube of the collecting bottle with the teeth. The bark ripper and the axe are used for working dead, or decayed wood. A sheet of brown paper is spread beneath the log, or branch, and the bark removed, and tapped over the brown paper, the beetles dropping thereon where they are easily secured. If a valuable beetle is seen at rest on a branch, or on a tuft of grass, or in fact on any object elevated above the ground, the umbrella, or brown paper, should *always* be placed underneath it before capture is attempted. Failure to take this precaution will result in many losses, as beetles nearly always drop to the ground and feign death, and under these conditions it is usually impossible to again detect the insect amongst the dead leaves, grass, and other rubbish almost invariably present. The axe is used to cut into the solid wood where many boring species may be found in their burrows, together with their larvae and pupae. In using

the axe it is always best to *split* the wood off in pieces rather than to chop it, or at any rate to chop as little as possible. In this way beetles, or their larvae, are most likely to be disclosed without injury. The brown paper should, if possible, be spread out under the log, or branch, which is being split, so that specimens which fall out of their burrows during the process may be safely secured. Some beetles live in moss and this may be torn in pieces over the umbrella, or brown paper. Dead seaweed on the beach may be shaken over the brown paper, which it is well to weigh down with a stone at each corner, in case of disturbance by wind, a very frequent occurrence. Carrion beetles inhabit dead animals, birds, or fish, especially when in the dried up stage after decomposition. Such remains may be profitably shaken over a sheet of brown paper, which should be abandoned after the unsavoury task is completed. The same procedure applies when hunting for the very few dung beetles found in New Zealand. Certain beetles inhabit fungi in all stages of growth and decay and these should be carefully examined. It is a good plan to throw the fungi on a sheet of brown paper, when the beetles will be dislodged.

With few exceptions the New Zealand water beetles are very small, and may be captured in pools, or streams, with a small water net, made of a calico bag supported on a wire ring attached to a small stick. These water beetles are not numerous and are comparatively seldom met with, but this is really an argument for making special search for them. Logs and stones lying on the ground should be overturned and both the log, and the place from which it has been removed, carefully examined. When a log can be easily moved it is a good plan to set it up on end, and beat, or kick it, over a sheet of brown paper. The beetles secreted in the irregularities on the underside of the log then fall on the brown paper and can be secured. Many beetles found under logs are highly protected, both as regards form and colour, and are extremely difficult to detect in their natural surroundings. Any scrap of bark, moss, lichen, or vegetable refuse, having the least resemblance to a beetle, or arousing the slightest suspicion on the part of the collector, should be carefully examined with a lens. It is better to examine fruitlessly 100 such objects than to allow one perfectly protected beetle to escape discovery. The Bignell tray, sold by all dealers in entomological apparatus, is preferred by some to the umbrella. It is,

however, much more expensive, and in many places, not so convenient to handle. When spread out for use, the Bignell tray hides the ground immediately in front of the collector, and this is a distinct danger, except on a roadside, or on a very good track. Special nets for sweeping foliage may also be purchased, and are useful for working open tussock country, but are not comparable for general purposes with the more homely umbrella. A small sieve is used by many coleopterists for collecting beetles amongst dead leaves, and other vegetable refuse. A linen bag is secured to the lower edge of the sieve, by means of a string, or a strong tape, let into a hem in the top of the bag. A few dead leaves, gathered at random, are then placed in the sieve and the finer portions (including the beetles) sifted into the bag. This process is continued until the bag is conveniently filled, the contents being taken home and examined at leisure. Mr. O'Connor tells me that he places the heap of siftings on a table, under a powerful electric light, and this induces many of the best things to climb out of the rubbish and thus reveal themselves. Later the siftings are examined in detail, and the beetles placed in the collecting bottle in the usual way.

After very heavy rains great quantities of dead leaves, sticks and other vegetable refuse are brought down by streams and deposited at the water's edge of rivers and lakes. This flood rubbish, *if examined immediately the flood begins to subside,* will be found teeming with beetle life and many rarities will then be secured. In mountainous regions torrents often bring down refuse from inaccessible places, and special attention should be given to the investigation of flood rubbish in localities of this description. Dense forests, untouched by man, are less productive in beetles than those areas which have been partially cleared, but are still untouched by fire. Insect-life generally, is presumably abundant in the tree tops over dense forest areas, but it is of course impracticable to collect it. The natural edge of a flourishing forest may always be expected to yield good results, and an open forest on the top, or side, of a hill is a promising spot. Many species may also be found in scrub bordering on the sea coast and, generally speaking, the best localities for beetle collecting are those enjoying plenty of sunshine. Newly fallen trees should always be carefully worked, and the withering branches beaten over the umbrella. Branches almost fresh, which have been brought down by a recent

gale, should receive close attention as they are frequently extremely productive. Dead branches exposed to hot sunshine in the early summer are often prolific in beetles.

Where the collector has the opportunity resort may be had to methodical trapping. Round tins, or jam pots, sunk level with the ground, are very effective traps for many species of ground beetles and others, the insects often falling into such pitfalls during their nocturnal rambles. These kind of traps must, however, be visited daily, or at all events frequently, otherwise the inmates may damage or destroy each other. The dead bodies of small animals, birds, or fish, may be deposited in likely places, when such are not available in the ordinary course of things, and should be revisited and examined after the lapse of some weeks. Old sacks may also be placed on the ground, weighted down by means of stones. These are most productive on the edges of forest or scrub. They should be left three or four weeks before being examined for any beetles which may have secreted themselves underneath. In addition natural traps are frequently available. Beetles, apparently drowned, are often found floating on the surface of pools of water and, if required, should at once be transferred to the killing bottle, as they generally recover, and make off, soon after they are removed from the water. Again the large cup-shaped leaves of the mountain lily (*Ranunculus Lyalli*) fill with water after rain, and form admirable traps on the mountain slopes. These leaves are well worth examining, as rare mountain weevils and other good beetles are occasionally thus ensnared, and may be secured without difficulty. The quieter reaches of the mountain streams sometimes contain quantities of green "slime" weed, amongst which rare beetles may become entangled.

Concerning the best season for collecting it may be safely said that, short of starting operations in the depth of winter, the earlier the collector gets to work in the spring the better. As soon as the weather permits every opportunity should be taken to examine bark and wood. Some of our finest longicorns for instance, such as *Didymocantha* and *Ophryops,* appear in August and September, and are seldom, or never, met with later in the year, and the same remarks may apply to other species. Many of our native trees and shrubs flower during October and November, and beating operations should then be in full swing, whenever the weather is at all favourable. The speargrass (*Aciphylla*), which, in the lowlands, blooms

early in November, should receive special attention. The spiky flower heads should be gently bent down over the edge of the umbrella and well beaten, when many interesting species will be brought to light. The blossoms of the common rangiora (*Brachyglottis repanda*), and the Wineberry (*Aristotelia serrata*) are fairly productive and should not be neglected, but the kamahi or towai (*Weinmannia racemosa*) must never be missed, as it is certainly most productive, especially in respect of that beautiful genus of Weevils, *Eugnomus*. Flowering manuka attracts many beetles, especially the tree manuka, (*Leptospermum ericoides*). *Parsonsia,* which also blooms in December, is likewise deserving of special attention. Later on the white and red ratas (*Metrosideros*) should not be neglected, but it will be noticed that after the new year beetles become decidedly scarcer, except in the mountains, where the most prolific part of the season lasts fully a month longer. In the late summer and autumn recourse must again be had to searching bark and wood, and the examination of seaweed, fungi, dead animals, etc., etc., but the results then obtained will not be comparable with those of the spring, notwithstanding the fine warm weather which nearly always prevails at that time. Those who have had the good fortune to do well out of leaf sifting, contend that this is the best of all methods in the autumn, when beetles are taking up their winter quarters amongst the fallen leaves.

It is often rather difficult to decide whether intensive collecting over a small area will give better results than more or less intermittent collecting over a much larger area. Young collectors are, on the whole, prone to waste time and opportunities in trying to cover very large areas, but in so doing they may, perchance, discover new localities for rare or little known species. On the other hand intensive collecting by experienced workers over areas previously well worked will often give unexpectedly good results. The question may therefore well be left open to the preference and capacities of individual collectors.

As regards special localities it is difficult to say much. Although a large amount of beetle collecting has been done in New Zealand, systematic records and statistics of species found in the two Islands, and in different localities, have not been published, and are not available for comparative purposes, as in the Lepidoptera for instance. Owing to the prodigious amount of work done by the late Major Broun, the beetles of the Northern part of the North Island

are much better known than those from elsewhere. Nevertheless the researches of Messrs. Helms, O'Connor, Hall, Fulton, Commander Walker and others, indicate that the southern portions of the North Island, and the South Island generally, are likely to be as rich, or possibly even richer in species, than the northern area to which Major Broun devoted his special attention. These circumstances should stimulate our young collectors to strenuous efforts, especially amongst the magnificent mountains on the West Coast of the South Island, where it confidently may be predicted many most interesting and attractive novelties are still awaiting discovery.

The following may be mentioned amongst special localities deserving of close attention:—

1. The Central Plateau of the North Island; Mounts Ruapehu, Ngauruhoe, and Tongariro.
2. Mount Egmont.
3. The Ruahine Ranges.
4. The Tararua Ranges.
5. The Mount Arthur area (Nelson), including Mount Arthur, Mount Peel and the Tableland.
6. Arthur's Pass and the mountains around.
7. The Mount Cook area.
8. The mountains of South Westland.
9. The mountains around Lakes Wakatipu, Te Anau, Manapouri and other lakes further south.
10. Stewart Island.
11. The Snares; the Auckland Islands, and Campbell Island.

The fact that seven new species* of giant Weevils, belonging to two new genera, were taken on the Snares and Auckland Islands, during a brief visit in 1907, is a striking testimony to the possibilities that the Sub-antarctic Islands offer to the enterprising beetle collector. The more generally accessible islands nearer the New Zealand coast should also be worked by any energetic collector who has the chance of visiting them, and may be expected to yield good results. This is amply borne out by the notable discoveries made by Mr. A. C. O'Connor on Stephen's Island.

Something should now, perhaps, be said on the subject of rearing the larvae of beetles, and thus elucidating their life histories. This is a branch of beetle lore which has

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**Catadryobius vestitus* (Snares); *C. benhami, C. erubescens, C. tetricus, C. grandis; Heterexis sculptipennis* and *H. laeviusculus* (Auckland Islands).

hitherto been much neglected, and an exaggerated impression is widely prevalent regarding the difficulties attendant on this line of research. During the ordinary course of collecting, beetle larvae are constantly discovered, often frequenting the same haunts as the perfect insects. In the case of wood feeders, a number of the larvae may be enclosed with the appropriate wood, or bark, in a fair-sized tin, with a few very small holes punched in the lid. In dealing with the more delicate larvae, it is often a good plan to bore a hole in the wood, with a gimlet of suitable size, and very carefully place the larva therein, afterwards gently plugging the entrance with a little very soft wood, or frass. The larva will usually resume feeding in the artificial tunnel thus supplied. Each tin should be labelled, with a reference to the description, or figure, which has been made of the larva, and special care taken that different species of larvae are invariably placed in separate tins. Here they must be left, *absolutely undisturbed,* for three, or even six months, and this precaution is a most important element in attaining success. When the tin is finally opened, the mature beetle will, in many cases, be found alive, as the supply of food in the tin is, or should be, sufficient to sustain the inmates for quite an indefinite period. Even if the tin has been left undisturbed too long, the integument of most beetles is so hard and durable that it seldom happens the remains cannot be identified with certainty. On the contrary, if the tin is disturbed too soon, the chances are that the larva will be preparing for pupation and highly susceptible to the slightest injury, or, if it has changed to the pupa, a slight disturbance will prevent the development of the imago and the whole investigation will fail. Carnivorous larvae must, of course, be supplied with their prey, but these should be introduced with as little disturbance as possible and, as soon as it appears that the larvae have become inactive, they should be left severely alone, until there is every reason to think that the beetle has had full time to mature. If these precautions are followed, the observer may reckon on a fair percentage of successes, that is, he may reasonably hope to rear some 15 or 20 per cent. of the larvae he has under observation. In the case of larvae having specially distinctive terminal appendages, legs, jaws or antennae, it is often quite possible to identify the crumpled up larval skin, as found, at the posterior extremity of the pupa, in the pupal chamber. This may be done by carefully soaking the shrivelled larval skin, in warm water, and examining, with a lens, or microscope

of moderate power, the remains of the special appendages. In this way a pupa may sometimes be assigned with certainty, to its relative larva, without the latter having been actually reared in captivity. This was successfully done in the case of *Veronatus tricostellus* and *Lasiorrhynchus barbicornis,* the beetles having been found partially developed in their pupal chambers along with their old larval skins. It is always worth while to try this expedient, when unusual difficulties are met with, whilst attempting to rear a larva.

We will now proceed to consider the second portion of our subject, i.e., the preservation of the captured specimens, and their arrangement in the cabinet:—

On arrival home, the collector will remove the cork bung from the collecting bottle, and place the beetles in boiling water, in order to make sure that life is extinct. Many beetles are so tenacious of life that they will recover, even after having been in the laurel bottle for quite a long time. It is a good plan to cover the cup, or other vessel of boiling water, with a piece of calico, or wire gauze, its surface submerged just below the surface of the water. If the beetles are placed on this they will be instantly killed, and the tedious operation of lifting them, one by one, out of the water avoided. Large beetles, which are better brought home alive in separate boxes, (glass topped metallic boxes are the best for this purpose) will, of course, be killed at the same time, and in the same way. A wide mouthed bottle, or tight fitting tin, loosely filled with bruised laurel leaves, is now required. The beetles, after having been placed on blotting paper to remove the superfluous moisture, are put into a screw of paper, with the locality and date of capture written thereon. This screw of paper is then placed in the laurel, securely closed down, and the beetles therein left to relax. The period required varies according to the size of the beetles, and the season of the year. With small beetles, in hot weather, a few days will suffice, but larger beetles, in colder weather, may require a month in the laurel, before they are sufficiently relaxed to set properly.

For mounting and preserving the following apparatus is required:—

1. A bottle of gum arabic, fairly thick and as pure and white as possible. It is best obtained from the chemist, in solid form, and dissolved in cold water and strained through white muslin.

2. Cards, or Bristol Board. For the preliminary "rough setting" soiled card will do, but for the final mounting clean white card, with a perfect surface, is essential.

3. Two or three small camel hair brushes, one with a fine point for setting, and one cut down and rather stiff for brushing out legs and antennae.

4. Setting needles. These are needles of various degrees of thickness, mounted in wooden or bone handles, obtainable from all dealers in entomological apparatus. One with a slightly hooked point is often useful in spreading out refractory legs or antennae.

5. A supply of short stout entomological pins, but the ordinary "lillikin" pins will do for beetles.

6. A bottle of best methylated spirit.

7. A stoppered bottle, three-quarters full of benzine.

8. A cup of clean cold water.

Other very useful accessories are:—

9. A good low power (3 or 4 diameters) magnifying glass, or better a speera-binocular magnifier, worn like spectacles, and leaving both hands free.*

10. A small simple dissecting microscope with hand rests, and magnifiers of say, six, ten and twenty diameters. The six can be transferable to a pocket mount, and used in the field.

Next, as to the method of setting:—

The beetle is taken out of the laurel, placed on its back, the legs and antennae well brushed out from the body with the stiff brush. A piece of the rough card is taken and either well gummed, or a spot of gum placed on the underside of the beetle, and the insect placed on the card right side uppermost. The legs and antennae are then arranged in a natural position, like those shown in the figures in this book, and retained in place with gum, care being taken not to gum the upper surface of the beetle itself, especially in the case of hairy species. A number of specimens may be placed on one card of convenient size, and the date and locality of capture written thereon; the same particulars may, of course, apply to quite a number of specimens.

A few words of warning to the inexperienced may here be necessary:—

(1) Do not use gum, or attempt to set a beetle, until all the limbs are well brushed out free from the body.

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*To be obtained from Messrs. Watson & Sons, 313 High Holborn, London.

(2) If refractory, return the beetle to the laurel until well relaxed.

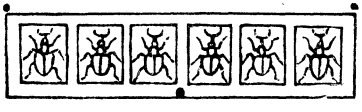
(3) If by mischance a beetle becomes covered with gum, immediately put it into water until completely clear of gum.

(4) Very small beetles, which have their limbs folded into grooves, such as Histers, Pill beetles, or Weevils, can sometimes be manipulated by gumming them on their backs to the card, leaving the gum to dry and then brushing the legs out. After this the beetle can be soaked off the card and set in the usual way. This method should only be resorted to in cases of exceptional difficulty. In the Entomologists' Monthly Magazine for November, 1932, Mr. H. R. P. Collett describes the following method for anchoring small convex beetles on their backs, preparatory to setting or dissection:—Procure a circular cork stopper about two inches in diameter and half an inch thick. On one side of this cork make an irregular-shaped cavity, and into this cavity press some 'plasticine,' fitting it flush. Then, according to the size and shape of the beetle to be dealt with, make a depression in this plasticine with the blunt end of a setting needle holder. The smallest beetle will thus remain firmly fixed, and can easily be loosed by a needle placed under the body. Should any grease adhere to the insect, which is rarely the case, it can soon be removed with some de-greasing fluid.

When thus "rough set" the specimens should be pinned on a corked board and retained in a well ventilated box, or "drying house," for a month or so. They may then be transferred to a corked Store Box, (also obtainable from all dealers), and left over until the winter, or other convenient season, when the final mounting can be completed. This, however, should never be attempted until the beetles have been on the rough card for at least two months, otherwise the process of floating them off in cold water, to be presently described, will relax their limbs, and many of the specimens will have to be set over again as a result.

For the permanent mounting the best card is required. A standard width must then be fixed for each series of beetles which may vary according to the collector's preference, but should definitely fit in as a multiple of the size of the drawers of his cabinet. In my own case the inside measurement of each drawer is 1 foot $3\frac{3}{4}$ inches by $9\frac{3}{4}$ inches and the depth is $\frac{3}{4}$ inch clear of the cork. This I have found a very convenient size. With a card 46 mm. wide, the drawer can be divided into eight columns of that

width, with a double pencil line (margin), about 2½ mm. apart, between each column and along each side of the drawer. A pattern card of the required width should be made and marked "Pattern," and all future mounts cut to that size as regards width, but the depth will vary according to the size of the beetles. Small rectangular pieces of card are then cut and fastened with paste on the oblong card as shown in the accompanying figure. The number on each mount will vary according to the size of



the beetles. Thus of the very small species as many as eight or ten specimens can be placed in a row, whilst with the large ones only two or three can be so placed. The very large beetles will, of course, occupy the whole width and will need a separate card for each specimen. In making these mounts very careful attention is required as to the size of the beetle, or beetles, to be mounted. The mounts must be large enough to accommodate the beetle with its legs and antennae fully extended, but not larger. Large mounts for small beetles look bad, and, in the aggregate, waste much valuable space in the cabinet.

The method to be followed in the final mounting now remains to be described:—

The beetles belonging to the same species are first cut off from the rest on the rough cards, an operation best done with a pair of sharp-pointed scissors, and requiring great care, otherwise legs and antennae may be broken during the process. When thus detached they are submerged in a vessel of clear cold water and left until the gum, which was used during the rough setting, is completely dissolved. After about fifteen minutes' submersion, the beetles will generally be found floating on the surface of the water. A small piece of blotting paper is now slipped under the beetle, and it is lifted thereon out of the water, and placed on a larger pad of blotting paper. Whilst wet any gum remaining on the beetle or its limbs should be washed off with a camel hair brush. When the blotting paper has absorbed all the superfluous moisture, the beetle may be further dried by a liberal application of methylated spirit. Any dust or dirt can be conveniently cleaned off at this stage and, if the beetle is inclined to become greasy, it

should be placed, for a few days, in a stoppered bottle, about two-thirds full of benzine.

When thoroughly clean a suitable mount is selected, and the beetle affixed thereto by means of a very small drop of gum on its undersurface. The legs and antennae may require slight adjustment, but should not be gummed, unless absolutely necessary, and then only the smallest quantity of gum should be used. If possible, one specimen of each species should be mounted on its back. The locality and date of capture can be written on the underside of the mount before the beetle is mounted, or better still, a distinctive number placed on the mount and the particulars entered up in a book, which should be of a size to accommodate some 4,000 species. Each species should be given a number and each specimen a distinctive letter, but specimens of the same species which have all been captured together, can be given the same letter, and covered by the same entry in the book. The book record enables much fuller details to be given, and results in the automatic numbering of every species, or suspected species, in the collection. This in itself is a great aid to the separation and correct identification of species. Where more than one specimen of the same form has been taken, a duplicate, with the same number, can always be sent to an expert for identification. Such specimen need not necessarily be returned, as its number alone will give the collector a clue to the name of the corresponding specimen retained. In the case of the New Zealand worker, who will have many difficulties to contend with in the identification of beetles, this is a great recommendation in favour of the book system of record as against mere locality labels.

There are many scientific experts who consider that beetles should be mounted on the apex of card triangles, or merely impaled on a pin, the symmetrical extension of legs and antennae etc. being a matter of indifference to them. Such use locality labels and augment them by the attachment, underneath the card triangle, of sundry other labels, bearing the name of the collector, name of the beetle, and usually the name of the entomologist identifying the same. Specimens prepared thus are certainly not objects of beauty, and do scant justice to the insects they are intended to immortalize. Quite apart, however, from these aesthetic considerations, the artist or photographer who is called upon to prepare figures from such specimens cannot possibly depict all the essential features from an insect contracted and distorted as in death. An effective drawing,

or photograph, can only be made from a specimen carefully mounted, in the position assumed by the insect when alive and moving. It is an indisputable fact that an unset specimen is a nuisance to everyone who has to deal with it, whether for purposes of description, identification, or delineation. The time actually lost, during the use of such unset specimens, is very much greater than that which would have been occupied by the collector in properly setting the insect in the first case.

The beetles are finally arranged in the cabinet in systematic order, and the list at the end of this book has been drawn up mainly for that purpose. The name of the Group, Family and Genus is given at the top of the column, the specific name appearing immediately under each mount. Labels are attached by means of small pins. Mounts are fixed by means of a small pin through the middle of the lower edge of the under card and a small steadying pin is inserted in the cork at each corner of the mount to keep it horizontal in the drawer. See figure on page 24 where the heavy dots indicate the position of the pins. A piece of camphor, or naphthaline, is fastened in the corner of each drawer to keep away mites, and, if mould is troublesome, the collection should be fumigated with pure carbolic acid. This can be applied on a pellet of cotton wool in a watch glass, the camphor or naphthaline being withdrawn during the process, otherwise the white paper at the bottom of the drawer will be stained with exudations. Equal parts of oil of thyme, oil of aniseed and methylated spirits may be mixed together and applied on cotton wool in the same way. This is an excellent preservative, is pleasant to use, and deters mites and other marauders. It is most essential that the cabinet, or store boxes, containing the specimens, should be kept in a dry room, with a fire in the winter.

CHAPTER III.

Brief Descriptive Notices of Many of our Most Conspicuous Species.

METHOD OF TREATMENT.

In New Zealand, as elsewhere, the study of beetles has been mainly pursued from the systematic and morphological standpoint, the very beautiful and varied structure of these insects rendering them most suitable objects for such investigations. Beginners are not, however, usually attracted by mere descriptions of structure, however accurate, and it therefore seemed preferable, on this account, and in order to break new ground, to approach the study more from the viewpoints of the general nature lover and field naturalist. To this end habits and life histories are here mainly described, and the structural distinctions between Families, Genera, and Species, either alluded to as briefly as possible, or else dealt with by references to works where full details can be found by those who want them. No attempt has been made to differentiate between extremely obscure, or doubtful forms. Descriptions of larvae (made from the living insect) are given in fuller detail as, in the great majority of cases, nothing in regard to them has been published elsewhere.

A representative series of conspicuous and interesting beetles, belonging to all the important families, many with their larvae, and some with their pupae, are depicted on the plates. These figures are intended to enable the earliest beginner to identify many of the Coleoptera he will find during his rambles. After having gone thus far, it is hoped the collector will be able to identify, with more or less certainty, most of the other beetles which are not figured, but are briefly described in respect of size,* form, colour, habits and habitat. When this has been accomplished the student, who desires to go

*The length of the insect is given in millimetres immediately after the name of each beetle thus:—(16 mm.). Approximately, a millimetre equals 1/25th of an inch.

further into the subject, will of course need to consult more strictly scientific works on New Zealand Coleoptera, and the systematic index, constituting Chapter IV, has been compiled to help him to do so. Some may, perhaps, regard this method of treatment as unscientific, but it is probably the most suitable for an elementary work, and if it results in an increase in the number of workers on the New Zealand Coleoptera, it will at least be scientifically justified.

Sub-Order 1. ADEPHAGA.

Group CARABOIDEA.

Family **CICINDELIDAE** (Tiger Beetles).

Elongated beetles of a fine metallic colour beneath. Head broad with prominent eyes, and long, slender antennae and legs. They run quickly, and fly in jerks for short distances. They feed on other insects, and are therefore useful to man. They are found in sandy places, where the larvae lie in wait for their prey in holes in the ground.

Cincindela tuberculata. (12-13 mm.; Plate 1, fig. 1, 1a larva.) This is the common tiger-beetle of New Zealand and is abundant in most dry situations throughout the country. On hot, sunny days it is extremely active, running rapidly and, unlike most other beetles, it is able to take wing at least as quickly as a blue-bottle-fly. I have noticed that this insect, when hunting its prey, takes short and extremely fast runs, suddenly stopping motionless between each run, with its head considerably raised. This procedure renders its detection on the ground a matter of great difficulty. Hot dry paths, roadsides, and river-beds are much frequented by this beetle, and in such situations it is a most familiar object all the summer. So rapid is this insect on the wing that the usual methods followed in collecting beetles are useless, and a butterfly net is essential if we desire to capture a specimen.

The length of the full grown larva is about 20 mm. The head and prothorax together form an almost circular flattened mass, considerably hollowed anteriorly, highly chitinized, with many superficial irregularities, and elongate white bristles; metallic green with vivid crimson reflections; there is, however, very free motion between the head and prothorax. The mandibles

are powerful sickle-shaped organs, finely pointed with strong inner tooth. Labrum well developed, projecting from anterior portion of head. Maxillae with 3-jointed palpi. Antennae 4-jointed. Legs with two-jointed tarsi and double claw, the middle pair usually directed upwards. Mesothorax small, with horny dorsal plate. Metathorax slightly larger, with dorsum less horny. Segments 5-8 gradually increasing in size. Segment 9 with very pronounced dorsal hump, bearing on its summit two recurved hooks, and many stout bristles; remaining segments gradually tapering towards anal extremity. Segment 13 with horny dorsal plate; other segments of abdomen with small horny dorsal plates, one on each side of median line, and smaller lateral plates. A distinct anal proleg. Many stout bristles on terminal segment and on anal proleg. A few bristles on each of the other horny plates.

The burrows of these larvae are very conspicuous, and may be seen in garden paths, road cuttings, sandbanks, and other dry situations. They are sometimes very numerous, and are best described as perfectly round shafts, about 2mm. in diameter, extending to a depth of four to six inches, generally slightly curved at the bottom. The sides are smooth, and the larva may often be discovered near the mouth of its burrow, using its dorsal hooks to support it, and thus having both legs and jaws to dispose of the unfortunate insects falling into its snare. By reference to fig. 1a it will be seen how admirably the hollowed head and prothorax serve the purpose of a shovel to the larva when forming its shaft. These burrows are first observed about the middle of November, the perfect insects coming abroad three weeks, or a month later, when they are constantly seen in the neighbourhood of their old domiciles. They are very voracious, devouring flies, caterpillars, and other insects, often considerably larger than themselves.

Cicindela waiouraensis (14-15 mm.) Larger than *C. tuberculata* and very vividly marked, but otherwise extremely similar. Probably our handsomest species of Cicindela. Common on the central plateau of the North Island, at elevations of about 2800 feet above sea-level. (Waiouru, Waimarino, and National Park).

C. latecincta (13 mm.) Duller and broader than *C. tuberculata* with the dusky cream-coloured lateral band reaching to the lateral rim of the elytra; the rest of the elytral surface is more uniform in colour, and particularly the rows of punctures much less marked and with smaller green spots. Found at Westport and apparently throughout the Southern half of the South Island.

C. parryi (11 mm.): Smaller than *C. tuberculata*, with the elytra wider in proportion; there are two oblique velvet-like marks near the suture and the yellowish marginal band is narrower, speckled with blackish. Very common in the Wellington District, but not so abundant as *C. tuberculata*, frequenting damper and more shady places. It has also occurred on Mount Egmont, at Pipiriki, Wanganui River, Mount Arthur, Lake Wakatipu and Mount Earnslaw, often reaching elevations of over 4,000 feet. It is evidently a widely distributed species. Its larva is smaller (12-13 mm.) than the larva of *C. tuberculata*, and the bristles on the head and prothorax are brown instead of white; the prothorax is also less metallic.

C. feredayi (10 mm.) Dark dull green, with the head and thorax more or less clothed with white hairs. The cream-coloured marginal markings on the elytra are very narrow, but vivid, the punctures inconspicuous, and not marked in metallic green as in *C. tuberculata* and several allied species. Apparently a rare insect found in river beds in both Islands. It has occurred in the beds of the Rangitikei and Manawatu Rivers, the Dee River near Kekerangu, and in Canterbury.

C. austromontana (11 mm.) Slightly larger than *C. feredayi*, blacker and more parallel-sided. The labrum in the male of *C. feredayi* is angularly produced in the middle ending in a stout tooth, but in the male of *C. austromontana* it is not produced, forming in the middle a sharp tooth with a more obtuse one on each side. Apparently confined to the eastern slopes of the N.Z. Alps (Castle Hill) and Marlborough Province.

C. helmsi is very similar to *C. feredayi* and *C. austromontana*. It differs from both in having large round green spots scattered over the elytra, not arranged in a definite series. Common in river beds in the Nelson and Westland Districts.

C. halli (11 mm.) is a very dull-looking species, bluish-black, with the usual marginal markings on the elytra, narrow, obscure, dull greyish-ochreous, speckled with darker; there are no tubercles, but numerous shallow bluish punctiform spots. Discovered by the late Mr. T. Hall, exact locality not stated. Subsequently taken by Mr. C. E. Clarke on the Waiho River, South Westland, to whom I am indebted for specimens.

C. perhispida (10 mm.) The most distinct of all our tiger beetles. The ground colour of the elytra is cream-colour; there is an elongate triangle of dull green on the suture, its broad base towards the thorax, two curved oblique green marks from the rims about one-third towards apex, and a slender irregular horseshoe-shaped mark on the lower part of the elytra but not nearly touching the apex. Locally abundant on the sandhills at Woodhill, near Auckland. The original specimen was taken, by Mr. T. F. Cheeseman, near Hokianga, and Major Broun took others on the loose white sand at Marsden Point, Whangarei Harbour. The last-named authority states it is the most active Cicindela he has seen.

Cicindela circumpictoides is very common in the bed of the Clarence River in Marlborough.

Family **CARABIDAE** (Carnivorous Ground Beetles).

This is a large family, the members of which have long legs, run quickly, and are carnivorous in habits. Black is the most common colour among them. They hide under stones, moss and logs, and are very useful, as they keep down the numbers of insects and their larvae in forests, gardens and fields. The larvae of the ground beetles are just as useful as the beetles themselves; they live in similar places.

Amarotypus edwardsi (7 mm. Plate II, fig. 1, 1a larva.) This very active beetle may be beaten out of trees and shrubs when heavily covered with pendant moss, but is not found on the ground as is usual with most members of this family. Its handsome larva is found in similar situations. Younger larvae are much slimmer than the full-grown specimen figured. When handled this beetle emits an extremely pungent and offensive smell. Generally distributed in both islands, and especially common in those localities having a heavy rainfall.

Clivina rugithorax (7 mm.) The prothorax is joined to the elytra by a very distinct neck; it is rectangular, very slightly longer than broad, and is wider than the elytra, which are elongate and deeply striated; the anterior pair of legs are rather stout, the others somewhat slender. Shining black, immature reddish specimens often met with. Found in wet places, under logs and

stones, in the beds of the Manawatu and Rangitikei Rivers, and probably generally distributed in similar localities throughout the North Island.

Genus MECODEMA.

Nearly eighty species belonging to this very characteristic New Zealand genus have been described as distinct, most of which are hard to discriminate. Many of them are, however, very large and conspicuous beetles. Mountains and islands are most productive in species of *Mecodema,* few being found in cultivated areas. Superficially they may be known by their large size, stout body and legs, and much constricted posterior portion of prothorax or "waist."

Mecodema rugicolle (23-26 mm.; Plate I, fig. 2.) One of the commonest and most generally distributed species, having occurred on the central plateau of the North Island 2,800 ft., on Mt. Egmont at 3,000 ft. and at various localities in the Nelson District.

M. O'connori (34 mm.) Larger and stouter, with rather deeply striated elytra, slightly punctured close to the sides. It was discovered by Mr. A. C. O'Connor, under logs in the bush near Levin, and has since occurred at Obelisk, Dunedin.

M. acuductum (30 mm.) Considerably smaller, narrower, and duller, with all the striae on the elytra distinctly punctured. It is found in beech forests on the eastern side of Wellington Harbour, and on the eastern hills of the Hutt Valley.

M. bryobium (28 mm.) is an extremely similar species found in similar localities.

M. costipenne (28 mm.) A very handsome species, slightly coppery tinged, with the suture raised, and three conspicuous, smooth, raised ridges on the elytra. Occasionally found under logs, in the forest at the head of Lake Wakatipu.

M. impressum (25 mm.) A much narrower, shining black species, with the elytra finely striated and punctured, is found, quite commonly, in the same locality.

M. simulans (25 mm.) A very similar species, but with the elytral striae less strongly punctured, is found commonly under logs on the lower slopes of Mount Arthur (3,000 to 4,000 ft.), but so far no description of it seems to have been published.

M. costellum (35 mm.) Somewhat similar to *M. costipenne,* but much larger, dull coppery. black, with the elytral ribs less distinct and connected by small raised polished irregularities across the interstices. Very abundant under logs and stones on Stephen's Island. A long series reveals the fact that there is great variation in the polish of the general surface, and in the distinctness of the sculpture. It is possible that these variations may partly be due to age.

M. punctellum (40 mm.) Jet black, very handsome, probably one of the largest species of the genus. Has broad raised polished ridges on the elytra near the suture. Also found on Stephen's Island but very rare.

M. rugiceps (22 mm.) Dull black, with a deep central groove on the prothorax and about eight series of very deep elongate impressions on the elytra. Found under logs and stones on the mountain sides at Arthur's Pass and the Otira Gorge.

M. seriatim (22 mm.) An extremely similar species which occurs at the head of Lake Wakatipu.

M. aeneoniger (18 mm.) A somewhat similar species, smaller, with the sculpture much less distinct. Has occurred on the central plateau of the North Island and at Nelson.

M. angustulum (18 mm.) An extremely similar species, probably identical, found on Mt. Egmont 3,000 ft., Waimarino 2,800 ft. and Mount Arthur Tableland 4,200 feet.

M. gratum (14 mm.) One of the smallest members of the genus, very highly polished, with shallow elongate punctures on the elytra, the interstices smooth, but ill-defined. Found under logs, in damp places, around the head of Lake Wakatipu and on the Lake Harris saddle.

Metaglymma modicum (16 mm.) Very similar in general appearance to a *Mecodema,* coppery-bronze, with head and thorax highly polished, elytra very regularly and deeply striated, the striae heavily punctured towards the sides. Occurs very sparingly under logs on the hills, near the sea coast, in the Wellington District, and on Stephen's Island.

Brullea antarctica (26 mm.) A stout-looking, very striking beetle, blackish-brown, highly polished, the elytra deeply striated, with punctures near the sides and very short, stout, reddish-brown, digging legs, covered

with strong bristles. It is found in sandy places, under logs or stones, on the sea beach above high water mark, but is usually rare. Specimens have been taken at Paekakariki, Wanganui and Auckland.

Diglymma ovipenne (15 mm.) A very neat looking small ground beetle. The elytra are much wider than the thorax, and together strikingly oval in shape; they are finely striated, the striae being shallower towards the sides. Found fairly commonly under logs in forest in the Wellington District, and has also been taken at Greymouth. It is easily recognised by its extremely pungent and offensive odour.

Dichrochile subopaca (11 mm.) Dull black, much flattened, with moderately long, slender legs; the elytra are much broader than the small, somewhat heart-shaped prothorax, and are very regularly and sharply striated with the interstices hardly convex. Found commonly around Christchurch, and taken occasionally under karaka logs, on the coast-hills near Wellington.

Genus ANCHOMENUS.

Includes about 28 species of flattened beetles with the prothorax small, usually somewhat heart-shaped, the elytra broad, the labrum truncated and the claws simple. They live under stones and logs and amongst dead leaves. The genus *Ctenognathus*, distinguished by its members having a long bristle on each side of the prothorax, includes about 21 very similar insects.

Anchomenus novaezealandiae (16 mm.) One of the largest and most elegant species; dull black with the legs long and slender, the elytra deeply and very regularly striated, their edges reflexed and strongly sinuate at the apex. Found under logs in the forest-region around Kaitoke, and the upper reaches of the Hutt River.

A. feredayi (7 mm.) Black, with slight greenish bronze reflections, the elytra with very shallow striations. Very common around Wellington, Picton and Christchurch. Probably generally distributed.

A. lawsoni (8 mm.) A very similar beetle, slightly longer and narrower, with the elytral striations deeper and the legs reddish-brown. It is rather local, but probably generally distributed in the North Island.

A. submetallicus (10 mm.) The elytra are finely striated, very wide in proportion to the prothorax, dull

metallic green, the legs yellowish-brown. Common under logs in the Nelson District and possibly generally distributed in the South Island; apparently not found in the Wellington District.

A. otagoensis (11 mm.) Brownish-black, with the thorax less strongly narrowed behind, and the antennae palpi and legs tawny yellow. Apparently common and generally distributed in the far south.

A. helmsi (10 mm.) and **A. sandageri** (10 mm.) are both very similar yellow legged species with the prothorax more constricted behind. They are found under stones on the sides of streams in dense forest ravines in the Wellington District. *A. helmsi* was discovered by Mr. Helms at Greymouth.

A. hallianus (13 mm.) Shining black, much stouter, with shorter legs, squarer prothorax, less constricted behind, and very deeply striated elytra. Common under stones near the sea coast.

Ctenognathus adamsi (12 mm.) Deep brownish-black, rather dull, with long reddish legs and antennae, small prothorax, slightly constricted and square behind, and oval elytra with regular deep striations. Often abundant under decaying logs beside streams and probably generally distributed in the North Island and northern parts of the South Island. Also found on Stephen's Island.

C. suborbithorax (11 mm.) Black, shining, with prothorax wider and more heart-shaped, reddish-black legs and more deeply striated elytra. Found under stones, usually near the sea coast. Possibly confined to the North Island.

Trichosternus difformipes (22 mm.; Plate I, fig. 3, 3a larva.) This species, and the extremely similar but larger *T. planiusculus* (27 mm.), are the commonest ground beetles found in the Wellington District. They may always be discovered under logs, or stones, in damp situations, especially in or near native forest, *T. planiusculus* being the commoner of the two. Both are very ferocious and highly predaceous insects and will use their powerful mandibles to some effect on the human skin, unless handled with due caution.

The larva of *T. difformipes* is found under large logs where there is dry soil beneath. It is predaceous and very active. Considering the relative abundance of the perfect insect it is extremely rarely met with. When confined in

a large tin, with a supply of earth and tipulid larva, it was found that these larvae were cannibals and only one specimen was reared out of three individuals.

The length of the larva is about 34 mm. Upper surface of head rugose around a slightly raised centre; sides of head also slightly raised. Antennae 4-jointed, the terminal joint very small and at a slight angle with the rest. The other essential characters are shown in the figure.

In addition to the foregoing no less than 32 New Zealand species of Trichosternus have been described. Many of them are very much alike in general appearance, the same applying to the five species included under the closely allied genus Zeopoecilis, and the 106 species included under Pterostichus. Of this multitude the following species may appeal to beginners:—

Trichosternus antarcticus (27 mm. or more). Very robust, bronzy-black, with brilliant metallic green reflections; the elytra regularly and deeply striated. Common under logs and stones on the Lyttelton Hills, and probably throughout the Canterbury Province.

T. hudsoni (21 mm.) Smaller and much less robust, otherwise very like *T. antarcticus.* Fairly common under logs in the Wellington District. I have taken it at Makara, Levin, and Pohangina.

T. cephalotes, very like *T. hudsoni,* but with broader elytra, which have a slight coppery tinge. Common in bush, Graham River, Motueka Valley, Nelson.

Zeopoecilus optandus (21 mm.) One of our handsomest ground beetles. Prothorax brilliant brassy and red; elytra with metallic purplish reflections. Common under logs on Stephen's Island, in the Nelson District, and the same, or an extremely similar species, occurs at Invercargill.

Pterostichus oneroaensis (25 mm.) Very robust, black, and very highly polished, with very stout legs, especially the femora. Found under logs at Lake Wakatipu and Invercargill.

P. sandageri. A similar species with rather less robust legs, and two large punctures on the fifth elytral striae; also found in the extreme South, the original specimen having been taken at Puysegur Point.

P. arduus (19 mm.) An elegant, rather highly polished, parallel-sided, species, found commonly under logs on Mt. Arthur, at about 3,500 ft. above sea level.

P. bullatus (27 mm.) A very large, robust and most striking species. It has distinct oblong elevations on the 3rd, 5th and 7th elytral interstices which immediately distinguish it from any of the other allied forms. It is found in the Lake Wakatipu region, but is apparently a rare insect.

P. lewisi (19 mm.) A rather elongate, parallel-sided species, with the elytral sculpture composed of rows of elongate depressions. It is occasionally found under stones around Wellington.

P. cribalis. An extremely similar species found in like places in the Nelson District.

P. praecox (15 mm.) One of the smaller and more slightly-built species, with rather finely striated elytra, distinctly punctured, except near the suture. It is abundant under logs and stones around Wellington.

P. eruensis (17 mm.) Of which I have been unable to trace a published description, has very distinctly fluted elytra. It is found on Mount Egmont, and on the central plateau of the North Island, at elevations of between 2,000 and 4,000 feet.

Hypharpax antarcticus (7 mm.) A very stout, rectangular-looking beetle, black with strong coppery-greenish reflections. The elytra are finely and very regularly striated without punctures; the tibiae and basal joints of the antennae yellowish-brown. Found in hot dry sandy places and very active. Probably generally distributed.

Allocinopus sculpticollis (11 mm.) A dull, blackish-brown, beetle, with rather yellowish-brown legs and antennae; the head is large, eyes prominent, prothorax nearly square, slightly narrowed behind; the elytra hardly wider than prothorax, abruptly tapering posteriorly, very distinctly striated. Found under logs, near rivers. Has occurred at Wainuiomata, near Wellington, and Graham River, Nelson.

Allocinopus smithi (7 mm.) Much smaller, dark brown, with legs and antennae slightly paler, prothorax less narrowed posteriorly and elytra finely striated. It is found, fairly commonly, in mud, under stones, at the edges of forest streams near Wellington.

Zolus and Oopterus include numerous species of small ground beetles, convex, very highly polished and

extremely active. They feign death amongst rubbish, but if discovered rush away and secrete themselves. The species are hard to distinguish.

Zolus helmsi (8 mm.) Prothorax rounded and narrowed in front, broad and square behind, elytra oval, very finely, but distinctly, striated. It is occasionally found amongst moss or under logs. Originally discovered by Mr. Helms at Greymouth, it has since occurred at various places around Wellington.

Zolus nigritulus (7½ mm.) Extremely highly polished, dark reddish-black with deep red legs; the head and prothorax are relatively smaller and the elytra very slightly striated. Found in similar situations to *Z. helmsi.* Probably the commonest species in the Wellington District.

Oopterus frontalis (5½ mm.) is a very similar insect with yellowish antennae, less convex eyes; the head and prothorax are relatively larger, and the elytra very finely punctured and striated. It is common amongst moss and dead leaves in the Wellington District.

O. pygmeatus (4 mm.) One of the smallest members of the genus. The elytra are very broad and distinctly striated. It is found under stones on high mountains, from 3,000 to 4,500 feet, and has occurred on Mount Arthur, Old Man Range Central Otago, and Humboldt Range Lake Wakatipu.

Tarastethus puncticollis (5½ to 6 mm.) Very like an *Oopterus,* has the elytra very evenly and distinctly punctured in rows. It is found amongst moss and under logs on the lower slopes of Mount Arthur and on the mountains around Arthur's Pass (2,800 feet). Discovered at Greymouth by Mr. Helms.

Cyclothorax insularis (5½ mm.) as its name implies, may be distinguished from *Oopterus* and allied forms by its almost round prothorax. It is common under logs and stones, and seems to be very generally distributed near rivers and on the sea coast.

Genus BEMBIDIUM.

These are very elegant, delicate little beetles, generally with an elongated prothorax and slender moderately long legs. They are active sun-lovers, and may be found under stones, at the water's edge, in river beds. The species are numerous and mostly very hard to discriminate.

Bembidium musae (7 mm.; Plate I, fig. 5.) One of the largest and handsomest species, was discovered by Mr. Cheeseman on Mt. Arthur. It has since been found sparingly in the Manawatu, Pohangina, and Rangitikei river beds, and is probably generally distributed in such localities.

B. callipeplum (3½ to 4 mm.) A very beautiful little beetle, with the head and prothorax bronzy-green, elytra fawn colour, with blotches of blackish across scutellar region, and beyond middle; legs and basal joints of antennae reddish-fawn. Common in same localities as *B. musae*, extremely active, and very hard to see amongst the sand.

B. anchonoderum (4 to 4½ mm.) Uniform dark bronzy-green, the elytra finely and regularly striated, with punctures. It is one of the commonest species and seems generally distributed, in the beds of large rivers, in both islands.

B. parviceps (4¼ mm.) Shining black, with the punctured striae more distinct but ceasing on the posterior portions of the elytra. Also very common and generally distributed, not confined to large rivers.

B. maorinum (7 mm.) Larger, more flattened, shining bluish-black, is also a very common and generally distributed species.

B. charile (8 mm.) A very similar beetle, bronzy-black, with brown legs, the elytral striations deeper and finely punctured. It is common in the river beds of the Manawatu and Rangitikei, and has also been found in Canterbury.

B. actuarium (4 mm.) Shining black, with the legs and basal joints of the antennae brownish-yellow; the elytra have about six deep striae, heavily punctured towards the shoulders. It is a very beautiful little species, apparently confined to the bed of the Wanganui River.

Actenonyx bembidioides (7½-8 mm.) Eyes very large, but not prominent, the head being considerably wider than the prothorax; the elytra are very broad and terminate abruptly; there are about seven rather broad, striations; the insect is entirely dull black, with slight bronzy-green reflections. Generally distributed and very common under stones in river beds.

Wakefieldia vittata (5 mm.) A very remarkable-looking little beetle, rather flat, with the head and prothorax shining black, the latter extremely wide in front, with prominent anterior angles; elytra very broad with angles much rounded, brownish-yellow; a broad irregular blackish stripe on each side, much wider posteriorly; legs pale brownish-yellow, antennae darker. Found amongst dead leaves, but very rare. Has occurred in Auckland and Wellington Districts. Although small it is immediately recognisable.

Agonochila binotata (6 mm.) Very flat, the face and eyes black; the prothorax broad and short, yellowish red; the elytra very broad, dark brown with a conspicuous dull yellow oval spot on each; legs and antennae dull yellowish-red. Found under bark, generally distributed. Formerly quite a common species, but now apparently very rare.

Genus DEMETRIDA.

Head wider than the prothorax and the elytra broad and flat, gradually becoming wider posteriorly.

D. nasuta (9 mm.) Deep blackish-brown with yellow markings; head and antennae yellowish-red; prothorax with very deep median groove, brownish-black; elytra strongly striated, blackish-brown with an elongate yellow spot on each shoulder and an oblique mark on each side posteriorly; legs yellow. Generally distributed, but not a very common species. Found under stones, amongst flood rubbish, etc. Is very active, running with great rapidity.

D. lineella (9 mm.) Narrower, warm brownish-yellow; sides of head behind the eyes blackish-brown; brownish bands on each side of prothorax and elytra; the latter with deep striations, and some elongate brown spots on the elytra beyond middle. Found in similar situations to the last species. Has occurred at Wellington and in the Marlborough Sounds area.

Genus SCOPODES.

These are very beautiful little insects, in general appearance suggestive of diminutive Tiger beetles. Owing to their very large eyes, the head is distinctly wider than the prothorax. The elytra terminate squarely, and abruptly; their surface is uneven, having a metallic silky appearance, and the striae are much

interrupted. All are sunlovers, and should be looked for under stones, or bark, exposed to hot sunshine. They are extremely active, and being found in small numbers, are difficult to obtain.

S. elaphroides (5 mm.) One of the commonest species. Dark silky bronze with yellow legs. Has occurred at Auckland and around Wellington.

S. pustulatus (5 mm.) A somewhat similar beetle, but darker with black legs. Occurs around Wellington and in the Buller River Valley.

S. versicolor (6 mm.) One of the largest and most beautiful species. Brilliant metallic copper colour with green reflections; legs blackish-bronze with steely-blue reflections. Originally discovered at Otira; very abundant in the Routeburn river bed at the head of Lake Wakatipu, running over cushion plants in hot sunshine.

Family **DYTISCIDAE** (Carnivorous Water Beetles).

Antennae with ten or eleven joints, setiform or filiform; body oval; pronotum broader than long. The last pair of legs are flattened and paddle-shaped, set with long bristles. The front tarsi have small pulvilli in the males of the larger species, which enable them to keep their footing on smooth surfaces. They are more common in standing than in flowing water. These beetles frequently come to the surface of the water to breathe, the air being taken in at the posterior end of the body, where two large spiracles are situated. A reserve supply is also stored under the elytra, and is assimilated through the spiracles situated on the other abdominal segments. The family is very poorly represented in New Zealand.

Homeodytes hookeri (25 mm.) Our largest water beetle. Very flat, broad, elongate oval, deep greenish-black, the front of head and margins of prothorax and elytra yellow. Apparently generally distributed in the North Island but very rarely met with.

Rhantus pulverosus (11 mm. Plate II, fig. 6, 6a larva.) The commonest, fair-sized, water beetle we have in New Zealand, found in both islands, but nowhere abundant. It is very widely distributed in other lands, having occurred commonly in Australia and New Caledonia; also in South Japan, China, Java, Assam, Himalaya, Egypt, Mesopotamia, Algeria, Southern and Central Europe, but

wanting, or extremely rare, in Northern Europe. Its wide dispersal must have been effected by flight, aided no doubt by gales. The insect is a powerful flyer and I have observed it on the wing in New Zealand.

The length of the full-grown larva is about 17 mm. Head large, almost round, flattened; mandibles long, slender, sickle-shaped; antennae slender, fully as long as head, 4-jointed; maxillary palpi slightly shorter than head, 3-jointed. Prothorax slightly broader than head, almost rectangular, broader than long. Meso- and metathorax much shorter, about equal. Legs rather slender, with femur, tibia and tarsus only slightly decreasing in length, the last furnished with a long double claw. Abdominal segments gradually tapering posteriorly, and becoming slightly longer, the eighth distinctly longer, the ninth elongated, bearing at its extremity two slender, heavily fringed processes, which support the terminal end of the larva above water, when it requires air. General colour very dull, deep, ochreous-brown marbled with paler colour on marginal areas; the head is slightly reddish-tinged, and the legs much paler.

This larva is very active and ferocious, as is usual with the larvae of water beetles. It feeds on small aquatic crustaceans and lives in muddy pools, or sluggish streams.

Lancetes lanceolatus (10 mm.) Elytra more acutely pointed; general colour brownish-ochreous, with black markings, eyes and posterior margin of head black; a broad black band on posterior margin of prothorax and about seven rather irregular black streaks on the elytra. Taken at Martinborough by Mr. A. C. O'Connor, to whom I am indebted for specimens. It has also been found in Australia and Tasmania. Three other species of the genus *Lancetes* are from Chili and one from Buenos Ayres.

Antiporus wakefieldi (5½ mm.) Convex with the prothorax wide, rectangular, and lobed at the base; dull yellow with extremely variable blackish markings. Found in stagnant pools, and apparently generally distributed throughout New Zealand.

A. duplex (4¾ mm.) Much darker in colour, with the sides of the prothorax more rounded. Common in the Auckland District. Has also occurred at Titahi Bay near Wellington.

Bedessus plicatus (3 mm. Plate III, fig. 2, 2a larva.) This little water beetle is common in stagnant pools near streams and rivers in open situations, during the spring and summer. It is probably generally distributed in both islands.

The larva, which is found amongst duckweed and other water plants in November, is very active, rapacious and ferocious. It becomes quite "dry" immediately it leaves the water, and can run on land with great rapidity.

Length, when full-grown (including anal setae) 12 mm. General colour ochreous, with dorsal plates dull blackish-brown, much paler in some specimens than in others. Head slightly tinged with reddish-brown; a very pronounced frontal process, with two divergent lateral processes about $\frac{1}{3}$ from base; mandibles very slender, long, sickle-shaped; maxillae apparently very small, with long slender 2-jointed palpi; labial palpi very long, slender, 3-jointed. Antennae 4-jointed, long, and very slender, terminal joint minute. Legs long and slender, especially middle and posterior pairs, clothed with fine bristles. Terminal appendages very long, gradually tapering, a distinct black streak from about $\frac{3}{4}$ to extremity.

Family **GYRINIDAE** (Whirligig Beetles).

These are smaller species than those of the last family. They are shiny beetles, and are remarkable for having the eyes completely divided in the middle, as if they had four eyes. The antennae have a large basal joint, and the remaining joints have the form of a small fusiform club. Represented in New Zealand by a single species *Gyrinus huttoni*, which is very rare.

Family **RHYSODIDAE.**

A very small family whose members are easily distinguished from the other Adephaga by their stout antennae with almost globular joints. Considerable diversity of opinion seems to exist as to the correct systematic position of these interesting beetles.

Rhysodes aterrimus (7 mm. Plate II, fig. 3.) A remarkable-looking beetle found in decayed logs when in a moderately dry, fibrous, condition. Usually met with in the late winter, or very early spring, but most uncertain in its appearance. Four other New Zealand species have been described, but all appear to be very similar insects.

Sub-Order II. POLYPHAGA.

Group I. BRACHELYTRA.

Family **STAPHYLINIDAE** (Rove Beetles).

Elytra much reduced in length, generally covering only the wings and the base of the abdomen. The wings

themselves are of ample size and can be unfolded and brought into action with great rapidity. The abdomen is composed of seven or eight freely movable segments.

This is a very large family, comprising, for the most part, little elongated, black species, which live beneath moss, bark and stones, in decomposing substances and animal refuse, in the ground, in fungi, in ant-hills, on damp sandy shores, and on flowers. The larvae, which closely resemble the adults, generally prey upon other insects. Many of the beetles have a peculiar odour, and when approached raise their tails. Many species fly in the sunshine, and occasionally get into the human eye. These numerous little insects are very hard to identify, and only a few of the most conspicuous species are mentioned. Dr. Cameron, 15 Teesdale Road, Leytonstone, London, E.11, is one of the leading British authorities on these insects.

Falagria micans (3½mm.) is a very interesting little ant-like beetle sometimes found under logs in very damp places; dark reddish-ochreous with long slender legs and antennae. It is very active. Has occurred at Tairua, Whangarei and Wellington.

Genus Conurus.

These are very active elongate little beetles found in damp places under stones or logs. They run with great rapidity, then suddenly feign death, lying on their side and folding up legs and antennae. The sudden change from rapid motion to absolute stillness is most baffling to a pursuer. The prothorax is very wide, large, and prominent, the insect gradually tapering thence posteriorly with the end of the body acutely pointed.

C. auricomus (3½ mm.). Reddish-golden-ochreous with black markings. Probably generally distributed through the North Island.

C. largulus (7-8 mm.) One of the largest species, is deep brownish-black, densely clothed with fine yellowish hairs; legs and antennae reddish-brown. Found in burrows, in dead trees, or shrubs, probably feeding on the inmates. Has occurred at Tairua, Whangarei, Wanganui, Palmerston North and Wellington but seems to be rare.

Quedius antipodus (14 mm.) A very stout black species, broadest over the elytra; the head is rounded, with a constriction between it and the prothorax. Found

under logs, or bark, and also amongst the dried skin or bones of dead animals. Probably generally distributed in both islands.

Q. fuscatus (11 mm.) An elongate, narrow, yellowish-brown species occasionally beaten out of vegetation in sub-alpine forests. It has occurred at Arthur's Pass and Mount Arthur and is probably confined to the South Island.

Staphylinus oculatus (19 mm.) Probably the largest species of the family found in New Zealand; black, stout, with large broad head, and bright red spot behind each eye. Common amongst carrion everywhere.

Xantholinus sharpi (15-16 mm. Plate I, fig. 4, 4a larva, 4b pupa.) This fine beetle may sometimes be cut out of the stems and branches of small trees, drilled with numerous burrows of weevils and other woodboring insects. It is rarely observed in the open.

The larva, which is extremely active, inhabits similar situations and probably feeds on the weevil larvae in their burrows.

Its length is about 16 mm. It is slender, subcylindrical, slightly flattened. The head is large, oblong-oval, deep blackish-brown, shining, but slightly rugose anteriorly; a slight constriction close to prothorax. Prothorax oblong-oval, bright reddish-brown, highly polished; meso- and metathorax much shorter, dull reddish-brown. Legs reddish-brown, furnished with numerous stout bristles. Abdominal segments rather short, oval, with deep constrictions, greyish-black, with connecting membranes dull white, and a dull white dorsal line. Anal segment conical, with two divergent processes, bearing one stout central bristle and two smaller lateral bristles. A few slender bristles on abdomen, and a very few smaller ones on head and thorax.

The pupa is deep brownish-ochreous with the tarsi dark brown. The head and prothorax are bent forwards on to the ventral surface and the limbs of the future beetle are closely appressed to the body and in slight relief only; there is a sharp spine, at the extremity of the terminal segment, with the tip bifid. This pupa has a close resemblance to that of a Lepidopterous insect.

Seven other species of Xantholinus are recorded as occurring in New Zealand.

Xantholinus cultus (12 mm.) Smaller and flatter than *X. sharpi;* the head is much broader and differently sculptured; the body narrower, much diffused with deep yellowish-brown, especially at the base of the elytra, the segmental divisions, and the legs. It is a rare species, found amongst decaying rimu, probably generally distributed.

X. arecae (8-11 mm.) is smaller and very much flatter than either of the preceding species. It has a most pungent and distinctive smell which, when once observed, will ensure its immediate identification in the field. Although originally discovered amongst decayed stems of the nikau palm, it lives under the bark of various dead trees, notably that of the karaka. It is probably generally distributed in the North Island.

Metaponcus brouni (8-10 mm.) Closely allied to the foregoing species. Deep red, sometimes yellowish, and very highly polished; the posterior half of the elytra and the basal segments of the abdomen are black. It is an extremely active insect, found occasionally amongst decayed wood.

Cafius litoreus (13 mm.) The head and prothorax are black, and very highly polished; the rest of the body dull brownish-black clothed with fine yellowish hairs. It is found amongst decayed seaweed just above high water mark.

C. quadri-impressus (13-15 mm.) The head is very large (especially in the male), somewhat square, with two deep impressions between the eyes; the prothorax is narrower in proportion to the rest of the insect than in *C. litoreus*. It is often very common amongst decaying seaweed on the coast around Wellington, especially in the early summer.

Hyperomma duplicatum (7½-8 mm.) The prothorax and abdomen are very long, the elytra being extremely small; deep red. Found amongst dead leaves, Maketu and Wellington. Rare and remarkable.

Coprostygnus optandus (8 mm.) Head very small, prothorax also small, and very rugose; the elytra broad and very deeply striated, and the abdomen also broad; black with basal joint of antennae and tarsi reddish. Found in decayed wood, under logs in beech forests, Arthur's Pass and West Coast of South Island.

Omalium litoreum (4-5 mm.) Flat and broad with small head, wider prothorax, and large wide elytra, thence tapering posteriorly; brown, the two basal joints of antennae, legs, a large basal patch on each elytron and posterior extremity, chestnut red. Very abundant amongst decaying seaweed on the coast around Wellington and probably generally distributed.

Family **PSELAPHIDAE.**

Elytra short. Antennae eleven-jointed, clubbed. Tarsi three-jointed. These are very small reddish or yellow beetles, which are found among moss and dead leaves, under stones, and in ants' nests, and are easily recognised by the characters of the antennae.

There are a great number of species of these little insects in New Zealand. When viewed, with adequate magnifying power, many of them will be found extremely beautiful objects, and their study has thus become quite a distinct branch of beetle lore. Most of the species are best taken by sifting dead leaves, the resulting leaf mould being afterwards examined at home, at leisure. Only three species are figured here, but it is hoped that these will indicate the interesting nature of these "Micro-Coleoptera."

Pselaphus pauper (2 mm. Plate VI, fig. 9.) Found rarely under stones or amongst dead leaves. Probably generally distributed in both islands.

Sagola citimus (3 mm. Plate VI, fig. 4.) Found under wet bark on dead hinau logs; also under the logs themselves. No less than 130 species of Sagola have been described in New Zealand.

Eupines dispar (2 mm. Plate VI, fig. 8.) Over forty species belonging to this genus have already been described in New Zealand. Apart from working dead leaves, these little beetles may often be secured by "trapping." See chapter on collecting. *E. dispar* may be taken occasionally in native forests around Wellington by either of these methods.

Family **SILPHIDAE.**

Body flat, sharply margined. Antennae with eleven joints, rarely with only ten, gradually thickened, or with several of the joints at the end expanded. The front coxae are conical, and project from their articular pits. The abdomen is composed of six movable segments. These beetles generally live in carrion, or in the bark of trees, and thus act as scavengers in nature. Most of the New Zealand species are small and inconspicuous.

Necrophilus prolongatus (10 mm. Plate III, fig. 1, 1a larva.) This fine carrion beetle is quite common in the neighbourhood of Wellington, and is probably generally distributed throughout New Zealand. Specimens

have been taken plentifully, amongst decayed animal matter, at the end of July, and the perfect insect is most likely to be found in such situations during the whole year.

The length of the larva when full-grown is about 15 mm. Elongate; broadest at mid-thorax, all segments deeply excised. Head moderate, deep dull brown; antennae 3-jointed, basal moderate, second joint elongate, rather irregular, with minute bristles, terminal very small. Prothorax broad, half as long again as meso- or metathorax, which are equal. Legs rather slender, with long claw-like single jointed tarsi. Abdominal segments gradually tapering posteriorly, very distinct; terminal segment with two long, slender, 2-jointed appendages, and stout anal proleg. General colour very dull blackish-brown. Legs, antennae, and connecting membrane between horny segments dull ochreous. About three stout bristles on lateral margins of each segment. The whole integument, except between the segments, is very hard and horny, much more so than in most beetle larvae.

This larva is very active in its habits. Numerous specimens were discovered in the much decomposed matter under the remains of three hawks. The larvae were taken at the end of September and the beetles were mature early in December.

Genus CHOLEVA.

These are small, rather broad, dull blackish beetles, having the head much bent downwards under the prothorax and the legs flattened. They are found amongst decaying vegetable, or animal matter, and some of the species are extremely active and jump long distances when disturbed.

Choleva lugubris (4 mm.) Dull brownish-black with the basal joints of the antennae and tarsi paler. Found amongst dead leaves, and may be trapped by placing an old sack on the ground under the trees and examining it a fortnight or three weeks later.

Mesocolon undulata (3 mm.) is very like a *Scaphisoma* in general appearance, bright ochreous mottled with brown, with a very conspicuous brown marking on the base of the prothorax. It is found under logs, but is rarely met with.

Family **SCAPHIDIIDAE.**

Boat-shaped, smooth, shining little beetles, which live in fungi, and in the decaying stumps of trees. The antennae are straight and consist of eleven joints, the last

five being enlarged. The front coxae are prominent. The number of abdominal segments varies from six to seven.

Scaphisoma scutellare (2½ mm. Plate VI, fig. 5.) Black; very convex and extremely highly polished. It is often abundant under wet bark and amongst decayed wood. Probably generally distributed. Other species of *Scaphisoma* may be found amongst fungi.

Family **HISTERIDAE.**

Wing-cases strongly truncated. Legs with flat tibiae, retractile into pits. Hind coxae widely separated. Integument very hard. The species live in carrion and beneath the bark of trees, where they prey upon other insects.

Sternaulax zealandicus (9-10 mm. Plate III, fig. 5, 5a larva.) This jet-black, extremely highly polished, beetle is fairly common, under the bark of dead karaka trees, on the coast hills, near Sinclair Head, Cook Strait, from August till April. Single specimens have also occurred at Wainuiomata and at Newman in the Wellington District, but generally speaking it seems to be a very local insect. It is certainly the finest Histerid found in New Zealand.

The larva lives under the bark of dead karaka trees, amongst the powdery decayed wood, and is found during the winter and early spring.

Its length when full-grown is 20 mm. It is rather stout, subcylindrical, much flattened, very slightly tapering towards extremities. Head moderate, very flat somewhat rugose, deep blackish-red; mandibles large, pointed, recurved; antennae three-jointed, slender, about one-half the length of the head. Prothorax bright reddish-brown, very flat, rather narrow, with margins rounded and two shallow depressions. Meso- and metathoracic segments very short, but broad, transversely wrinkled, with slightly chitinized dorsal plates. Nine visible abdominal segments, of almost uniform size, each with two deep transverse wrinkles. Anal proleg slightly developed. Terminal appendages slender, two-jointed, divergent, about as long as terminal segment.

Larvae of the two moths, *Lysiphragma epixyla* and *L. mixochlora*, as well as numerous larvae of *Saprosites* (*Aphodius*) *exsculptus*, were found associated with the larva of *Sternaulax zealandicus* and are very likely preyed on by the latter.

Saprinus pseudocyaneus (4½ - 5½ mm.) Very like *Sternaulax zealandicus*, but smaller; bright coppery black, very highly polished, with the elytra very beautifully

punctured. Four curved striae traverse the upper portion of the elytra, and the posterior part is densely punctured, the discal area being smooth. This beetle is occasionally found amongst dried up carrion, when almost reduced to skin and bones.

Pachylopus lepidulus (6 mm.) Larger than *S. pseudocyaneus*, black, with the elytra dull and densely punctured, except near the shoulders and suture. Found on the beach at Lyall Bay near Wellington, but apparently very rare.

P. pedator (5 mm.) Black and very highly polished, with five oblique striae on the elytra near the shoulders, and the anterior tibiae very broad and densely clothed with bristles. Specimens were found by Mr. Creagh O'Connor amongst dead fish on the beach at Paraparaumu, and by the writer on the beach at Paekakariki. This beetle was also taken by Major Broun, presumably near Auckland, but is evidently a rare insect.

Epierus planiceps (2 mm.) A minute oval, very convex beetle, often found under bark around Wellington, and on the Waitakerei Ranges near Auckland.

Group II. CLAVICORNIA.

Family **TROGOSITIDAE.**

Body oval or elongated, usually flattened. Antennae eleven-jointed. The first tarsal joint is the smallest. The claws are simple, with a small styliform lobe between them, terminated by two bristles. These beetles are found under the bark of trees.

Leperina farinosa (10-11 mm. Plate V, fig. 3, 3a larva.) This beetle is frequently found throughout the summer under the bark of many small trees in the Wellington District. It seems to show a preference for ngaio, and is more plentiful near the sea coast where that tree often abounds.

The larva is found in burrows in the solid wood of ngaio, nikau palm, *Carpodetus*, fuchsia, *Hedycarya* and other small trees. It feeds on the solid wood.

The length of the larva is about 25 mm. Stout with very fat body. Head black-brown, horny, rugose; antennae 3-jointed. Prothorax with large, rounded, dorsal plate; mesothorax with two plates; metathorax with two much smaller plates. Remaining segments with elongate irregular dorsal humps; terminal segment black-brown, wholly chitinous, with two curved, sharp, prong-like appendages slightly bent upwards; a

very stout anal proleg; many minute black warts bearing ochreous bristles, those at the sides much longer and stouter. General colour dull whitish-ochreous, often more or less suffused with grey.

L. nigrosparsa (12-16 mm.) In general form like *L. farinosa* but larger, silvery grey with slight greenish reflections and extensive black markings. Elytra with seven longitudinal raised keels. The paler portions are due to dense patches of scales, and the dark areas the general integument underneath. Found under bark, but uncertain in its appearance. Apparently the largest and handsomest species of the family found in New Zealand. Possibly generally distributed.

Promanus depressus (7-8 mm.) Very similar in general shape to *Leperina*, dark brown, with the antennae and legs reddish; the prothorax has a few rather shallow punctures and fine hairs; the elytra about 18 rows of very distinct punctures and a few very fine hairs. Found rarely under the scaly bark of living rimu trees. Apparently generally distributed in both islands.

P. pulchellus (3-3½ mm.) A very beautiful little species. The head and prothorax are reddish-brown; the elytra brilliant metallic green with four extremely jagged, coppery-brown transverse bands; the whole surface of the elytra is densely punctured. Found under bark, and occasionally beaten out of foliage. Generally distributed in both islands but rarely met with. Apparently commonest in somewhat elevated districts remote from settlement.

Grynoma varians (4½ - 5 mm.) Like a diminutive *Leperina*, much flattened, with the posterior third of the elytra very broad, and the whole insect irregularly covered with whitish hairs. Beaten out of foliage during the spring and early summer. Probably generally distributed in both islands.

Phycosecis discoidea (2¾ mm.) This little species has the prothorax almost round and the elytra rotund; dull black, with the base of the elytra pale ochreous; the whole insect is covered with deep punctures, each of which emits an erect white bristle. Found amongst sand on the beach, where it is almost impossible to detect except when moving. Feeds on dead fish, or dead sea birds. A dried up carcase on the sand, if shaken over the beating sheet, will very probably yield a series.

P. atomaria (2½ mm.) Very similar, slightly smaller, and wholly black. It has identical habits.

Family **NITIDULIDAE.**

Small, flat, and rather broad beetles, with straight antennae, usually composed of eleven joints, three forming the club. The front coxae are cylindrical. The tarsi are five-jointed, some with the first and others with the fourth joint very small. They are all small beetles, and feed on dried animal matter and carrion. Many of them are found upon flowers.

Epuraea zealandica (3 mm. Plate II, fig. 5.) Dark yellowish-brown with legs and margins of prothorax and elytra yellowish, the very large club to the antennae black. Common amongst large yellow fungi in the autumn and early winter.

Soronia hystrix (3 mm.) In form like the last species but black, the whole insect covered with irregular nodules and black bristles. May be beaten out of native shrubs affected with the " Black fungus " (*Antennaria*) throughout the summer. The beetle is perfectly protected on the fungus covered foliage and stems. Found in both islands and probably common and generally distributed.

Xenoscelis prolixus (5 mm.) Unlike most members of the family, elongate, gradually tapering from the front of the prothorax to the posterior extremity; yellowish-brown, the prothorax finely and regularly punctured and the elytra with about 6 rows of very regular punctures. Found in the main stems of the dead fronds of the silver tree fern (*Cyathea dealbata*). Occurs in both islands. Probably generally distributed.

Lenax mirandus (5 mm.) Another elongate species quite unlike any other beetle. Black. Head almost round with a deep depression behind each eye; prothorax narrow oblong, with two elongate, punctured grooves near the middle, and a spike-like projection on anterior angles; each elytron has two prominent keels parallel with the suture, and four rows of deep puctures. Found under bark of recently felled hinau trees. Also very rarely beaten out of forest growth. Occurs in both islands but extremely rare.

Family **CUCUJIDAE.**

Body usually long and flat. Antennae with eleven joints, filiform, or with three larger terminal joints. Tarsi with five joints, frequently only four on the last pair in the males. Found under the bark of trees, or in vegetable refuse, and usually rare.

Chaetosoma scaritides (12 mm. Plate V, fig. 1, 1a larva.) This elongate, parallel-sided, black beetle seems to be generally distributed throughout New Zealand. It is usually cut out of logs tenanted by weevils and other woodboring species, but is occasionally found in the open. It is a very easily recognised insect.

The larva inhabits burrows in beech (*Nothofagus*) and other trees possibly feeding on other woodboring larvae.

Length when full-grown about 12 mm. Stout, cylindrical, rapidly tapering towards the head. Head narrow, rather elongate, horny, blackish-brown. Segment 2 with large, highly polished, bright brown dorsal plate; segments 3 and 4 pinkish-ochreous, each with two rather small, oval, pale brown, horny, dorsal plates. Rest of body dilated, soft, pale pinkish-ochreous, mottled with darker pink on the back; segmentation very distinct; terminal segment with horny brown dorsal plate and two strong divergent processes. Posterior portion of larva furnished with reddish hairs.

Chaetosomodes halli (7½ mm.) A closely allied but very much rarer species. It is less parallel-sided than *C. scaritides;* the prothorax is rounder, covered with almost uniform deep punctures, and the elytra are deep brown, heavily punctured; there are five shining yellow spots on each elytron which are not punctured. It inhabits beech forests. This beetle has occurred in Gollan's Valley, on the eastern side of Wellington Harbour, on Mt. Arthur, and at Lake Rotoiti, where it was discovered by the late Mr. T. Hall.

Diagrypnodes wakefieldi (6-7 mm. Plate V, fig. 2, 2a larva.) This very thin, flat, elongate beetle is common under bark in both islands. Its structure is most perfectly adapted for making its way between the bark and the solid wood of dead trees. This it does very effectively, but in rather a leisurely fashion.

The larva, which is found in similar situations, is about 8 mm. in length, extremely thin and flat, gradually widening posteriorly. Head small, yellowish-brown; antennae 3-jointed. Prothorax elongate, parallel-sided, pale brownish-ochreous; meso- and metathorax much shorter, slightly broader rounded, pale ochreous; legs small, rather slender. Abdominal segments becoming much broader beyond middle, thence very slightly narrower, ochreous; a short depression near margin, and an elongate depression next median line; last segment but one, without depressions, clouded with light ochreous-brown. Terminal segment wholly bright ochreous-brown, with two furcate terminal processes, one each side, each bearing two large teeth, the innermost tooth strongly curved inwards; two additional minute teeth near base of each process. A bristle on the side of each segment. A very large anal proleg. Lives under bark and crawls about very slowly.

Dryocora howitti (7 mm. Plate V, fig. 4, 4a larva.) This interesting beetle may be immediately recognised by the peculiar shape of its head and its deep brownish-red colour. It lives, with its equally remarkable larva, in the middle of rimu and hinau logs when in a moist, deep red, stage of decay. At such times the wood becomes divided into numerous small blocks, and this thin beetle, together with its much thinner larva, are both specially adapted for living in the damp crevices between these blocks.

The length of the larva when full-grown is about 12 mm. It is extremely flat and thin. Head large, with prominent lateral lobes, whitish-ochreous; the organs of the mouth brown and horny. Antennae four-jointed. Thoracic segments somewhat heart-shaped. Abdominal segments rounded-rectangular. Legs rather short, stout, with single tarsal joint. Terminal segment with two short posterior appendages, bearing bristle on summit. General colour pale whitish-ochreous, slightly darker anteriorly, and on two posterior segments; surface highly polished. A very short anal proleg. A series of isolated long slender bristles on sides of abdominal segments. Alimentary canal indicated by deep reddish-brown dorsal line.

Parabrontes setiger (6½ mm. Plate III, fig. 3, 3a larva.) This active little beetle may be found under the bark of various trees in the Wellington District. It has also occurred on Mount Arthur.

The larva lives under the bark of dead beeches (*Nothofagus*) and probably other trees. It is active in its habits, running about under the bark, to which life it is specially adapted by its very thin, flattened form.

Its length is about 13 mm.; much flattened, widest near middle of abdomen. Segmentation very distinct. Head broad, short, with three-jointed antennae, about half as long again as width of head. Prothorax rather longer than wide; meso- and metathorax slightly shorter and wider. Dorsal portions of all segments somewhat raised, and irregularly pitted and wrinkled. General surface highly polished. Abdominal segments broadest before middle; apparent terminal segment (the 12th) oval, bearing at its extremity an elongate proleg and two short crescentic appendages. General colour dull blackish-brown, paler towards head. Alimentary canal often black. Organs of the mouth, and anal appendages, reddish-brown.

Cryptamorpha brevicornis (7 mm. Plate V, fig. 5, 5a larva.) This very active beetle is often abundant under the loose-bark of recently felled hinau trees (*Eleocarpus dentatus*), especially when saturated with moisture. It is found throughout the Wellington District and probably elsewhere.

The larva, which is even more active than the beetle, is found in similar situations.

Its length when full-grown is about 13 mm. Elongate, much flattened, rapidly tapering posteriorly. General colour very dull greyish-brown; a blackish dorsal streak from mesothorax to extremity; two large dull yellow spots on body segments 5-11 inclusive; antennae slender 3-jointed, about two and a-half times as long as head. Prothorax rounded quadrate, surface very irregular; meso- and metathorax shorter, also much wrinkled on dorsal surface. Abdominal segments slightly wider near middle, thence tapering posteriorly. The armature on the terminal segment consists of a long forked process, rising almost vertically from the dorsum, and when seen from above very much foreshortened. A stout, elongate, anal proleg.

This larva is almost certainly carnivorous.

The pupa is secreted in a crevice on the inner side of the bark, its terminal segments remaining enclosed in the old larval skin.

Family **EROTYLIDAE.**

Antennae with eleven, rarely with only ten joints, club-shaped. Legs widely separated. Front coxae globular, and inserted into articular depressions. Tarsi with four or five joints, the fourth being frequently very small and enclosed within the third.

A very small family so far as New Zealand is concerned, mainly characteristic of the tropics. Its members principally inhabit fungi and timber.

Cryptodacne vittata (4-4½ mm. Plate III, fig. 4) is occasionally found amongst decayed rimu around Wellington.

Thallis polita (5-6 mm.) A very similar-looking insect, but larger, very highly polished, deep brownish-black with deep red legs and antennae. Found amongst bark and dead leaves, but not often met with. Apparently mainly attached to hinau. Possibly generally distributed in the North Island.

Family **CRYPTOPHAGIDAE.**

Abdomen composed of five freely-movable segments, the first of which is the longest. Antennae with eleven joints, the club being formed of three. The tarsi are generally five-jointed, the hind tarsi with only four joints in the males of many species.

Small to minute beetles of very varied habits. They are found amongst flowers, in fungi, and in decayed wood.

Cryptophagus rubellus (2 mm. Plate VI, fig. 6.) Found under bark and probably generally distributed in

the North Island. Another somewhat similar species, more convex, with the prothorax more rounded, occurs amongst flowers in the utmost profusion.

Telmatophilus depressus (2½-3 mm.) Rather flattened; the prothorax with rounded sides; the elytra much wider than the prothorax, very finely punctured in rows; deep yellowish-brown with the sides of the elytra blackish-brown. In some individuals the whole body and club of the antennae are blackish-brown. Found between the leaves of the cabbage tree palm, but apparently rather local. Probably distributed throughout the North Island.

T. nitens (2-2½ mm.) Much more convex with the elytra oval, their posterior extremity rather pointed; head and prothorax deep reddish-brown, finely punctured; elytra black, highly polished, finely punctured in rows; the shoulders and two spots near termination ochreous, the extent of the ochreous colouring varying greatly in different individuals. Very abundant during November, in the flowers of speargrass (*Aciphylla squarrosa*), on the coast hills around Wellington. Probably generally distributed throughout the North Island.

Family **LATHRIDIIDAE.**

Minute beetles; antennae clubbed; tarsi with three simple joints, the front tarsi rarely with four. The abdomen is formed of five or six segments covered by the elytra. They live amongst decaying vegetable substances.

Rethusus pictulus (2¼ mm. Plate VI, fig. 3.) A very beautiful little insect, found by breaking up dead leaves of nikau palms and other vegetable refuse over the beating sheet. Has occurred near Wellington and Dunedin.

Family **CIOIDAE.**

Minute cylindrical insects with short clavate antennae and 4-jointed tarsi. Fore- and middle coxae small, oval, not prominent. Abdomen with five segments beneath.

Cis undulatus (2½-3 mm. Plate VI, fig. 1.) One of the largest species, rare, but probably generally distributed in both islands; may be beaten out of shrubs from November till March.

C. picturatus (2½ mm.) Yellowish-brown, the elytra finely variegated with black, and the whole insect

irregularly clothed with short, very fine, golden hairs; legs reddish; antennae yellow, club black. Found very sparingly around Wellington. Beaten out of shrubs from November till February.

C. cornuticeps (2 mm.) Reddish-black without clothing, the whole surface finely and regularly punctured; the head has two processes between the eyes. Often found in numbers amongst the "shelf" fungi (*Momes*) when somewhat decayed. Has occurred around Wellington, and at Whangarei.

Family **COLYDIIDAE.**

Antennae with from eight to eleven joints, clubbed. Tarsi simple, with four joints. Abdomen with five, rarely with six segments, the first three or four being immobile. Front and middle coxae globose. They are found under bark, or in fungi growing on trees.

This is a family of usually elongate, more or less cylindrical beetles, exhibiting a great diversity of extraordinary sculpture and clothing. Most of them are restricted to primaeval forests and disappear entirely when these are destroyed. Some 170 species have been found in New Zealand, as compared with only 19 in the British Islands. The sedentary lives of many of these beetles are very remarkable; the creatures concealing themselves in the crannies of fungus-covered wood, and scarcely ever leaving their retreats, so that it is the rarest circumstance to find them at any distance from their homes. Collectors will do well to devote special attention to these most interesting insects, whose extermination is almost certain to result from the extension of settlement.

Pristoderus (Ulonotus) antarcticus (7-8 mm. Plate IV, fig. 4.) Usually found in companies of five or six specimens, under bark, or in crannies of dead trees more or less infested with fungoid growths. It is especially attached to the cabbage tree palm (*Cordyline australis*). Has been recorded from the Wellington, Manawatu, and Auckland districts. When alive this beetle is often more or less covered with a bluish-white "bloom" which disappears in the dried specimen.

P. discedens (5-6 mm.) Devoid of the sculpture and clothing characteristic of *P. antarcticus* and most other members of the genus; dull reddish-black with the elytra faintly punctured in rows, each alternate row bearing several obscure pale spots. Found under logs and stones

in river beds. Has occurred in the Manawatu District, on the West Coast of the South Island and in the Dart Valley, at the head of Lake Wakatipu. Probably generally distributed.

P. viridipictus (4 mm.) Much more like *P. amtarcticus*, but smaller, with the raised nodules on the elytra bright green, and a blackish blotch on each side. Highly protected when resting on moss covered tree trunks. Fairly common in the Wellington and Manawatu districts.

P. wallacei (4½ mm.) Slightly larger, with the elytral nodules smaller, more numerous, pale green or grey; there is no black blotch, but several obscure oblique blackish marks across the elytra. Occurs around Wellington in same situations as *P. viridipictus*. Discovered by Mr. W. L. Wallace at Wairiri, Seaward Kaikouras.

P. abberans (5½ mm.) Very deep yellowish-brown with the elytral nodules black. Found at Tairua, Whangarei Heads, around Wellington, and on Mount Arthur (Nelson). Probably generally distributed.

P. asper (2½ mm.) Deep blackish-brown with reddish-brown legs; the projecting edges of the prothorax and bases of the elytra whitish-brown, or fawn colour; several minute pale coloured nodules on posterior half of the elytra. Discovered by Major Broun at Tairua. Found fairly common amongst bark on dead trees around Wellington, but apparently specially attached to karaka.

Genus NOTOULUS.

Includes a number of small species very similar in general appearance to *Pristoderus*.

Notoulus scabrus (3½-3¾ mm.) Purplish-black, with a large yellowish-brown nodule on each elytron below the shoulders, and a conspicuous, yellowish-brown patch, with raised nodules, near posterior extremity. Beaten from dead branches of trees. Generally distributed.

N. sellata (3¾ mm.) A very beautiful little beetle, pale olive green or brown, with a conspicuous oblong black spot in the middle of the elytra behind the scutellum. May be beaten from dead branches of trees. Fairly common in the Wellington District. Originally discovered by Mr. Helms at Greymouth.

N. libentus (almost 4 mm.) Broader, pale reddish-brown with a large black blotch on the side of each

elytron. A rare species, found in the Waitakerei Ranges, Auckland, and in the beech forests on the eastern side of Wellington Harbour.

Tarphiomimus indentatus (4½-5 mm.) Dull yellowish-brown, with several interrupted irregular raised ridges on the elytra and their margins strongly serrate. Very common amongst dead branches and generally distributed.

Dryptops undosus (6-7 mm.) Rather broad. Dark brown; the sides of the prothorax flat and strongly produced; the elytra narrow at the base, their whole disc abruptly elevated, the raised edges being nearly on a line with the side margins, and the posterior protuberances extending nearly as far as the termination, making the enclosed space appear as one large irregular depression. Beaten out of dead branches, or from the under surface of logs, in coastal scrub around Wellington. Occurs also on Stephen's Island and at Outram, Otago. Rare and remarkable.

Bitoma insularis (3½ mm.) An elongate, cylindrical, little beetle common under the bark of recently felled trees; reddish-brown with bright yellowish elytra variegated with black; both prothorax and elytra are strongly fluted.

B. vicina (3 mm.) Somewhat similar, but the elytra are golden ochreous, with a few minute black marks, and a conspicuous black patch on the extremity. Beaten from dead branches of *Nothopanax arboreum,* but uncertain in its appearance. Apparently generally distributed.

B. rugosa (3 mm.) One of the commonest species of the genus. Dull brown, or greyish-brown, variegated with blackish, with several small, whitish, raised nodules on the elytra. Beaten out of forest growth throughout the summer.

Enarsus bakewelli (8-9 mm. Plate IV, fig. 3.) Often found adhering to the undersides of logs, in which position it almost exactly resembles an excrescence. Common and generally distributed.

E. wakefieldi (7 mm.) Smaller and darker, with the summits of the nodules marked in brownish-white. Found under karaka logs on the coast hills around Wellington. Probably generally distributed.

E. cucullatus (9-11 mm.) Very like *E. bakewelli* but larger; deep reddish-chocolate-brown; the thoracic lobe over the head is elongate, not deflexed, with its sides much

raised. Found commonly under logs in the forest on the lower slopes of Mount Arthur (3,000-4,000 feet). Also at Boatmans and Greymouth.

Recyntus tuberculatus (4-4½ mm.) Very broad, convex, blackish-brown, with three rows of large nodules on each elytron. Found amongst bark and fungi, and possibly specially attached to pukatea and *Coprosma*. Has occurred around Wellington, at Tairua, and on Stephen's Island, but is generally rare.

Rhitidinotus squamulosus (11-13 mm. Plate IV, fig. 2.) One of the most remarkable beetles in New Zealand. It was formerly (1883) found in the extensive flat region around the Manawatu when in its primitive forest-clad condition, but has long since disappeared in that area through the extension of settlement. Specimens have quite recently been taken at Mamaku and at Whangarei and the species has also occurred in the Chatham Islands. It is now apparently confined to the far north of New Zealand.

Family **COCCINELLIDAE** (Lady Birds).*

Body hemispherical. Head much concealed by prothorax. Antennae with from nine to eleven joints, gradually thickened or clubbed, and inserted in front of the eyes. Tarsi apparently three-jointed, the third joint being hidden in the second. The beetles and their active larvae live on Aphides and scale insects, hence they are of great economic value.

Coccinella tasmanii (5½ mm. Our native ladybird.) Hemispherical, shining, black, with two large yellow spots on the prothorax, and eight large irregular yellow spots on each elytron. It is generally distributed, but nowhere common.

C. 11-punctata (5¼ mm.) A very similar beetle in structure; the elytra are orange-red with 11 conspicuous black spots. Uncertain in appearance, but apparently very generally distributed. In January, 1893, it occurred in considerable numbers, on the top of Mount Enys, near Castle Hill, West Coast Road, at an altitude of 7,000 feet above sea level. It is evidently of migratory habit as no food for the insect could have been available for some

*In New Zealand the very common little green chafer, *Pyronota festiva*, is often erroneously referred to as a "Ladybird."

miles around. This species was possibly introduced from Europe in the very early days of the Colony.

Leis antipodum (6 mm.) Another beetle of the true ladybird type; prothorax yellow with two divergent black stripes; elytra more or less suffused with blackish, often with obscure yellow markings. Attached to epiphytic plants growing in the tops of large rimu trees. Only to be found in numbers by examining the vegetation growing in the top of a forest tree just felled.

Vedalia cardinalis (4 mm.) Elytra brilliant crimson with several irregular black spots. This species was introduced into New Zealand many years ago to destroy scale insects, and has proved a great success.

Scymnus acceptus (2½-3 mm. Plate IV, fig. 5, 5a larva.) One of the commonest species of Coccinellidae in New Zealand. It is constantly beaten out of forest growth from November till February. Immediately recognisable by the large pale yellow spot on the shoulder of each elytron, otherwise somewhat variable in colour.

The larva, which is found in similar situations, is about 3½ mm. long; flat, onisciform, moderately broad, slightly tapering at each end; general colour pale ochreous-grey. Head small, ochreous, mottled with black at base. Prothorax pale grey, nearly round. Meso- and metathorax wider, ochreous-brown, each with two rounded lateral projections, and two conspicuous black spots. Legs short and stout. First segment of abdomen with two rather conspicuous patches of woolly white; remaining segments, except last, with two conspicuous black spots, those on body segments 8 and 9 confluent, and forming black dorsal bands; body segments 10 and 11 with paler median blotches; terminal segment large, rounded posteriorly. A large, pale yellowish anal proleg. Underside dull grey-green, paler towards middle.

S. flavihirtus (3 mm. Plate IV, fig. 1, 1a larva, 1b pupa.) This little beetle is probably generally distributed throughout the country. It seems to be specially attached to beech forests and sub-alpine scrub.

The length of the larva is 4½-5 mm. Elongate oval, much flattened, onisciform. Head small, deep brown, antennae and mouth organs minute. Prothorax rounded triangular, without projections, blackish, with minute white bristles, and central suture; meso- and metathorax with two projections on each side, also black, with numerous minute white bristles, and central sutures. First abdominal segment with four dorsal tubercles and one lateral tubercle on each side, pale whitish-ochreous; abdominal segments 2-4 inclusive with much less pronounced black dorsal tubercles and similar lateral tubercles, all clothed with minute whitish bristles; segments 5 and 6 of abdomen with small median dorsal tubercles and large outer dorsal and lateral

tubercles, pale whitish-ochreous; segment 7 of abdomen with black tubercles, dorsal series less pronounced; segment 8 with small central pair, and large outer dorsal and lateral pairs, whitish-ochreous; no distinct tubercles on terminal segment. Legs large and strong, but hardly visible from above owing to great breadth of larva. Intersegmental spaces black tinged with dull yellow. A large strong anal proleg. Underside smooth, dull greenish-grey.

This larva is active in its habits and no doubt predaceous.

The pupa is naked. It is attached by the tail to the old crumpled larva skin, which in turn is strongly adherent to a leaf, or stem.

The beetle may be found from October till February. It is often beaten from foliage, and numerous specimens of the larva may be taken in the same way.

Family **DERMESTIDAE** (Bacon Beetles).

The antennae, which are inserted on the front of the head, are short, straight, and usually eleven-jointed, with a large club composed usually of three, more rarely of two, or more than three joints. Underside of thorax bearing a hollow for its reception. The front coxae are conical, the posterior pair flattened. The tarsi have five joints, and the abdomen is composed of five freely movable segments. Many species frequent flowers, often in large numbers, and the larvae feed on dead animal substances. The upper surface of the larvae is covered with a complex clothing of hairs, of various lengths, the function of which is at present unknown.

Dermestes vulpinus (8 mm.) An elongate dull black beetle with reddish-brown antennae; the underside is covered with dense white hairs. It feeds on animal substances and has been introduced into all parts of the world with the spread of commerce. May be found amongst sheep skins. An extremely destructive insect.

Trogoderma punctatum (3½ mm.) Rounded-oblong in shape, black, with three transverse series of irregular white marks on the elytra. May be beaten from the flowers of the tree manuka (*Leptospermum ericoides*) about midsummer. Has been taken at Howick, Wellington and Picton.

Family **BYRRHIDAE.**

Antennae usually with eleven, rarely with ten joints, gradually thickened, but with several larger terminal

joints. The head prominent or retracted under the pronotum, and the whole of the appendages capable of complete apposition to the body. The front and middle coxae are cylindrical, and the posterior coxae are flattened, transverse, and approximated. They are very convex beetles, and feed on moss.

A revision of the New Zealand members of this family, with photographic illustrations, will be found in the New Zealand Institute Bulletin No. 2, issued on 30th August, 1910.

Pedilophorus coruscans (4½-5 mm. Plate II, fig. 4, 4a larva.) This very highly-polished, metallic-green, or coppery-green pill-beetle, seems to be common and generally distributed throughout the country. It is usually beaten out of moss-covered trees or shrubs.

Its remarkable larva, which also inhabits moss, is about 12 mm. in length. Body elongate, cylindrical, terminal segment greatly enlarged, with almost flat oval top. Head globular, slightly flattened, a little broader than prothorax, black, horny and slightly rugose; antennae moderate, apparently 3-jointed. Prothorax elongate, cylindrical, constricted near front, horny, black, surface rugose. Mesothorax much shorter, with horny anterior ring, otherwise soft; greenish-black. Metathorax slightly longer, soft greenish-black, much paler on the sides. Legs fairly long with black horny claws. Segments of abdomen, except terminal, greenish-black, pale dull greenish on sides, gradually increasing in size, except last but one which is shorter, all body segments, except head, prothorax and terminal, are highly polished. Terminal segment very large, oval, horny, and much flattened above; red-brown, with yellowish median band, the sides darker and very finely raised; the general surface slightly rugose. A few short stumpy bristles, except on terminal where hairs are very short, fine, and hardly visible; a series of subdorsal depressions on each side of body segments 5 to 11 inclusive. Underside of larva much paler, with surface much furrowed. Underside of terminal segment yellow, with very large, irregular, anal proleg.

This larva is fairly active in habit. It almost certainly feeds on moss. It is full-grown in December.

The beetle may be met with the whole year through, but is much commoner during the summer months.

P. humeralis (9 mm.) One of our largest species, duller in colour without green or coppery-metallic reflections, the whole surface being very finely punctured. Found on Ben Lomond and in the Routeburn Valley, Lake Wakatipu; also on Minaret Peaks at an elevation of 6,000 feet. Characteristic of the mountainous regions of the far south.

Synorthus mandibularis (4 mm.) Smaller and rounder in shape than *P. coruscans* with the legs and antennae

relatively longer; black highly polished with reddish legs and antennae. Has been found on Mount Egmont, at Wellington, Mount Arthur, Mount Cook and the Humboldt Range, Lake Wakatipu.

Family **DRYOPIDAE.** (Parnidae).

Body elongated, flat, or convex, sometimes partially covered with short, felty hair. Antennae on the front of the head, usually eleven-jointed. Wing-cases closely contiguous, and entirely covering the abdomen. Front coxae sometimes cylindrical, sometimes globose; the posterior pair almost semi-cylindrical. Tarsi five-jointed, with a large terminal joint. These beetles live in or near running or standing water, where they creep about on plants and stones, but do not swim. They subsist upon decomposing vegetable matter, and are provided with an air-sac, which enables them to remain for a considerable time under water.

Protoparnus longulus (4½ mm.) Dark brownish-black, stout, convex, sparingly clothed with rather long hair, and the whole upper surface coarsely punctured; the antennae have joints 4-11 prolonged inwardly as tooth-like projections, the whole series forming a large, compact, almost dentate, club. Found under logs in very wet places.

Hydora picea (3½ mm.) Head rather narrow; the prothorax much wider at its posterior margin, with the two posterior angles very acutely pointed; the elytra elongate, broader than prothorax, margined, with about 8 rows of very distinct striate punctures; black, densely clothed with fine golden hairs. Found in river beds, running over stones at the water's edge, in hot sunshine, sometimes extremely abundant, and taking wing with great rapidity.

Family **HYDROPHILIDAE.**

Body oval, or nearly round. Antennae very short, not longer than the head, and terminating in a club. The maxillary palpi are elongate, often much longer than antennae. The hind legs are broadly flattened, and ciliated. Many of these beetles live in standing water, and swim by moving the legs alternately, not like oars, rising to the surface from time to time to take in air. This family is often regarded as constituting a separate group under the name of Palpicornia.

Rygmodus modestus (6 mm. Plate II, fig. 7.) May be beaten out of various blossoms in the spring and early summer. It is often quite common amongst wineberry trees (*Aristotelia serrata*), when in flower during November. Found in the Wellington District and probably generally distributed.

R. cyaneus (7 mm.) Less convex, more oblong, with blue elytra. Beaten freely out of blossoms on the mountains around Arthur's Pass at midsummer. The same, or an extremely similar species, occurs on the mountains around Lake Wakatipu.

R. limbatus (7½ mm.) Entirely black, with reddish legs, the elytra punctured and rather deeply striated. Found at Waimarino on the central plateau of the North Island, and on Mount Arthur, at elevations between 2,000 and 4,000 feet.

Philhydrus variolosus (5¼ mm.) Oblong-oval, deep yellowish-brown, the labrum, head between the eyes, and middle of prothorax dark brown; surface highly polished, the numerous punctures being very minute. A true water beetle. Has been found at Whangarei and at Martinborough. Rare, but probably generally distributed in the North Island.

Berosus mergus (4¼ mm.) A very beautiful little water beetle. The head and prothorax are metallic-green with crimson reflections, the latter broadly margined with dull ochreous; the elytra, which are broader, and about three times as long as the prothorax, are dull yellowish-brown, each elytron bears ten rows of very closely placed punctures. Discovered by Mr. S. W. Fulton in a pool on Mount Maungatua, Otago. Very abundant in pools along the Buller River near Newton Flat. Probably generally distributed in the South Island.

Tormissus magnulus (8 mm.) A very handsome species, stout, oval, convex, black, the whole surface very finely punctured; the palpi and antennae are reddish; the legs stout, with numerous short bristles; the elytra have ten rows of very distinct, moderately deep, punctures. So far only recorded from the vicinity of Wellington, where it occurs in very wet places amongst decayed vegetable matter, or fungi.

Hydrobius assimilis (9 mm.) Somewhat similar in general appearance, but more elongate and less convex, with relatively smaller and slenderer antennae, palpi and

legs. May sometimes be found in brackish pools on the sea coast. This species was apparently introduced into New Zealand in the very early days of the colony.

Cyloma lawsonus (4 mm.) Smaller than either of the foregoing, pitchy black with the margins of the prothorax and terminations of the elytra dark straw colour. A rare species found amongst dead leaves in very damp places. Has been recorded from Auckland, Mount Egmont and Wellington.

Group III. SERRICORNIA.

Family **DASCILLIDAE.**

Elytra covering the abdomen. Antennae eleven-jointed, filiform, or dentated. Prosternum without a projection towards the mesosternum. Front coxae elongate, greatly exserted. Tarsi five-jointed. Abdomen with five mobile ventral segments. Integuments flimsy. Found on flowers. The larvae live on the roots of plants.

These insects are highly predaceous in the imago state, and specimens intended for the collection should be immediately killed after capture. They are also very fragile, especially in respect of the legs and antennae, and much care is needed in setting them.

Byrrhocryptus urquharti (5½-6 mm. Plate IX, fig. 1, fig. 1a larva.) This is rather a rare beetle. It has occurred singly, beaten from foliage, on the margins of streams at Wellington and Picton. It was discovered by Mr. Urquhart on Mount Te Aroha. The correct systematic position of this species is somewhat doubtful, as it is apparently an intermediate between the families Elateridae and Dascillidae.

The larva lives in sand, near the water's edge, in riverbeds. It is fairly active, burrowing in the sand.

Length 13 mm. Cylindrical, flattened beneath. Head very small. Prothorax small, slightly narrower and longer than either meso- or metathorax. Remaining segments broader, of uniform size. Terminal segment flattened above, somewhat spoon-shaped, with raised margins. A few extremely minute bristles. General colour above, deep yellowish-brown, paler on thorax. Head reddish-brown. Posterior margins of segments 4-12 inclusive ringed with blackish-brown. Entire surface of larva very highly polished. Anal proleg bifid, the extremities of each part furnished with short recurved hooks.

Veronatus tricostellus (9-10 mm. Plate VII, fig. 2, 2a larva.) This beetle has occurred at Tairua, Waima-

rino, Wellington, and on Mount Arthur. It is probably generally distributed but, except in subalpine localities, is rarely met with.

The length of the larva is about 15 mm. General colour ochreous, with blackish alimentary canal showing through. Rather stout, of almost uniform thickness, cylindrical, somewhat flattened above and beneath. Head swollen, rounded, with very prominent rounded frons, and powerful mandibles furnished with about six minute teeth; maxillary palpi long, 3-jointed; labial palpi minute, 2-jointed; antennae long 11-jointed, the terminal third consisting of nine minute joints. Prothorax rounded—quadrate, slightly longer than meso- and metathorax. Legs rather long, fairly stout, the tarsus with single claw. Abdominal segments of uniform size, except last two, which are shorter than the others; terminal segment lunate, without visible armature. The abdominal cavity is mostly filled with the black digestive sac, but on each side there is a series of irregular quadrate plates, not quite coincident with the segments, and constituting a very conspicuous and peculiar feature of the larva. Under-side of abdomen without the special plates. Under-side of terminal segment with a few minute horny teeth. Penultimate segment with horny posterior ridge.

The powerful jaws may indicate predaceous habits, but the contents of the digestive canal, and appearance of evacuations, suggest that the larva feeds on the rich black vegetable mould in which it was found. When disturbed the larva is fairly active, otherwise it inhabits smooth cells formed in the damp earth underneath a deeply imbedded log. Specimens of the beetle were also found in the same situation.

V. longicornis (10 mm.) A very similar insect to the last. The head and prothorax are dark brown, the legs antennae and elytra fawn colour; there is no clothing on the elytra. Has occurred at Taïrua and Otira, but is a rare insect.

Mesocyphon marmoratus (5 mm.) Dark brown, with the elytra irregularly mottled with paler brown hairs. It is very common and generally distributed, especially in mountainous districts.

M. capito (7 mm.) A very similar species, larger and darker in colour, found in similar localities.

Cyphon amplus (4-5 mm.) Very convex, almost round, bronzy-brown, with metallic green reflections, and clothed with fine golden hairs. May be beaten out of foliage about midsummer, is extremely active, and almost impossible to get in perfect condition. Probably generally distributed.

C. genalis (3 mm. Plate VII, fig. 1, 1a larva.) This little beetle is often beaten from forest foliage during the summer months.

The larva is very interesting. It lives in the slushy accumulations between the leaves of the kie kie (*Freycinetia Banksii*), a large climbing plant, with long narrow leaves, often found in the tops of large forest trees. It is of active habits, making its way rapidly through the accumulated masses of semi-liquid decaying vegetable matter at the bases of the leaves.

Its length is slightly over 7½ mm. General shape elongate-elliptical, considerably flattened; highly polished, blackish-brown. Antennae very elongate, reaching back as far as segment 5; two basal joints large, rest threadlike. Maxillary palpi three-jointed, elongate. Legs stout with one-jointed tarsus; whole leg clothed with stout spines. Body clothed sparingly with fine hairs, water resisting.

Most of the species belonging to the genera Cyphon and Mesocyphon are very hard to distinguish.

Family **MALACODERMIDAE (Telephoridae).**

Body soft, usually elongate. Legs long and slender. Antennae eleven-jointed, setiform or filiform, serrated or pectinated. Abdomen with seven or eight visible ventral segments. Some of the females are without wings or elytra. Most of the species live on flowers.

Asilis tumidus (6 mm. Plate II, fig. 8.) This very soft, flat-looking, beetle may be beaten out of forest growth during fine sunny weather about midsummer. Probably generally distributed. There are several other closely allied species found under similar circumstances, which are very difficult to distinguish.

A. subnudus (4 mm.) Smaller, black, with dull purplish reflections, the basal joint of the antennae and legs yellow. A southern and mountain species. It has been taken at Queenstown and on Mount Aurum, Lake Wakatipu, also in the Mount Cook District.

A. fulvithorax (6 mm.) Prothorax bright orange yellow, otherwise blackish; stated to be common in the Auckland District, but extremely rare round Wellington.

Family **MELYDRIDAE** (or **Malachiidae**).

Closely allied to the *Malacodermidae*, but the abdomen with only six segments, and the base more or less co-adapted with the coxae. The species mostly frequent flowers.

Dasytes minuta (*subcyaneus*) (4½-5 mm. Plate II, fig. 9.) A beautiful little metallic blue beetle, often very abundant amongst flowers during the spring and early summer. Apparently generally distributed.

D. nigripes (4 mm.) A very similar insect, rather dull metallic green. Appears later in the season, and is found in great numbers amongst flowering veronicas in February and March.

D. helmsi (6-7 mm.) Dull slaty-purple. Common on the mountains around Arthur's Pass.

D. anarcharis (7 mm.) Larger and more brilliant, deep purplish-blue. Common on the mountains around the head of Lake Wakatipu.

D. laevulifrons (6 mm.) A very similar species to *D. helmsi,* deep purplish-blue. Seems to be widely distributed. It has been taken on the central plateau of the North Island, as well as in the Buller Gorge and at Routeburn, Lake Wakatipu.

D. oreocharis (7 mm.) Metallic greyish-green. Often very abundant on veronica and spear-grass blossoms, on the mountains between 3,500 and 4,500 feet. Has occurred on Mount Arthur, also on Bold Peak and Mount Earnslaw at the head of Lake Wakatipu. Probably generally distributed on mountains throughout the South Island.

Family **CLERIDAE.**

Body generally cylindrical. Antennae either gradually thickened, or with three enlarged terminal joints; eyes emarginate, tarsi five-jointed; but basal joint of posterior very indistinct, usually very small above, and closely united to second by an oblique splice; the apices of joints two to four usually prolonged as membranous flaps; anterior coxae prominent; labial palpi usually with large hatchet-shaped terminal joint; ventral segments five or six, very mobile. The soles of the tarsi are spongy, by means of which the beetles can hold very tightly. They are mostly sun lovers, living amongst flowers, or on leaves, and preying on other insects.

Phymatophaea violacea (7 mm. Plate XVI, fig. 4.) One of the most beautiful members of the family, fairly plentiful in the Wellington District. May be beaten out of foliage in December, January and February.

P. fulvipalpis (5 mm.) Smaller, reddish-brown, with purplish reflections; there is a large, blackish-edged yel-

low spot, on the side of each elytron near the middle. Found at the same season and under similar circumstances. Has a deceptive resemblance to the small longicorn, *Zorion guttigerum*.

P. atrata (5-7 mm.) One of the commonest species of the genus; wholly black with the elytra coarsely and irregularly punctured. Found in Wellington and Wanganui districts, from December till February. This beetle always falls into the umbrella with its head and prothorax at an angle with the elytra, and the legs very irregularly placed. In this position it has a most unnatural appearance, closely resembling a piece of twisted and blackened leaf. It is almost certain that this instinctive attitude has been acquired for protective purposes.

P. opacula (6 mm.) Elytra deep dull purple, and head, legs, and prothorax almost black. Occurs in the Otira Gorge, but one of the rarest species of the genus. It has a very strong superficial resemblance to *Dasytes helmsi*.

P. ignea (7 mm.) Stout, bright reddish-brown, highly polished, with four irregular yellow marks on the elytra, surrounded by a violet-blackish shading. Has occurred at Picton and Dunedin. Apparently rare.

P. opiloides (6 mm.) A very distinct species; the head, prothorax, legs, and shoulders of the elytra are black, the rest of the elytra being dull whitish-grey. Found by beating in December and January. Apparently generally distributed in both islands but rare.

P. electa (8 mm.) Deep blackish-brown with conspicuous, raised, highly polished, reddish-brown tubercles on prothorax and elytra. Found throughout the summer, but rarely met with. Has occurred in the Auckland District, around Wellington, and at Otira.

P. abnormis (8-9 mm.) A very similar species with polished tubercles, but its general colour is much paler. Has occurred at Waimarino, and around Wellington, but is rarely met with.

P. O'connori (7-8½ mm.) This very handsome species, discovered by Mr. A. C. O'Connor, is highly polished dark bluish-green, the femora, except extremities, being often chestnut red. Beaten out of withered beech (*Nothofagus*) on hills at Silverstream, Upper Hutt Valley, in November. Apparently local and very rare. A larger and duller form (10 mm.), possibly a distinct species,

occurs at Flora River, Mount Arthur, at an altitude of 2,800 feet.

P. testacea (4½-5½ mm.) Pale yellowish-brown, with the sides of the prothorax, two oval spots on the shoulders of the elytra, and two elongate spots near the middle, black. Beaten out of forest growth in December and January. Common around Wellington.

P. fuscitarsis (5½ mm.) Much darker in colour, the central portions of the elytra being more or less suffused with blackish-brown, but with no definite markings, and the tarsi blackish. Found under similar circumstances.

P. pantomelas (6-8 mm.) Dull black, the elytra coarsely punctured, except near extremities; a rectangular yellow mark on side of each elytron below middle and some obscure yellow marks often on disc. Has occurred at Martinborough, but is apparently very rare and local.

P. breviclava (4½-5 mm.) Greyish-brown, with variegated paler spots on the elytra, which are coarsely punctured; the club of the antennae is unusually short. Common around Wellington about midsummer.

P. apicalis (6-6½ mm.) Blackish-brown with a bright orange-brown tip to each elytron, and sometimes obscure paler marks in the disc. Found on the Waitakerei Ranges near Auckland and around Wellington, but rather rare. Appears in December.

Balcus signatus (11-12 mm.) Shining black, with faint iridescent reflections, and two pale spots on the anterior part of each elytron; the whole insect is sparingly clothed with rather long whitish hairs. Beaten out of flowering shrubs, mostly manuka, in December, but not common. Probably generally distributed.

B. niger (9-9½ mm.) Smaller with strong greenish reflections, and no pale spots. Found under similar circumstances.

Paupris aptera (6-8 mm.) Wingless, pale yellowish-brown, with the sides of the prothorax and elytra irregularly streaked with blackish; there is a blackish band on the posterior femora and the legs are rather long; the abdomen is very stout and projects beyond the elytra. Beaten out of forest growth during the summer. Probably common and generally distributed.

Parmius longipes (4-6 mm.) Elongate with very long legs; the head, prothorax, elytra and femora are purplish-

bronze, the tibiae and tarsi being bright yellowish-brown. Generally found on mountains between 3,000 and 4,000 feet above sea level, but rarely met with in lowland localities. Has occurred on the slopes of Mount Ruapehu and on Mount Arthur.

P. debilis (5-5½ mm.) Legs shorter; general colour, pale yellowish-brown, the sides of the elytra usually green; there is a series of irregular, often confluent, brown marks on each elytron near the suture. Also found on mountains, at about 3,500 feet, but apparently confined to the South Island. Has occurred on Mount Arthur, Arthur's Pass and Humboldt Range, Lake Wakatipu.

Necrobia ruficollis (6-7 mm.) Prothorax, legs, and shoulders of the elytra bright orange-red, the rest of the elytra metallic blue. An introduced species found commonly amongst decaying animal matter.

N. rufipes (6 mm.) Also introduced. Wholly brilliant metallic blue, with orange-red legs. Found in similar surroundings.

Family **ANOBIIDAE.**

Elytra covering the abdomen. Antennae with from nine to eleven joints, filiform, serrated, pectinated, or with three enlarged terminal joints. The prosternum has no projection towards the mesosternum. The tarsi are five-jointed, the first two joints being about equal. The claws are simple. Five visible ventral segments. The beetles live in wood, and dry vegetable and animal substances. There are two very distinct sub-families:—Ptinides and Anobiides. In the Ptinides the antennae are long and filiform, whilst in the Anobiides they are either serrate, pectinate, or loosely clubbed and sometimes very *bizarre* in appearance.

Subfamily PTINIDES.

Ptinus speciosus (2½ mm. Plate XVI, fig. 6.) A very beautiful native species, red, clothed with long yellow hairs, with a deep brown and white stripe across the elytra beyond middle. Found amongst kie kie (*Freycinetia*) but apparently rare.

P. tectus (3-3½ mm.) In shape very like the last species, but larger with the elytra more rounded and convex. Head, thorax, and antennae chocolate-brown;

elytra punctate-striate, yellowish-brown, densely clothed with fine hair. Found in houses. Apparently often mistaken for *Ptinus fur*. Introduced from Europe. A world-wide domestic pest.

Subfamily ANOBIIDES.

Anobium ruficorne (5 mm. Plate XVI, fig. 8.) So far as the Wellington District is concerned this is the notorious "borer" in houses. Its larva lives in dry timber and causes great destruction, few wooden houses over 10 years old being free from it. The larvae feed during the whole year, their presence being revealed by the fine powdery mass which soon accumulates beneath every infested board. Each opening in the wood thus manifested should be saturated with kerosene. The beetles emerge from their burrows in December, when they may be seen walking about the walls, or crawling on the window panes. They should of course be instantly destroyed, as the destruction of one beetle is of greater importance than that of many larvae. It seems possible that this indigenous species is responsible for much of the damage usually attributed to the introduced *A. domesticum*.

A. paniceum (3½ mm.) Stouter reddish-brown with the elytra finely punctured in rows. A world-wide insect, often met with in New Zealand houses, and highly destructive.

A. inaequale (5 mm.) Rather stout, cylindrical, pale to dark grey, variegated, with several short, irregularly placed, raised ridges on the elytra. May be beaten out of forest growth about midsummer. It is fairly common in the Wellington District.

A. niticolle (4 mm.) A very distinct species; dark slaty-black, the antennae only slightly serrate, without enlarged joints at extremity; the elytra large, broad and very finely, but irregularly punctured. Common amongst foliage during the summer. So far only recorded from the Wellington District.

Cyphanobium illustris (3 mm.) A most remarkable little beetle. Head broad with very large prominent eyes; the antennae have the basal joints extremely minute; the three terminal joints very long, two have curved projections on their inner edge, longer than the joints themselves; the terminal joint is elongate and somewhat crescentic; the prothorax and elytra are very convex, shining

brownish-black, the prothorax densely clothed with yellowish hairs, the elytra much more sparsely clothed. In the female the head and eyes are much smaller, and the antennal projections broad and very much shorter. May be beaten out of forest growth, in hot sunshine, in December, but is rarely met with. It is extremely active, taking wing with great rapidity. Has occurred in the Wellington District, and at Tairua near Thames.

Euderia squamosa (♂ 5 mm. ♀ 4 mm.) Elongate, narrow, dilated posteriorly, brown, variegated with grey; in the male the antennae have the last three joints very long, thread-like, proceeding from a common base so as to appear as one trifurcate joint or club; in the female the same joints are only slightly enlarged; the forepart of prothorax is much elevated; each elytron has a row of about five large, rounded nodules. Beaten out of forest growth about midsummer. Occurs in both islands and, although rare, is generally distributed.

Family **BUPRESTIDAE.**

Antennae short, eleven-jointed, filiform or dentated. Mesosternum with an excavation, into which a process of the prosternum fits. The hinder angles of the pronotum are obtuse or rectangular. The abdomen is composed of five segments, the front ones being more or less amalgamated. They are sluggish beetles. The larvae, which are elongated, with a minute head and greatly expanded prothorax live in wood. The beetles are found on wood, and fly about during the mid-day heat.

Nascio enysii (7-9 mm. Plate X, fig. 1, 1a larva, 1b imago expanding wings.) This very handsome metallic-looking beetle is found in forests, throughout New Zealand, wherever beech trees are abundant. It varies considerably in size, and specimens are occasionally met with having the whole of the face brilliant metallic crimson. It is only met with during the summer months, December till February, and delights in hot sunshine.

The larva lives in the bark of beech trees (*Nothofagus*), forming flattened tunnels in the inner bark next to the solid wood. It is sometimes very abundant in trees which have been recently felled.

In a large tree of *Nothofagus fusca,* the bark of which had been "ringed," much powdery frass was exuding from the irregularities in the bark, and both larvae and pupae were found in cavities in underside of the bark *below* the

ring, but not above it. Many of the larvae were killed by fungus and the mortality from this cause, in a state of nature, is probably very great.

Length of full-grown larva 17 mm. Head minute, corneous. Prothorax greatly enlarged, anterior portion highly contractile; meso- and metathorax gradually tapering. Abdominal segments of almost uniform size, except last two, which are much smaller; the terminal smallest of all. Generally cylindrical, elongate, with divisions well indicated. No visible legs. A single deep suture on upper-side of prothorax; a double suture on under-side. General colour warm, pale, ochreous-brown, becoming yellower on basal abdominal segments. Alimentary canal indicated by pinkish-brown, or purplish shading in places. A little very fine downy clothing.

The pupa is enclosed in a chamber in the wood, access being plugged by means of tightly compressed frass. The pupal chamber provides room for the expansion of the wings of the imago within it.

Two pupae were found on 28th October with the legs and under-side crimson-metallic and partly hardened; the rest of the pupa was soft and white, the wings and elytra being in the normal pupal condition, folded around the sides, and reaching the ventral surface in the usual way. These pupae were placed in small glass-topped tin boxes and observed. On 31st October, at 9 a.m., one of the pupae was found in the stage depicted on Plate X, fig. 1b. By 11 a.m. the wings were withdrawn under the elytra, and next day the beetle was apparently fully developed, but comatose, the colour also was metallic crimson, in place of metallic green as in captured specimens. It was not until November 8 that the beetles had assumed their natural colour, and were fully active. It is quite clear that the change from pupa to perfect insect naturally takes place in the pupal chamber within the tree, and that the process occupies at least 10 days. I have since witnessed similar transformations in several other beetles, belonging to widely different groups.

N. eremita. The only other Buprestid found in New Zealand. It varies considerably in size ($4\frac{1}{2}$ to $6\frac{1}{2}$ mm.) and also in colouring, some specimens being dull and almost destitute of the usual metallic colouring. It is broader in proportion than *N. enysii* and the elytra are not pointed and have no spines at the apex; they are thickly punctured but without striations. The usual colour is metallic green, or purple, much suffused with coppery, or crimson reflections. This beetle is only met with occasionally when beating scrub in hot sunshine. It is more

generally distributed than *N. ensyii*, but nevertheless a much rarer insect.

Family **ELATERIDAE (Click Beetles or Skipjacks.)**

Body rather long, generally narrowed behind. Antennae with eleven joints, usually serrate along inner edge frequently pectinated, rarely filiform. The posterior angles of the pronotum are more or less prolonged into pointed spines. The prosternum is lobate in front, with a projection behind, which fits into an excavation of the mesosternum. The abdomen is composed of five segments. Tarsi five-jointed. Many of these beetles have the power of jumping, and if placed on their back can spring into the air, and in doing so make a clicking noise.

The subfamily Eucneminae is distinguished from the genuine Elaterinae by the antennae being somewhat distant from the eyes. They are chiefly noteworthy on account of their larvae, which are without legs.

Most of the species are only to be found during hot fine weather towards the middle or end of summer. A few are conspicuous, and easily recognised insects, but many, although of fairly large size, are extremely difficult to identify, even by an expert coleopterist. Others are puzzling on account of their variability in colour, whilst difficulties are constantly arising through the disparities which frequently exist between the sexes of the same species. The family is an excellent field for original research in all branches, and it is probable that a knowledge of the larvae of many of the more obscure forms would prove very helpful in their identification.

Subfamily EUCNEMINAE.

The beetles belonging to this subfamily are similar in form to the true Elaterids, but have little, or no power of jumping.

Neocharis concolor (4-5 mm.) Shining black, the prothorax very convex, with broad produced posterior angles; the elytra are clothed with fine black hairs; the antennae strongly serrate and very long, especially in the male. Beaten from forest growth early in December, but rarely met with. Discovered by Major Broun at Tairua, and subsequently taken around Wellington.

Talerax capax (6 mm.) Similar in form, but the elytra almost parallel-sided; bright reddish-brown with a few very fine golden hairs; the basal joint of the antennae

is very large, subsequent joints very small, gradually increasing in size towards the apex, feebly serrate, the entire antenna is somewhat longer than the head and prothorax combined. A rare and very pretty species. Beaten out of forest growth on eastern side of Wellington Harbour. Has also occurred at Tairua. Perhaps attached to beech forests.

Drasterius nigellus (*Melanus sculptus*) (5 mm.) Antennae hardly as long as the prothorax; very stout in form, almost parallel-sided; deep dull black; a deep median depression on posterior portion of prothorax, which is densely punctured throughout; elytra also densely punctured and striated; legs short and slender. Sometimes beaten out of forest growth. Has occurred around Wellington, and at Whangarei, but not commonly.

Subfamily ELATERINAE.

Geranus lineicollis (13-17 mm. Plate VIII, fig. 4, 4a larva.) This fine click is probably common and generally distributed throughout the country.

Its larva is about 26 mm. in length; general colour reddish-ochreous-brown, darker towards each extremity. Cylindrical, tapering slightly towards head, with elongate conical prothorax; meso- and metathorax, and body segments 5-9 of almost uniform length; segments 10-12 slightly longer. Terminal segment with red-brown, horny, very rugose dorsal plate, and two strong, immobile, forcep-like appendages, with a much smaller, spike-like, appendage above each forcep; a distinct anal proleg. Body segments 6-12 slightly punctured. Legs very short. Spiracles red-brown. Underside much paler, with still paler sublateral line. A few isolated short reddish bristles, mostly in clusters near termination of each segment.

This larva is found in very wet hinau logs, in an advanced stage of decay, which are tenanted by numerous *Limnophila* larvae. One larva was observed biting a hole in the soft *Limnophila* larva. Another *Geranus* larva was enclosed in a separate tin with a *Limnophila* larva and it was subsequently found with its head buried therein, the dipterous larva being still alive. Two days later the *Limnophila* larva was almost reduced to an empty skin, and the elater larva was resting in a cavity in the wood, apparently in a replete condition. It is thus practically certain that the larva of *Geranus* feeds on tipulid larvae which subsist on decayed wood.

The beetle appears about midsummer, and is very active in hot sunshine. It is almost certainly a mimic of the

ferocious spider-wasp *Salius wakefieldi* and its allies. The short, jerky, way of walking in the hot sun and the manner of holding the antennae are both highly suggestive, quite apart from similarity in general coloration.

G. collaris (9-10 mm.) Smaller than *G. lineicollis*; the head and elytra are dark reddish-brown; the prothorax orange-brown, highly polished, with a few very fine punctures; the elytra deeply striated, with punctures in the striae. Beaten from shrubs in December, January, and February. Has occurred at Auckland and Wellington, and is probably found throughout the North Island.

Genus PROTELATER.

These click beetles have the prothorax very elongate and cylindrical, slightly wider posteriorly, with very divergent, prominent, posterior angles; the elytra are widest near the shoulders, thence tapering to a pointed termination.

Protelater elongatus (10 mm.) Elytra regularly striated and punctured; the general colour is rather variable, yellowish- or reddish-brown, usually with darker transverse bands across the elytra; the head and thorax are clothed with fine golden hairs. Common amongst fuchsia and other shrubs during the summer months. Apparently generally distributed in both islands.

P. diversus (11 mm.) Almost uniform deep reddish-black. Found in beech forests in both islands, usually at considerable elevations above sea level.

P. urquharti and **P. nigricans** are very similar dark-coloured species.

P. vitticollis (8-10 mm.) A very elegant little click; orange-yellow, with a blackish-brown stripe on each side of the prothorax; two pointed streaks on the shoulders of the elytra, and a cloudy transverse band beyond the middle, often reduced to two spots. Found around Wellington and on Mount Egmont. Probably generally distributed throughout the North Island, but rather rare.

P. opacus (7-8 mm.) Another very attractive little species, bright orange-brown with a broad darker transverse band on the elytra; the prothorax is densely punctured, and the elytra very regularly striated and punctured. Beaten out of foliage in forests in December, but rather rare. Has occurred around Wellington, and at Tairua near Thames.

P. guttatus (5½-6 mm.) One of the smallest and most beautiful species of *Protelater*. Prothorax very densely and strongly punctured; elytra striated with the striae deeply punctured; head blackish; prothorax dull red, clouded with black on the sides, with the posterior angles pale yellow; elytra blackish, with two reddish-yellow patches on the shoulders, a very oblique yellowish transverse band near the middle, and another transverse band towards extremity, often reduced to two spots. Beaten out of forest growth at Wainuiomata in December. Has also occurred in the Hikiwai forest, Tairua.

Monocrepidius exsul (12-14 mm. Plate VIII, fig. 3, 3a larva.) This very dark-looking yellow-legged species seems to be common and generally distributed throughout the North Island.

The larva is about 22 mm. in length; rather stout, highly polished. Head black-brown, slightly rugose; prothorax elongate, central portion deep reddish-brown, anterior and posterior margins dull ochreous; mesothorax deep reddish-brown, ochreous behind; metathorax ochreous slightly tinged with reddish-brown in front. Remaining segments gradually increasing in length, and slightly in width, till beyond middle; deep ochreous, highly polished; a series of dorso-lateral depressions; spiracles red-brown; terminal segment horny, oval, with edges produced into about six blunt teeth on each side; many fine bristles, gathered into distinct clusters around spiracles, fewer bristles on head and thorax.

This larva is subterranean in its habits and is often found in gardens. It is very active when disturbed.

The beetle appears during the late summer. It is usually observed in the dusk of evening, when specimens may frequently be seen flying.

Corymbites agriotoides (7-9 mm.) This is a moderate-sized, plain brown click, constantly beaten out of foliage during the summer months. The head and thorax are usually rather darker than the elytra and the whole insect is sparsely clothed with fine ochreous hairs. The elytra are finely striated.

C. olivascens (9-11 mm.) A very similar beetle, much darker in colour, more highly polished, less hairy, and with brassy reflections. Found on Mount Egmont, on the central plateau of the North Island, and apparently generally common throughout the Northern portion of the North Island.

C. canaliculatus (16-19 mm.) A large, elongate, brown click, often found under the bark of rimu trees. There

are several other extremely similar species, found under like circumstances, which are very difficult to distinguish.

Elatichrosis livens (15 mm.) Elongate, narrow, nearly parallel-sided, shining bluish-black; the prothorax is almost smooth; the elytra are deeply striated, with the striae punctured towards the sides; there are two tooth-like projections at their termination. This is one of the earliest of the clicks, appearing towards the end of November. May be beaten from the flowers of many native shrubs, and is probably generally distributed in both islands.

E. barbata (16-21 mm.) Stout, with very short antennae, very deep reddish-brown, the elytra strongly striated, with very obscure punctures. Usually found under stones. Widely distributed in both islands, and often found in the mountains.

E. impressa (15-19 mm.) A very similar species, but narrower, nearly black, with the elytral striations shallower. Found on Mount Arthur, and on the mountains around Lake Wakatipu, at elevations between 3,000 and 4,000 feet.

Hypnoidus sandageri (8-10 mm.) Prothorax much swollen in middle, tapering considerably before posterior angles; dark brown, with yellowish-brown legs and antennae; elytra finely striated, the striae with obscure punctures. Found under stones on the banks of streams in the Wellington District. Appears about midsummer.

H. thoracicus (9 mm.) Stouter, darker in colour, more polished, with the elytral striations shallower and without obvious punctures. Occurs amongst flood rubbish on the shores of Lake Wakatipu. Other very similar species of *Hypnoidus* may be found in like situations.

Oxylasma tectum (12-13 mm.) Elongate, narrow, flat, much less stoutly built than most clicks, with longer legs and antennae; the prothorax has a deep median groove and its posterior angles are very large, and much prolonged; elytra finely striated, with minute punctures; colour warm yellowish-brown, but somewhat variable. Found amongst forest growth in December and January, but rare. Has occurred at Whangarei, at Waimarino, on the central plateau of the North Island, and around Wellington.

O. pannosum (12-14 mm.) Deep rich brown, highly polished, with much broader elytra, deeper sculpture,

shorter legs and antennae. Found in the same localities, and under similar circumstances.

Mecastrus convexus (9 mm. Plate VIII, fig. 6, 6a larva.) This jet black, highly polished click is sometimes found under the scaly bark of rimu trees, in the late summer. It is rather a rare species, but probably generally distributed in the North Island.

The larva was discovered, feeding on powdery wood, in the middle of a dead karaka tree, in October.

Length about 18 mm. Cylindrical, tapering at each end. Head very small, dark brown. Prothorax elongate-oblong, deep red-brown with paler anterior and posterior bands. Meso- and metathorax similar, but much shorter and slightly broader; legs small. Abdominal segments becoming much broader near middle; bright ochreous-brown, intersegmental portions paler; a dark red-brown ring at posterior end of each segment and a finer, red-brown line on anterior portion, with fine, divergent, lateral lines; terminal segment elongate, narrow, conical, deep red-brown, without markings; a large proleg at base of terminal segment. Underside ochreous, with narrow, brown, longitudinal median line.

Lomenus elegans (7-8 mm.) A very pretty species, bright orange-brown with blackish head and deeper brown shading in middle of prothorax; the elytra are finely striated; the scutellum and antennae are black, the latter thick and heavily serrate in the male. Beaten freely out of foliage about midsummer. Probably generally distributed in the North Island.

L. suffusus (7 mm.) A very similar species, but with the prothorax, except posterior angles entirely black. Found in both islands but rare.

L. rectus (7 mm.) Almost parallel-sided, black, with dull yellowish legs; elytra finely but distinctly striated, the outer striations slightly punctured. Beaten out of forest growth in November and December. Possibly attached to beech (*Nothofagus*). Has occurred on the eastern side of Wellington Harbour and at Whangarei.

L. pilicornis (5½-7 mm.) A somewhat similar species, duller, not parallel-sided, the antennae clothed with fine hair, and the posterior angles of the prothorax, as well as the legs, yellow. Beaten out of foliage, from December till middle of February. Common around Wellington. Also found at Tairua.

Amychus candezei (*Psorochroa granulata*) (17-22 mm.) Prothorax broader than long, rounded at the sides, with posterior angles prominent but not divergent; elytra nar-

rower than prothorax tapering behind; the whole surface of the insect much roughened, resembling bark, variegated and variable in colour, unlike any other New Zealand click. Apparently confined to the islands in Cook Strait (Stephen's Island and The Brothers), where it is abundant in crevices in the rocks, and under logs and stones.

Panspoeus guttatus (2½-3 mm.) The smallest Elaterid found in New Zealand, shining black, the posterior angles of the prothorax, and two spots on the sides of each elytron, yellow. Beaten out of foliage about midsummer; probably attached to beech (*Nothofagus*). Has occurred at Tairua, on the eastern side of Wellington Harbour, at Picton, Takaka and Lake Wakatipu, but nowhere common.

Betarmonoides gracilipes (4½ mm.) Black with slender, legs; the prothorax short, somewhat cylindrical, slightly tapering just before posterior angles; the elytra considerably wider. Abundant amongst flowering manuka (*Leptospermum*) early in December. Probably widely distributed.

Amphiplatys lawsoni (3½-4 mm.) Quite unlike any other New Zealand click. It is broad; head large, the prothorax and head together nearly as long as elytra, which are oval; antennae short, without serrations, terminal joints slightly expanded; general colour yellowish-brown, or dark brown, and highly polished. Found amongst dead leaves in the autumn. Has occurred at Auckland and Wellington but very rare.

Metablax acutipennis (20-25 mm. Plate VIII, fig. 2, 2a larva.) This fine elater although widely distributed, is rather rarely met with. It may be immediately recognised by its very acutely pointed elytra which are ornamented with four conspicuous longitudinal bands of whitish pubescence. This pubescence is, however, very easily removed, and is only clearly evident in fresh specimens. The colour of the integument varies from deep reddish-black to almost red.

The larva is found in tunnels under the bark and in the wood of recently felled trees, of many kinds, but shows a preference to hinau. It is very active and ferocious.

The length of the full-grown larva is about 33 mm. Moderately stout, subcylindrical, much flattened, fairly even in thickness throughout; anterior abdominal segments slightly narrower. Head black, flattened, rounded-oblong, anterior portion depressed,

very rugose, much punctured; antennae 3-jointed, terminal short and very slender; maxillary palpi apparently 3-jointed. Prothorax elongate, parallel-sided, deep chestnut brown with broad ochreous rings at each extremity very highly polished. Meso- and metathorax similar, paler in colour, together about same length as prothorax. Legs short, but stout. Abdominal segments gradually increasing in length and width, also in depth of colouring, towards posterior extremity, dull deep yellowish-brown; terminal segment with flattened disc; two very blunt, short-forked, posterior processes, and four small teeth on lateral edge, the largest posteriorly; surface rugose, with three depressed lines, the central line forked towards base. A median depressed line from prothorax to end of segment 13. A very broad short anal proleg. Underside pale ochreous-brown.

Younger larvae have the dorsal plates (tergites) smaller and widely separated, giving the insect a more or less distended appearance, the intervening portions between the horny dorsal plates are soft, and pale ochreous in colour.

It is practically certain that this larva does not feed exclusively on bark and wood. A larva placed in a large tin, with an abundance of wood, and seven tipulid larvae was found, after an interval of 25 days, to have eaten all but one of the tipulid larvae,* as well as a considerable quantity of the wood. This larva appeared in a replete condition. Another larva was caught in the act of devouring a caterpillar (*Izatha*).

The pupa is enclosed in a plugged burrow constructed by the larva. One larva, apparently full-grown, was found on 5th March, 1931. The beetle was discovered in the pupal chamber, evidently only just hardened, on 1st November, 1932.

The perfect beetle appears from the beginning of November until the end of January.

Metablax brouni. Extremely similar to *M. acutipennis*, from which it is stated to differ in " the entire absence of any suture between the middle coxae at the junction of the meso- and metasternal processes." Possibly confined to the North Island.

M. cinctiger (♂ 13 mm., ♀ 19 mm.) Perhaps the handsomest click in New Zealand. Deep reddish-brown, with a broad cream-coloured longitudinal stripe close to each side of the prothorax and elytra. It is occasionally beaten out of forest growth in January, February and early March, and the blossoms of the white rata (*Metrosideros perforata*) have a distinct attraction for it. Found

*Larvae of *Macromastix viridis.*

in the Wellington District, also at Auckland and North of Auckland. Possibly confined to the North Island.

Ochosternus zealandicus (13-20 mm. Plate VIII, fig. 7, 7a larva.) This is a rare and somewhat obscure species, having a strong superficial resemblance to *Thoramus*, but its larva is strikingly different. The beetle has occurred at Auckland, Tairua, Pohangina and Wellington, and is probably generally distributed throughout the North Island.

The length of the full-grown larva is about 37 mm. Cylindrical, of almost uniform thickness, except terminal segment, which is sharply pointed bearing a single, very stout, proleg, and armed with a number of small, blunt spines. Head rather small, round, slightly sculptured above; very deep reddish-brown. Prothorax elongate, about as long as meso- and metathorax combined. Remaining segments becoming slightly longer, until about segment 10. Segments 11 and 12 slightly shorter and narrower. Segment 13 conical. General colour above bright reddish-brown and very highly polished. Underside yellowish. Segments 12 and 13 slightly rugose. Segmental divisions well defined, and marked by rings of darker and lighter colour. General integument hard and leathery.

This larva is very active when disturbed. It is usually found under logs amongst rather dry, decayed wood on which it probably feeds. Its growth is apparently very gradual, full-sized larvae taken in April, 1930, not having changed up to the present time (March, 1933). A single specimen was successfully reared by R. C. Cooper.

Thoramus wakefieldi (15-30 mm. Plate VIII, fig. 5, 5a larva.) This fine beetle seems to be fairly common and generally distributed throughout New Zealand as far south as Hokitika and Christchurch. It is very variable in size, but generally speaking is one of our largest clicks.

The larva, which feeds in sound rimu logs, is about 45 mm. long; stout, cylindrical, somewhat flattened, of almost uniform thickness, the last segment rapidly tapering. Head broad, flattened, horny, dark brown, with powerful blackish mandibles and labrum. Prothorax long, anterior portion broadly ochreous, a semicircular patch of reddish-brown on posterior two thirds; mesothorax with faint reddish-brown dorsal mark. Other segments ochreous, soft, highly polished, each with a row of minute bristles posteriorly, and irregular clusters of same on midback. Terminal segment conical, with cluster of small brown, horny processes on its extremity. A very strong, stout, anal proleg.

Nine other species of Thoramus have been described in New Zealand. They are all large and conspicuous beetles, but owing to their great similarity in general appearance, and considerable variability in size, are very difficult to discriminate.

Thoramus laevithorax (15-19 mm.) Is usually smaller than *T. wakefieldi,* narrower, more parallel-sided, and with the antennal serrations in the male more pronounced. Found in the Wellington District under bark, or occasionally flying at dusk.

T. huttoni (♂ 19 mm., ♀ 23 mm. Plate VIII, fig. 1 ♂, 1a larva.) A handsome species found in beech forests on the eastern side of Wellington Harbour. It feeds on the bark and wood of the native beeches, as well as on karaka.

Length of full-grown larva about 26 mm. Moderately stout, cylindrical, considerably flattened, broadest near middle, tapering towards each extremity, especially posteriorly. Head deep reddish-black, rounded-oblong, flattened and rough above; antennae and maxillary palpi very small and short 3-jointed; labial palpi extremely minute, apparently two-jointed. Prothorax slightly oblong, deep red-brown, with ochreous anterior and posterior margins. Meso- and metathorax much shorter, slightly broader, with red-brown dorsal plates, the metanotum the smaller. Abdomen elongate, widest near middle, soft, pale ochreous, with relatively small, harder, dorsal plates, clothed with extremely minute spines; terminal segment much narrower, conical, bearing at its apex a cluster of small, strong, horny teeth. A large elongate anal proleg. Underside flattened, soft, ochreous-white.

The blunt termination of the elytra will at once distinguish this beetle from *Metablax acutipennis,* which has somewhat similar clothing.

Group IV. HETEROMERA.

Family **TENEBRIONIDAE.**

These are, for the most part, black, or dark brown, in colour. Antennae inserted under the expanded lateral border of the head, which covers the first joint to a greater or less extent. Front coxae short, not projecting from the cavities, enclosed behind. Tarsi destitute of lobed joints. Claws smooth. The abdomen is globular or oval.

Actizeta albata (3 mm.) Oval, pale grey, or whitish, variegated with blackish-grey; elytra finely striated; antennae very short, slightly thickened towards extremity. Found amongst sand on the sea beach, where it is extremely difficult to detect. Often taken under logs on the beach, at a considerable distance below the surface.

Mitua (Pseudopatrum) tuberculicostatum (13 mm. Plate IX, fig. 3, 3a larva.) This very remarkable beetle is common in the Wellington District, and is probably generally distributed throughout New Zealand. It may be found, all the year round, resting on the undersurface of rough logs, where both its colour and sculpture cause it to closely resemble an excrescence on the log.

The larva is found in similar situations. It is rather active in habit and, when pursued, quickly hides itself in the more or less decayed inequalities of the log. It is full-grown about November.

Its length is about 18 mm. Cylindrical, slightly enlarged towards posterior extremity. The antennae are as long as the head, three-jointed, the last joint with a distinct club. The tarsi consist of a single claw. Each segment has a horny dorsal ridge near the point of articulation, which no doubt assists the larva in burrowing. The terminal segment bears two very strong, recurved, horny processes which project upwards. The general colour is ochreous, with the horny ridges and terminal appendages brown. The skin of the larva is horny and highly polished.

If a log sheltering one of these beetles be overturned in hot sunshine, the insect remains perfectly still for about 30 seconds. Then it starts most cautiously to move and, in a few seconds, runs to a place of safety, not by a single run, but by a series of short jerky runs with brief motionless intervals between.

Uloma tenebrionoides (14 mm. Plate IX, fig. 4 ♂, 4a larva.) This very highly-polished, fine, reddish-black beetle is abundant in all kinds of decayed wood throughout the country. It has a very characteristic and not altogether disagreeable smell, somewhat resembling a combination of pitch and apples.

The larva of this beetle may be found commonly in almost any kind of decayed wood, when soft, and in a fairly advanced stage of decomposition.

Its length is about 22 mm. Cylindrical, of almost uniform thickness, hard, and highly polished, with a few extremely shallow punctures, especially on posterior segments. General colour ochreous, very slightly tinged with reddish-brown; a few scattered minute bristles. Head bright brown, with stout three-jointed antennae; other organs minute. Legs short, invisible from above. Prothorax long, very slightly tapering towards head, suffused with reddish-brown anteriorly; meso- and metathorax much shorter. Other segments becoming slightly longer posteriorly; terminal segment a short acute cone; a rather narrow band of reddish-ochreous-brown on posterior margins of all segments, except last; penultimate segment reddish-ochreous-brown, except on narrow anterior band; terminal

segment conical deep reddish-brown except on narrow anterior band; a fine reddish-brown transverse line on back of segments 3-11 inclusive.

Aphthora rufipes (5-5½ mm.) Closely allied to the foregoing, and so similar in general appearance as to suggest a very diminutive specimen. It is usually found in very dry, dusty, decayed rimu and is sometimes extremely abundant. It is, however, rather uncertain in its appearance and a whole season may, perhaps, pass without our observing a single specimen.

Chaerodes trachyscelides (7 mm.) A very convex, stoutly built beetle with strong digging legs; brownish-ochreous suffused with greyish-brown on the dorsal portions, and densely punctured. It is very common on the sea beach, amongst sand and seaweed, often close to the water's edge. Apparently generally distributed in the North Island. In the South Island its place seems to be taken by the very similar *C. concolor*. These beetles, in their general appearance, closely resemble the bladder-like growths of the seaweed and this assimilation may be protective.

C. laetus (5 mm.) Much smaller, pale straw-colour, shining, sparsely punctured, with a variable number of blackish-brown spots on the elytra and two suffused spots on the prothorax. Has occurred at Woodhill near Auckland and at Tairua. Apparently confined to the Northern part of the North Island.

Menimus caecus (3-3½ mm.) Elongate oval; very shining; deep brown, rarely yellowish-brown; the head is very large, eyes abortive, antennae short, 10-jointed, much thickened towards the apex; the head is distinctly punctured; the thorax without punctures, and the elytra with some rows of very obsolete punctures. Occasionally found in damp places under logs. Has occurred at Tairua near Thames, and around Wellington.

Cilibe otagoensis (20 mm. Plate IX, fig. 5, 5a larva.) This large, dull-looking beetle is probably fairly common throughout New Zealand.

The larva inhabits the dry powdery material under logs in an advanced state of decay. It is very erratic in its movements, gliding along with great rapidity for a short distance, and then becoming perfectly still. Its length is about 50 mm., cylindrical, very highly polished, deep yellowish-brown. The head is almost black and slightly rugose. First thoracic segment nearly as long

as next two segments combined; all thoracic segments and twelfth segment deeper brown and slightly reddish, as well as a band on the hinder margin of each of the other segments; terminal segment flattened, lunate, black, with slight flange posteriorly.

This larva evidently takes many years to attain maturity. Larvae, apparently full-grown, were enclosed in a large tin, with an ample supply of decayed wood, in March, 1930, but a perfect beetle did not eventuate until October, 1932.

There are no less than twenty other species of Cilibe found in New Zealand, but many of these are extremely hard to discriminate. The following are some of the commoner forms which the beginner is likely to meet with:—

C. opacula. Very like *C. otagoensis,* but larger with rather broader elytra, probably generally distributed.

C. humeralis (13 mm.) A smooth, very finely punctured species, common under stones, above *high water mark,* on all the beaches around Wellington. This species is preyed on by the well-known Katipo spider.

C. buchanani (14 to 15 mm.) Slightly larger than *C. humeralis,* much duller, with the sculpture more pronounced, found in similar situations, but not so exclusively a coastal insect.

C. huttoni (10-11 mm.) Slightly smaller and broader in proportion than *C. humeralis,* with the striations on the elytra more distinct. Found at Lyttelton and in Otago.

Zolodinus zelandicus (17 mm. Plate V, fig. 6, 6a larva.) This fine beetle is occasionally found in rata, rimu and beech logs when in advanced state of dry, fibrous, or dusty decay. It has also occurred in dead kohekohe and *Hedycarya,* when in a similar condition. Although generally distributed, it is uncertain in its appearance, and some collectors have never found it.

The larva, which may be found in similar situations to the beetle, is about 25 mm. in length. In general appearance it is very like the larva of *Uloma tenebrionoides,* but slightly larger and stouter. The terminal segment is upturned posteriorly, and bears at its extremity two recurved, sharp spines. The antennae are apparently three-jointed, without any club. The body is cylindrical, but distinctly flattened on the ventral surface. General colour dull ochreous, brighter posteriorly. A broad red-brown band on the hind margin of each segment; prothorax considerably longer than meso- and metathorax, almost wholly very deep red-brown, margined with darker brown. Legs with

simple claw-like tarsus, the anterior pair the longest. No anal proleg. Small red-brown punctures are present on body segments 8-13, most numerous on 11 and 12.

This larva is extremely active in its movements. The recurved spines at its posterior extremity are very sharp, and are unquestionably used for defensive purposes. When the larva is held between the fingers, a matter of some difficulty, the pressure exerted by these spines on the skin, is distinctly unpleasant. Larvae, apparently full-grown, taken in September, did not pupate until after January, and the beetles did not eventuate until the middle of March, so it is evident that life of the larva extends over several years. In a state of nature, the perfect beetle may be found at any season, but is more frequently met with in the late autumn, winter, and early spring. This species has several close allies in South America.

Lorelus priscus (4½ mm.) Rather flat, oblong, very dark yellowish-brown; the head rather large, more than half as long as prothorax; antennae short, slightly expanded at apex; elytra wider than prothorax; parallel-sided; the head and prothorax are rather finely punctured; the elytra coarsely and densely punctured. May be beaten out of fuchsia and other common shrubs during the whole summer. Often very abundant. Probably generally distributed in the North Island.

L. pubescens (4 mm.) A very similar beetle, with the prothorax broader and squarer, generally much darker in colour, and the puncturation finer. Found under precisely similar circumstances, but is a rarer species.

Artystona rugiceps (8-9 mm. Plate IX, fig. 6, 6a larva.) This beetle is common in the Wellington District, and is probably generally distributed throughout the country. It is usually found on tree trunks, or old fences, at night. When handled it emits a very characteristic pungent odour, which causes a slight smarting sensation in the nose.

The length of the full-grown larva is about 12 mm. Cylindrical, slightly tapering posteriorly, stoutest a little behind the thoracic region. Head large, somewhat flattened, rounded in front; deep blackish-brown, very rugose; antennae small, three-jointed, with two minute apical papillae. Prothorax nearly twice as long as meso- or metathorax, very horny, rugose, deep brown, paler behind; legs rather long and stout, with slender horny tarsal claw. Other segments very well defined, of uniform size, except last four which gradually taper posteriorly;

highly polished, shining bronze, with broad, darker and more horny ring on posterior edge of each segment except terminal. Two small, sharp-pointed, conical appendages on terminal segment, and a double anal proleg. Underside flattened and very much paler in colour than upperside.

This larva has been found in the dead branches of *Aristotelia, Hedycarya, Coprosma,* and *Myrtus.* It probably inhabits the dead wood of many small trees.

Artystona erichsoni (13 mm.) is larger, the punctures on the head and prothorax relatively finer, and the elytra often with metallic green reflections. A larva, perhaps referable to this insect, differs from the larva of *A. rugiceps* as follows:—Length 15 mm. Head extremely rugose; prothorax broad, shorter, with deep transverse depression behind anterior margin; meso- and metathorax only slightly shorter than prothorax; legs longer; body uniform blackish-grey, without ring markings, paler beneath. *No terminal appendages.* Found in dead branches of *Hedycarya arborea* and *Melicytus ramiflorus.*

Arthropus brouni (6 mm.) Oblong, somewhat parallel-sided, convex, very handsome; head and prothorax deep steely purple, and elytra deep metallic green, with purplish reflections; the three terminal joints of the antennae are enlarged; the prothorax is broad, with its sides strongly margined; the elytra slightly broader than prothorax at the shoulders, thence gradually tapering, with termination rather narrow; there is a slight constriction behind the shoulders, and about seven rows of fine regular punctures. May be beaten out of dead bushes of *Coprosma robusta,* but is a rare species. Has occurred at Tairua, near Thames, and around Wellington.

Chalcodrya variegata (15 mm. Plate XVI, fig. 2, 2a pupa.) One of the most beautiful species of the family. It occurs in forest and scrub, sometimes under bark, but more often beaten from dead shrubs in hot sunshine. Found in both islands, from sea level to about 3,000 feet, but nowhere common. The pupa has a remarkable horny shield to the prothorax, apparently protective whilst in its burrow. So far nothing is known regarding the larva.

Philpottia mollis (9-10 mm.) Very similar in general form to the foregoing, but much smaller; head and prothorax brownish, clothed with greyish hairs; the elytra dull grey, variegated with darker grey spots; legs brown, the tibiae green. Beaten from forest growth, usually in mountainous localities in the South Island. Has occurred

on Mount Arthur 3,500 feet, Arthur's Pass 2,500 to 3,000 feet, Longwood Range, and near the sea level at Tisbury, Invercargill.

Syrphetodes punctatus (11 mm. Plate II, fig. 2, 2a larva.) This species occurs occasionally on the under-surface of logs, in the Wellington District. Its irregular sculpture and variegated colouring is highly protective amongst dead wood.

Length of larva when full-grown about 13 mm. Sub-cylindrical, slightly flattened, of almost uniform thickness. Head pale brownish-ochreous, with paler central line, two dark spots on crown, and suffused darker spots at base; antennae three-jointed, terminal very minute, finely pointed. Prothorax much wider than head, slightly longer than wide. Meso- and metathorax slightly narrower, and much shorter. Legs rather long and slender, each with sharp curved claw, pale ochreous. Rest of body segments, except terminal, fairly uniform in size, slightly tapering posteriorly; terminal segment with two stout, divergent appendages, each bearing four very sharp, stout, divergent spines, two rather smaller lateral spines near base of these, a row of much smaller spines across base of terminal segment, and several blunt black spines on disc of segment; all these spines are slightly curved upwards at the tip. General colour of body blackish-brown, with paler central streak, and two large, dull yellow, oblique spots on the side of each segment except terminal; terminal segment reddish-ochreous; posterior portion of larva slightly suffused with red. A large, round, but very short anal proleg. Underside rather flattened, dull greyish-white.

This larva is fairly active in its habits. It feeds in galleries in the dry, dead, terminal branches of *Coprosma, Fuchsia, Aristotelia, Hedycarya,* and other small trees. It certainly prefers dry standing trees to prostrate branches, or logs on the ground. Except in the early spring, it is rarely met with, and on this account, it seems likely that its transformation is usually completed within the year. The complicated armature on the terminal segment is clearly directed against a rear attack on the larva whilst in its burrow.

Paraphylax varius (5½ mm. Plate VII, fig. 3, 3a larva.) This beetle was discovered by Major Broun at Whangarei. It has occurred occasionally in the Wellington District, but is, generally speaking, a rare insect. Single specimens are usually found adhering to the under-surfaces of logs, but on rare occasions large numbers may be taken on the fungi which form the food of the larva. The figure represents a bred specimen fresh from the pupa. Captured individuals are usually more

or less covered with a brown sappy substance, which sometimes entirely obscures the markings.

The larva of this beetle inhabits the large shelf-like fungi (*Fomes*) which grow on the trunks of large forest trees, apparently preferring those which have become detached, and are in a partially decayed condition. It drills tunnels through the very hard inner substance of the fungus, on which it feeds during the winter and early spring.

Its length, when mature, is about 10 mm. Cylindrical, bright reddish-ochreous, with a hard integument. Six strong walking-legs. Head shining reddish-yellow. Prothorax rather large, covered with numerous short reddish bristles; remaining segments somewhat uniform in size with a dense row of reddish bristles around the middle of each; posterior segment furnished with a reddish-brown toothed horny ridge near its base, and two very large recurved hook-like processes at its extremity.

Paraphylax exiguus (4 mm.) Much smaller and blacker. It is covered, on the sides of the thorax particularly, with greyish scale-like matter. It has been found on Mount Arthur (4,000 feet) and in Curiosity Gully, near Rakaia Gorge.

Genus PHILONEIS.

An extensive series of dark bronzy-black beetles, usually found in rather dry places under logs and stones. Their general appearance and habitat is suggestive of ground beetles, but the four-jointed tarsi of the hind legs immediately separates them from those insects. Some thirty-seven New Zealand species have been described, and as the larger and most interesting forms occur in the mountainous districts of the South Island it is probable others remain to be discovered.

Philoneis harpaloides (7 mm.) Oval, rather stout, deep bronzy-brown, with the elytra very finely punctured in rows. Often abundant under stones in dry places, and most likely generally distributed in both islands.

P. curtulus (12 mm.) Like *P. harpaloides*, but more elongate, parallel-sided, with larger and longer prothorax; greenish-bronze; the sculpture so fine as to be almost invisible, except under a lens of considerable power. Found on Ben Lomond, and amongst flood rubbish at Kinloch, Lake Wakatipu.

P. aucklandicum (9 mm.) Quite different in shape to the other members of the genus, being elongate, with a rounded prothorax, and a distinct neck between pro-

thorax and elytra; the head and prothorax are blackish-bronze; the elytra brighter with finely punctured striations; legs and antennae reddish-brown. Found under logs in the Wellington District, but not a common species. Has also occurred around Auckland.

P. bullatum (13 mm.) Elongate oval, convex, black, with slight bronze reflections; the edges of the prothorax are margined; the sculpture of the elytra is distinctive:—lines of fine punctures embracing oval, oblong, and a few linear spaces, all of a very irregular character. Has occurred plentifully at Invercargill and Lake Wakatipu and probably generally distributed in the far South.

P. calcaratum (13 mm.) A much smoother-looking beetle, more bronzy, with the elytra finely punctured in rows. Very common under logs in the beech forests around the head of Lake Wakatipu.

P. tinctum (12 mm.) Purplish bronze; the prothorax almost square with several irregular pits and traces of a median groove; the elytra are finely, but extremely irregularly, sculptured with winding grooves and punctures. Found under precisely similar circumstances to the last species.

P. cheesmani (10 mm.) Coppery bronze, parallel-sided, with numerous pits and fine punctures on the prothorax, the elytra finely and very regularly striated. Abundant under logs, in the forest on Mount Arthur, at about 3,000 feet.

Cerodolus chrysomeloides (7 mm.) Very convex, elongate-oval, the prothorax distinctly narrowed towards the head, and very finely punctured; the elytra have 8 rows of large distant punctures; general colour deep brownish-black, with strong coppery, or metallic green reflections, legs and antennae tinged with red. Common under logs on the lower slopes of Mount Arthur between 2,500 and 4,000 feet. Has also occurred at Greymouth, and in the Otira and Buller Gorges. Probably generally distributed in mountainous regions in the South Island. As suggested by its name, this beetle has a superficial resemblance to one of the *Chrysomelidae*.

Family **CISTELIDAE.**

The beetles included in this family are only separated from the *Tenebrionidae* on account of their pectinated claws.

Tanychilus (Amarosoma) sophorae (11-14 mm. Plate IX, fig. 2, 2a larva.) This fine beetle is occasionally beaten out of foliage during the early summer. It seems to have a special liking for the blossoms of *Weinmannia racemosa* where it may, at times, be taken in some numbers. It is also partial to the foliage of *Eugenia maire*. The figure was made from a metallic green specimen, but many are pitchy-red, and individuals of a more or less intermediate shade are sometimes observed.

The larva of this beetle is extremely active, much more so than the very similar larva of *Uloma tenebrionoides*. It lives in powdery decayed wood under logs, on which it probably feeds.

Length about 25 mm. Cylindrical, flattened beneath, increasing slightly in width posteriorly. Surface very highly polished. Head dark reddish-brown, antennae 3-jointed; final joint clavate with minute bristle. Prothorax dark ochreous. Rest of body dusky-ochreous, sometimes greenish, centrally blackish, and posteriorly blackish-brown. A broad, dull ochreous, band around posterior edge of each segment, except prothoracic. Terminal segment, flattened, conical red brown; two minute, curved, horny appendages on underside, invisible above, attached to anal flap. A few very minute hairs on extremity of last segment. Body slenderer and legs longer than in the larva of *Uloma tenebrionoides*.

Before pupation the larva becomes almost immobile; the head and anterior segments are curled in a loop, and the colour becomes uniform pale ochreous-brown.

Omedes fuscatus (8 mm.) Elongate oval, the anterior angles of the prothorax rounded; the elytra widest near the posterior thighs, finely striated, with punctures near the shoulders; chestnut brown, somewhat shining. Found in November amongst speargrass blossoms (*Aciphylla squarrosa*), on the coastal cliffs around Wellington. Also recorded from Port Chalmers and Moeraki.

Family **OEDEMERIDAE.**

Antennae long and filiform, or setiform. Head without a narrow neck. Prothorax not forming sharp edges at the sides. Penultimate tarsal joint broad; claws smooth. Wingcases much broader than the short pronotum, elongated, and generally narrowed towards extremity. Integument usually soft. The beetles live on flowers, and the larvae in old wood, and the stalks of plants.

Selenopalpus cyaneus (9-10½ mm.) Deep metallic blue, with two obscure raised ridges on each elytron; the

terminal joint of the palpus is somewhat crescentic and greatly enlarged in the male, as in many other of the New Zealand members of the family. A beautiful beetle, abundant in nearly all subalpine localities in both islands, where it may be beaten from flowering speargrass and other blossoms.

S. aciphyllae (8-10 mm.) A similar beetle, very dark steely-grey, or black. Found under logs in the Dart Valley at the head of Lake Wakatipu. Has also occurred at Taieri.

Thelyphassa lineata (18 mm. Plate VII, fig. 4, 4a larva.) This very soft, pale-coloured beetle is common in the Wellington District, and is probably generally distributed throughout New Zealand. It is attracted by light, and sometimes enters houses.

The length of the full-grown larva is about 21 mm. Cylindrical, with segmental divisions very strongly marked. Organs of the mouth very small, horny, red-brown; mandibles very powerful, blackish-brown. Antennae small, slender, apparently 4-jointed. Posterior part of head very large and, forming with prothorax, a globular mass consisting of two distinct segments; posterior portion of head with two deep sutures, forming a triangular vertex. Prothorax with deep median suture, and cluster of red-brown punctures on each side of same; similar clusters on body segments 3, 4, and 5. Meso- and metathorax cylindrical, decreasing in size. Rest of segments steadily narrowing posteriorly; all with very irregular dorsal humps; second and third abdominal segments have, on their ventral surface, projections resembling prolegs, bearing on their summits minute corneous excrescences. No distinct anal proleg. General colour very pale ochreous, with the alimentary canal faintly indicated by a darker median shading. A few very minute, scattered brown bristles.

This larva is of sluggish habit. It feeds and burrows amongst soft white wood (mahoe, kohekohe, ngaio, etc.) when in a sodden and half decayed condition, often after it has been abandoned by other beetle larvae. These larvae feed in the wood during the whole of the winter, spring, and early summer and the perfect beetle does not appear until January. The resemblance of the larva of *Thelyphassa* to a longicorn larva is very interesting.

Thelyphassa strigipennis (9-10 mm.) Much smaller, greyish-ochreous, with three paler striations on each elytron. Found under old sacks, or boards, rather rare, but probably generally distributed. The larva closely resembles that of *T. lineata* but is smaller, and pale brownish-ochreous in colour. It has similar habits, and is found in identical situations.

T. conspicua (13-14 mm.) Very like *T. lineata*, but without any blackish stripes on the prothorax and elytra. Found under logs. Has occurred at Nelson and Lake Wakatipu. Perhaps restricted to the South Island.

T. fuscata (12-13 mm.) Elytra short, the termination of the abdomen projecting beyond them; dusky greyish-ochreous; legs, margins of head and shoulders, and margins of the elytra dull ochreous. Somewhat variable in colour, some specimens being almost entirely dull ochreous. Found under logs on the sea beach at Paekakariki, and Westport and probably generally distributed in such situations. The integument of this beetle is very soft.

T. limbata (13-15 mm.) A very similar beetle, larger, and browner in colour. Occurs on the beach at Manakau Heads, New Plymouth and Wanganui, and is probably generally distributed throughout the North Island.

Family **PYTHIDAE.**

Head produced, with round prominent eyes. Prothorax not margined. Body flat. Antennae almost filiform, and very slightly thickened towards the tips, with the last joints broader than long.

Includes about nineteen New Zealand species of very beautiful little beetles belonging to the genus *Salpingus*. These may be beaten out of forest growth, or from the undersides of logs, during the summer. In their general appearance these insects are suggestive of diminutive Carabidae. Despite their small size, the beginner will find that these little beetles are not lacking in interest. The remarkable *Lagrioida brouni* also comes under this family.

Salpingus perpunctatus (2½ mm. Plate VI, fig. 2.) A most beautiful little beetle, the very large and deep punctures on prothorax and elytra being especially remarkable. Beaten commonly out of scrubby forest in October, November and December. Has occurred at Tairua, Wellington and elsewhere. Probably generally distributed.

S. rugulosus (2½ mm.) An extremely similar beetle and very likely identical. It has been found on Mount Egmont, at Waimarino and at Wellington.

S. bilunatus (2 mm.) Smaller, the elytra pale yellowish-brown, with the median portion at the shoulders, two elongate spots below middle, the margins and the terminal portion about suture, black; the punc-

tures on the prothorax are closer and finer than in *S. perpunctatus*. A well marked variety (*reductus*) occurs in which the general colour is much paler, and the black markings on the elytra are greatly reduced in size. Both forms are common in scrubby forest around Wellington in the late spring and early summer, have also occurred at Auckland, and are most likely generally distributed.

S. angusticollis (2½ mm.) Prothorax narrower, the elytra much broader and the puncturation finer, than in any of the foregoing species; the head and prothorax are deep brown; the elytra brassy-brown, with two large cloudy black blotches on the sides near middle, and a cloudy patch on the suture before termination; legs yellowish-brown without markings; antennae reddish-brown with five terminal joints blackish. Beaten out of scrub around Wellington, December till March. Occurs also at Auckland. No doubt common and generally distributed.

S. swalei (3 mm.) A very similar species, but much darker and richer in colour; the head and prothorax are densely punctured, golden brown with coppery purple reflections; the elytra very convex, golden-brown, suffused with black posteriorly, very highly polished, with about 6 rows of rather fine regular punctures; legs dark yellowish-brown without markings. Beaten from dead branches of *Coprosma* lying on wet ground, at Karori, Wellington. Common in October and November.

S. unguiculus (4½-5 mm.) Much larger than any of the foregoing species; shining brown, with the head, prothorax, and seven basal joints of the antennae reddish; the prothorax has a marked constriction near base, it is finely punctured, and the elytra are finely punctured in rows. Found under logs in the late summer and autumn, sometimes even in the depth of winter. Fairly common around Wellington. Has also occurred at Whangarei.

S. laticollis (2¼ mm. = *S. simplex* Broun, 1910.) A very similar-looking species, but much smaller and relatively broader, the prothorax with a less marked posterior constriction; both head and prothorax are more coarsely punctured. Beaten out of shrubs in the late summer and autumn. Common in the Wellington District. First discovered at Auckland.

Lagrioida brouni (5½ mm.) Elongate elliptical, with very large eyes; the head and prothorax much narrower

than the elytra, the former being cylindrical and slightly narrower than the head; the whole surface is thickly punctured, the punctures on the elytra being the coarsest; the beetle is also clothed throughout with fine whitish hairs. Taken on the sea beach by pulling up native grasses and shaking the roots over a sheet of brown paper. Has occurred at Tairua, Wanganui, Paekakariki and Nelson. Probably generally distributed.

Family **MELANDRYIDAE.**

Head triangular, slightly produced, or retracted into the pronotum. The pronotum is narrowed in front, but usually nearly as broad as the wing-cases behind. Some of the species are found under the dead wood of trees, or in fungi, but are mostly obtained by beating foliage during the height of the summer. They are elongate, very active beetles, and the figures of *Mecorchesia brevicornis* (Plate XVI, fig. 7) and *Ctenoplectron vittatum* (Plate XII, fig. 7) may be taken as typical of their general appearance. Most of the species jump with extraordinary agility, but in this family the jumping is effected by the legs, and not by the muscles of the prothorax as in the click beetles. The beginner should bear in mind that the elongate form, pointed extremities to the elytra, and jumping powers, although common to the two families, do not indicate any real affinity between them.

Ctenoplectron vittatum (9-12 mm. Plate XII, fig. 7.) One of the finest species, found from November till February, amongst forest and scrub. This beetle hybernates enclosed in a securely plugged burrow in the solid wood of dead *Carpodetus serratus, Olearia rani, Coprosma areolata* and probably other small trees. The pupal chamber is fully two and a half times as long as the pupa, thus allowing plenty of space for wing expansion and hybernation. The beetles mature during the autumn, and may be cut out of the wood, as late as November. As with other members of the family, this species exhibits intense activity in hot sunshine.

C. fasciatum (8-9 mm.) A very handsome and extremely active insect; elongate, abruptly tapering towards head, and gradually towards pointed extremity, the hind margin of prothorax being the widest part; deep reddish-black, with two small yellowish-red spots on the elytra below the shoulders, and a broad transverse band before apex. May be beaten out of forest growth

in hot sunshine in January, but is rather rarely met with. Has occurred at Tairua, Wellington, and Picton. Possibly generally distributed in both Islands. *C. maculatum* seems to be a very similar species.

Allopterus ornatus (5½-8½ mm.) Narrower than the foregoing; head and prothorax yellowish-red, with obscure blackish marks, and thin clothing of fine golden hairs; elytra pale golden-ochreous; two short, and two longer blackish streaks on shoulders, three narrow black marks enclosing elongate trapezoidal space near middle, often filled in with reddish, two blackish marks before apex; legs golden-ochreous; antennae darker. This rare and very beautiful insect may sometimes be beaten out of forest growth in December and January. It has occurred in the immediate vicinity of Wellington (Karori and Wilton's Bush), at Waimarino 2,800 feet, and at Parua, near Whangarei Harbour. It is evidently very variable in size.

A. cavelli (4 mm.) Blackish-grey; the elytra dull white, opaque, with the shoulders, and four irregular spots on posterior half blackish. Occurs at Arthur's Pass, and in Westland.

A. simulans (6 mm.) is a very similar species, larger, with much more distinct markings. It seems to be confined to the central plateau of the North Island, where it occurs amongst forest growth in January.

Genus Hylobia.

These are small elongate-elliptical beetles, the head bent down under the prothorax; the hind legs with the tibiae short and stout, furnished with very long spines. All jump with extreme rapidity, and frequently elude capture.

Hylobia velox (4½ mm.) Deep yellowish-brown, with two or three cloudy yellow spots on the sides of each elytron. It is one of the commonest species, and may be beaten out of scrub in January and February. Probably generally distributed throughout the North Island.

H. undulata (3½ mm.) Smaller, narrower, more parallel-sided, brownish-ivory, with very fine blackish-brown markings. Common under similar circumstances. Has also occurred at Picton.

H. nebeculosa (4½ mm.) Larger, slightly stouter, bright orange brown, variegated with deep brown. May be found under logs. It is best obtained by gently lifting

a log, and giving it a sharp jar over a sheet of brown paper, when the beetles, if present, will immediately be seen jumping about on the paper, with extraordinary agility, interspersed with intervals of death-like repose. Has occurred at various localities in both Islands. Probably fairly common, if worked for in the manner indicated.

H. usitata (3½ mm.) Yellowish-brown with cloudy variable markings. It is very abundant amongst foliage throughout the summer, but extremely fragile, and almost impossible to set without injury.

H. pulla (6 mm.) Almost uniform dark chocolate brown, without markings, clothed with very fine yellowish-brown hairs. Common amongst forest growth from November till February. Has occurred at Tairua, Wellington, and Picton, and probably generally distributed.

Mecorchesia brevicornis (10-13 mm. Plate XVI, fig. 7, 7a larva.) This interesting beetle is decidedly rare around Wellington and, so far as I am aware, has not been taken in any other locality. It is usually found under the scaly bark of rimu trees (*Dacrydium cupressinum*). It is an active beetle, and unless promptly secured by the collector will probably escape.

The larva, which was found under the bark of a recently felled rimu, is a rather elongate cylindrical grub, wholly ochreous, smooth, and shining; segments 5 to 9 inclusive are furnished with very prominent dorsal humps bearing on their summits numerous minute hooklets; the anal armature consists of two rather short, slightly recurved, horny processes. As only a single larva was found and reared, it is desirable that the life-history be verified by the rearing of additional specimens.

Family **MORDELLIDAE.**

Head attached by a neck, capable of great inflection. Pronotum narrow in front, but as broad as elytra behind. Elytra attenuated behind, leaving extremity of body exposed. Antennae filiform. The species are very active "hunch-backed" beetles met with on flowers.

Mordella antarctica (*funerea*) (13-14 mm., including terminal spine. Plate XII, fig. 9, 8, sideview.) One of the finest species and immediately recognisable. May be beaten out of blossoms, in hot sunshine, during February and March. Has occurred in the Waikato, and in various localities in the Wellington District.

M. detracta (9 mm.) Much smaller, with two large semicircular white spots on the hinder part of the elytra, in place of the narrow angulated band present in *M. antarctica.* Beaten out of flowering manuka, and white rata blossoms, from January till March, sometimes in considerable numbers. Probably generally distributed in both islands.

Mordellistena neglecta (5 mm.) Much smaller still, with less prominent prothorax, shorter terminal spine, and no white markings. Is found under precisely similar circumstances.

Family **RHIPIPHORIDAE.**

Like the Mordellidae but the antennae are strongly serrated, pectinate, or fan-like, and the sides of the prothorax do not form a sharp edge.

Rhipistena cryptarthra (♂ 7-9 mm.; ♀ 9-12 mm. Plate X, fig. 2 ♂, 2a larva.) This very interesting beetle occurs occasionally around Wellington. It was first discovered by Major Broun, at Tarukenga, and is, perhaps, generally distributed throughout the North Island.

The length of the larva is about 8 mm. It is soft, fat and almost pure white in colour; all the segments are deeply excised; legs short and stout; head and thoracic segments usually curved over as though about to pupate; there are dorsal and lateral ridges, and an indistinct series of subdorsal humps, but all very indefinite and subject to change as the larva moves.

Discovered by R. C. Cooper. One individual was found with its head buried in a young larva of *Prionoplus reticularis,* others near it were in the dry, much eaten, wood of a dead pine tree (*Pinus radiata*). The larva is very sluggish in habit, moving slowly, or not at all. Only one specimen was reared.

The beetle appears about midsummer, frequenting scrubby forest. It takes wing very rapidly, especially in hot sunshine, and on this account it is often difficult to capture.

Family **ANTHICIDAE.**

Head with an abrupt narrow neck; prothorax narrower than elytra; middle and hind coxae placed in definite acetabula. Claws simple. Small beetles, many of which have the appearance of diminutive Carabidae, others bear a superficial resemblance to ants. The species

are usually found on the ground, underneath logs and other vegetable debris.

Subfamily ANTHICINAE.

Anthicus minor (2½ mm. Plate VI, fig. 7.) A very ant-like little beetle, occasionally taken under palings which have been left on the ground undisturbed. It may also be trapped in pitfalls, but is otherwise rarely met with. Has occurred in the vicinity of Wellington, and at Howick, near Auckland.

A. obscuricornis (3½ mm.) Very like the preceding in shape, but with the elytra relatively larger. Black with the legs brownish; the elytra are coarsely, but rather distantly punctured, and sparingly clothed with rather long brownish hairs. Found under bark. Has occurred at Tairua (Thames), Manawatu District, Hutt Valley, and Buller River. Evidently generally distributed but rare.

Cotes vestita (5-6 mm.) Head almost globular with prominent eyes; prothorax with a deep constriction before middle; elytra elongate oblong; bright yellowish-brown, the elytra clothed with fine ochreous hairs. Found under bark in the autumn and early winter. Has occurred at Wellington and Christchurch, apparently generally distributed, but not common.

C. punctata (4 mm.) Similar in shape, bright reddish-brown; the elytra are punctured in rows; they have two cloudy blackish blotches on the shoulders, and two before middle, and are densely clothed with long reddish-yellow hairs. Found under boards, or amongst dead leaves, sometimes taken amongst blossoms, or even in houses. Very like a rather large ant in superficial appearance. Occurs around Wellington and at Howick, near Auckland.

Subfamily PEDILINAE.

Macratria exilis (4 mm.) Elongate oblong, with almost globular head and large eyes, the maxillary palpi very conspicuous with very large terminal joint; the prothorax is only slightly constricted; the elytra parallel-sided, abruptly rounded at termination; black, finely punctured; the thighs yellow towards base, and the whole insect sparsely clothed with fine whitish hairs. Beaten out of foliage, about midsummer. Rare and re-

markable. Has occurred at Tairua (Thames), Pohangina River and on the eastern side of Wellington Harbour.

Exocalopus pectinatus (5 mm.) Shining black; the head slightly wider than the prothorax, both of which are very small; the elytra are broad and more than twice as long as the head and prothorax combined; they are densely punctured; the antennae of the male have seven long pectinations by which the insect may be immediately recognised. Found on mountains between 3,000 and 4,000 feet. Has occurred on Mount Egmont and on Mount Arthur, and is probably generally distributed in such localities.

Techmessa concolor (5-6 mm.) Very like the foregoing, but narrower, with the antennae simple in both sexes. Abundant amongst forest growth about midsummer. Probably generally distributed.

T. telephoroides (7-11 mm.) Larger and stouter; the head and prothorax are blackish, the elytra and legs bright yellowish-brown; the antennae are relatively shorter in both sexes; general surface densely punctured. Common amongst blossoms from November till February. Probably generally distributed.

T. rugicollis (7 mm.) Parallel-sided; dark blackish-brown, the head, prothorax, and antennae black; the prothorax is densely and rugosely punctured. Also common amongst foliage during the summer. Has occurred at Waimarino and Wellington. All the species of *Techmessa* are very active insects, and will speedily mutilate each other, unless promptly placed in the laurel bottle.

Techmessodes picticornis (5-7 mm.) In general appearance somewhat like *Asilis tumidus* (Plate II, fig. 8) but the prothorax is smaller, not margined, and has two confluent depressions; the antennae are distinctly serrate; the elytra very broad, densely and rugosely punctured; general colour black. Has occurred at Tairua, Mount Arthur, Buller River and Otira Gorge. Probably generally distributed.

Group V. PHYTOPHAGA.

Family CHRYSOMELIDAE.

Short, compressed, and generally very convex beetles of rather small size. The antennae are moderately long; eyes moderately large, usually not at all surrounding the insertion of the antennae: upper surface usually bare and

shining, sometimes brightly coloured. These insects live on low plants, or bushes, and some of them are destructive to crops.

No satisfactory character for distinguishing *Chrysomelidæ* from *Cerambycidæ* has yet been discovered, although the two families are certainly distinct and natural.

Genus EUCOLASPIS.

These are moderately small, very convex, oval beetles, with rather stout legs, and the antennæ a little shorter than the body. Many of the species are very common amongst foliage, but they are extremely difficult to distinguish.

E. brunneus (5 mm.) Brownish-ochreous, usually with a blackish stripe down the suture, and one on the side of each elytron, but very variable in colour. Abundant throughout the summer and often destructive in gardens.

E. sculptus (4 mm.) Shorter and rounder, reddish-ochreous, with the elytra punctured and strongly striated towards termination. Also very abundant during the summer, especially amongst lawyer (*Rubus australis*) and wineberry (*Aristotelia serrata*).

E. picticornis (5 mm.) Shining bluish-black; the elytra finely punctured towards suture, more coarsely on the sides; legs rather stout. Probably generally distributed in both islands.

Arnomus fulvus (4-4½ mm.) Oblong-oval, the widest portion being level with the hind thighs; the prothorax flattened; legs long and rather slender; bright ochreous-red, with greenish reflections when alive; a dusky streak on each side of the suture. Common amongst *Astelia*, on Mount Arthur, 3000 to 4000 feet.

A. brouni (3-3½ mm.) A very similar beetle smaller, duller, and variable in colour (sometimes almost dark-brown) without definite markings. May be beaten out of foliage about midsummer. Seems to be generally distributed in both islands, but rather rare.

Alema paradoxa (3 mm.) Prothorax narrow, cylindrical, constricted behind middle; the elytra much broader, rounded—oblong, deeply striated and punctured; shining reddish-brown, often with dark blotches on the shoulders, and near middle of elytra. Common on the eastern side of Wellington Harbour in November and December. Has also occurred at Auckland.

A. spatiosa (4 mm.) Larger, more highly polished, with the sides of the prothorax and elytra more or less clouded with blackish. May be beaten out of shrubs, from October till March, and although not common seems to be generally distributed in the Wellington District. It has also occurred at Parua, Whangarei Harbour.

Allocharis robusta (6 mm. Plate VII, fig. 5, 5a larva.) Eight specimens of this interesting little beetle were reared from larvae found by Stella Hudson, near the Hermitage, Mount Cook, in December, 1928.

The larva, which is fairly active, feeds on the flowers and leaves of mountain veronicas.*

Its length, when full grown, is about 9 mm. stout, tapering rapidly posteriorly. Head black and shining; dorsal plate of prothorax black, rugose. Legs stout and strong. Rest of body dark brown; two rows of black tubercles around each segment, partially connected by raised horny ridge; each tubercle surmounted by three or four very short bristles; anal proleg well developed.

The perfect beetles emerged in February.

Chalcolampra speculifera (8-10 mm.) The largest and handsomest species of Chrysomelidae so far found in New Zealand; the eyes are large; the prothorax much broader than long, somewhat rectangular, with the outer sides slightly sinuate; the elytra are very convex, parallel-sided, about three times as long as the head and prothorax, finely punctured; general colour orange-brown with crimson reflections; a few irregular darker marks on prothorax; each elytron is broadly, but very irregularly margined with black. Found on the Dun Mountain near Nelson, and on Gordon's Pyramid (Mount Arthur), but apparently rare. First discovered by Mr. Helms at Greymouth.

Luperus vulgaris (5 mm. Plate IV, fig. 6.) One of our commonest beetles, abounding amongst all kinds of flowers during the spring and summer. It is especially partial to the blossoms of the rangiora (*Brachyglottis repanda*).

L. oleareae (5 mm.) Brilliant metallic green, densely punctured on the elytra; the tibiae and tarsi yellow. Abundant on *Cassinia* and tussock grass on the lower slopes of Mount Arthur at about 4000 feet. Also found on Mt. Egmont.

*These shrubs are now included by botanists in the genus *Hebe*.

L. axyrocharis (4½ mm.) Dull metallic green with blackish legs, the prothorax and elytra finely punctured. Occurs in profusion amongst the flowers of veronica and speargrass, on the mountains around the head of Lake Wakatipu between 3000 and 4000 feet. Also found at Arthur's Pass.

L. cheesmani (4 mm.) A very similar species, with smoother prothorax and blackish green legs. Very common on the mountains around Arthur's Pass, and in the Mount Cook area.

L. aeneus (4-4½ mm.) Brilliant brassy-green, with the surface very highly polished. Common amongst veronica blossoms on Mount Ruapehu, Mount Arthur, Mount Cook district and the mountains around Lake Wakatipu at about 4000 feet. It is probably generally distributed on mountains throughout New Zealand.

L. sulcifer (5-5½ mm.) Much stouter and broader than any of the foregoing, with the surface finely and evenly punctured, deep shining purple; the tibiae and tarsi dull reddish. Found on Arthur's Pass at about 3000 feet.

Group VI. LONGICORNIA.

Family **CERAMBYCIDAE.**

These are mostly large and handsome beetles, with setiform or filiform antennae, usually as long, or longer, than the body, and their insertion is much embraced by the eyes. Legs slender with four-jointed tarsi and broad spongy pulvilli. Body long and more cylindrical than flattened. The larvae, which are mostly wood borers, are elongate, gradually tapering from the thoracic segments posteriorly. The legs are extremely small. There is little variation in the preparatory stages in this family. The perfect insects are found on flowers, or amongst bark and wood. Owing to their large size, graceful antennae, and often brilliant colouring, they are great favourites with collectors.

Many of the species possess the faculty of stridulating. In some cases the sound is caused by the hind margin of the prothorax working against a striated area at the base of the scutellum; in others sound is produced by the friction of the hind femora against the edges of the elytra.

As already pointed out, no character of importance can be adduced to distinguish the Cerambycidae from the Chrysomelidae, although the members of the two families have, as a rule, but little resemblance in external appearance.

Prionoplus reticularis (♂ 30 mm. ♀ 38 mm. Plate XI, fig. 2 ♀, 2a larva, 2b pupa.) This fine species is the largest beetle found in New Zealand, and is common and generally distributed throughout the country. It usually appears about midsummer, when it is very susceptible to the attractions of artificial light. This leads the insect to fly into houses at night, through open windows, and its noisy arrival often causes needless alarm to the inmates. Nevertheless, its mandibles are very powerful and, if the beetle is incautiously handled, it is capable of inflicting a sharp nip which almost penetrates the skin.

The larva, which was known to the Maoris as the Huhu and eaten by them, is a large fat grub.

Its length is about 60 mm. The head is minute, very horny, with small, but extremely powerful mandibles; the maxillary palpi are four-jointed; the antennae are also four-jointed. The legs are very excessively minute, three-jointed, and apparently useless. The prothorax is very large and much swollen; its dorsal surface is extremely tough. It contains very powerful muscles, and is probably used as a fulcrum during boring operations as the relatively minute head can be wholly withdrawn into the prothorax. The remaining segments gradually taper posteriorly, becoming also slightly more elongated. A large spiracle is situated between the pro- and mesothorax, and smaller spiracles are present on eight of the abdominal segments. Segments 5-11 of the larva are furnished with large dorsal humps which assist the larva in progressing along its burrows. The general colour is ochreous, paler on the more prominent portions. The head is reddish-brown and the mouth organs brownish-black; the alimentary canal is indicated by a purplish-brown central marking.

This larva inhabits dead rimu, kahikatea, matai, kauri and other timbers, often when in a sound condition, and it may thus commit serious ravages. It is also partial to the trunks and branches of the introduced *Pinus radiata* and will speedily reduce a dead tree of that species to a condition of complete decay.

The pupa is enclosed in a large oval cell near the surface of the log, usually lined with densely packed frass, neatly smoothed within. From this chamber the perfect beetle cuts its way out with its powerful mandibles, and these large exit holes are the only outward sign that the log has been tenanted by *Prionoplus reticularis.*

Ochrocydus huttoni (33-38 mm.) Closely allied to the foregoing, but narrower in build, and usually of smaller size. It entirely lacks the pale coloured venation on the elytra, peculiar to *Prionoplus reticularis*, but otherwise there is considerable general resemblance between the two species. Legs and antennae dull red, rarely black. Although apparently a rare insect, it seems generally distributed, having been taken at Tairua, in the Waikato, at Paeroa, near Thames, and at Palmerston North and Martinborough in the Wellington District. A larva, which is almost certainly that of *O. huttoni*, occurs in tunnels in the stems of Manuka (*Leptospermum*) in company with the beetle. This larva is about 50 mm. in length, very similar to the larva of *P. reticularis*, but firmer in consistence, more highly polished, and with the segmental articulations dull brown. In the Nelson District specimens of this beetle have been cut out of beech (*Nothofagus*).

Liogramma zelandica (13-16 mm.) Uniform deep reddish-brown, the legs and antennae slightly paler; prothorax short and cylindrical, its surface very rugose with a smooth raised central keel, and two much shorter lateral keels, shaped something like question marks; the elytra are slightly broader than the prothorax, oblong, with many punctures, and clothed with fine yellowish hairs. May be found under the bark of dead tawa trees, in February. Probably generally distributed, but nowhere common.

Eburida (Didymocantha) robusta (12-16 mm. Plate XI, fig. 3, 3a larva.) This handsome beetle occurs occasionally in beech forests in both North and South Islands. It has been taken at Silverstream and Gollan's Valley, near Wellington, at Mount Arthur, Ashburton, Greymouth, and Lake Wakatipu.

The larva inhabits the bark and sap wood of dead beech trees (*Nothofagus*) and is sometimes found in large numbers. It evidently feeds through the winter as the beetles may be found making their way out of the trees in the early spring.

The length of the larva is about 22 mm. It is of the usual longicorn type. Head very small and retractile. Thoracic segments much enlarged; widest portion just behind head, thence tapering, but slightly wider on segment 12. A series of very irregular humps on all abdominal segments, most prominent on segments 8-11. Legs extremely minute, rudimentary. Antennae extremely minute four-jointed. General surface of larva apparently smooth, but with magnifying power of 20, covered with very fine, irregular striations. Numerous short hairs on head

and thoracic segments, and a very few very short, fine, hairs on rest of body. Anterior portions of larva ochreous, becoming greyish-ochreous posterior to thorax. Alimentary canal blackish, or dull reddish in some specimens; last two segments ochreous.

This larva was not actually reared but numerous specimens were found in trees in company with the beetle.

Eburida (Didymocantha) sublineata (10 - 12 mm.) Elytra pale reddish-ochreous with two small, elongate, blackish spots on each elytron. Common in beech forests from September till March and probably generally distributed in both Islands. Often beaten out of dead branches of beech which still have the leaves on.

Didymocantha hudsoni (♂ 15, ♀ 18 mm.) Basal joint of the antenna reddish-black; the thorax irregularly covered with large, deep, black punctures; the elytra similarly punctured, pale yellowish-brown, with a pair of ivory-like streaks extending from base almost to extremity. Found at Karori, and at Pipiriki, Wanganui River. Appears in the late winter and very early spring, more often taken indoors, but very rare. Judging from the descriptions, this insect seems to be very similar to, or possibly identical with, *Ophryops lentiginosus.*

D. media (15 mm.) Antennae very long. Body elongate, narrow, and somewhat parallel-sided; bright brownish-ochreous, redder on head and thorax: the prothorax is finely punctured, with two smooth patches before middle, and an elongate smooth area on each side; the elytra are irregularly and rather deeply punctured, with four more or less distinct ribs which are not punctured. Found throughout the Wellington District, where it may be beaten out of scrub in the early spring. *D. pallida* seems to be a very similar species.

Genus Ophryops.

A genus very closely allied to *Didymocantha,* including several large and handsome longicorns, very poorly represented in collections at present, and difficult to discriminate.

O. testaceus (23 mm., with antennae 40 mm.) Head and thorax reddish-brown. Elytra brownish-ochreous covered with rather large blackish punctures. *O. dispar* seems to be a very similar insect. Both appear very early in the year, about September. They have occurred round Wellington and in the extreme south and, later in the

season, in mountainous districts in both islands, but are very rare. The published descriptions of Ophryops indicate that additional specimens of both sexes are very much needed in order that the species may be better understood. Collectors will therefore do well to keep a very sharp look-out for these beetles and take all they can find.

Oemona hirta (14-28 mm. Plate XI, fig. 1, 1a larva, 1b pupa.) This very plain-looking longicorn is common throughout the country. It is very variable in size.

The length of the larva when full-grown is about 40 mm.; elongate, cylindrical, dilated at head end and slightly so posteriorly; all segments deeply excised and very nodulus. Surface highly polished, with numerous minute stiff brown bristles on lateral margins, especially towards head. General colour very pale brownish-ochreous; four darker brown marks on first thoracic segment and a darker median shading, indicating position of alimentary canal.

This larva tunnels the stems of rangiora (*Brachyglottis repanda*), tauhinu (*Cassinia*), *Senecio rotundifolia,* and probably many other native shrubs and small trees. The tunnels are driven longitudinally through the stem and branches of the living tree, and occasionally deep furrows are cut encircling a branch just beneath the bark and causing it to break off.

The pupa is enclosed in one of the burrows formed by the larva, the approaches to the pupal chamber being blocked by tightly packed shredded wood. It is much flattened, pale reddish-ochreous, darker on the wingcases; there is a row of strong recurved hooks on the seventh segment of the abdomen, and a few minute hooklets on the dorsum of the other segments, as well as a few on the cremaster. The following observation is of interest as indicating the length of time occupied by these wood-boring longicorns in attaining maturity. A larva of *Oemona hirta,* apparently full-grown, enclosed in a burrow in a stem of *Brachyglottis repanda,* was placed in a tin on 11th November, 1930. The branch had been split and afterwards tied tightly together in its original position. On 4th October, 1931, the tin was opened and the branch separated. A new burrow had been formed by the larva, in an adjacent part of the stem, and a pupal chamber made by plugging each end with shredded wood. Length of pupal chamber 45 mm., breadth 10 mm. In this chamber a perfectly developed active female was found. The insect had expanded its wings and completely hardened within the pupal chamber.

The perfect beetle is found at large during the late summer and autumn. This insect is stated to attack poplar, Chatham Island ake ake, goat willow, lemon, almond, apple, and gooseberry and is sometimes very destructive in gardens and orchards.*

Leptachrous strigipennis (17-20 mm.) Head and thorax very short, the latter with prominent pointed lateral tubercles and smaller discal tubercles. Elytra much broader than prothorax, fully four times as long, parallel-sided, rounded posteriorly. General colour pale ochreous with vivid dark brown, or blackish markings; a black bar on basal third of each joint of antennae (except first three joints) three longitudinal blackish stripes on head and prothorax, and five very conspicuous longitudinal stripes on elytra. Found under the bark of dead hinau trees in the late summer. Immediately recognisable by its pale ochreous colour and conspicuous dark markings. Probably generally distributed in the North Island.

Votum mundum (10-11 mm.) Shining pale reddish-ochreous; the head, legs and prothorax slightly darker. Elytra about four times the length of prothorax with prominent shoulders, parallel-sided, slightly dilated posteriorly, with rounded termination; their sculpture consists of three faintly raised ribs and numerous very shallow punctures. Beaten out of forest growth in the late summer. Very active. Has occurred around Wellington and at Tairua.

Pseudocalliprason marginatum (17-23 mm.) Antennae slightly longer than rest of beetle; basal joint much dilated at apex. Head broad between eyes, tapering towards neck; a series of conspicuous parallel ribs behind eyes. Prothorax conical with two large lateral, and two small discal spines, the latter close together; extreme disc and sides covered with numerous transverse rugosities. Elytra flat, widest at shoulders, tapering to about half the width at termination, which is rounded. Head and prothorax blackish; top of head sparsely clothed with whitish hairs; a broad band of fawn-colour on each side of pronotum. Elytra dark, dull, green, finely margined with orange, and thickly covered with deep rugose punctures. One of our finest longicorns, very rarely met with. Several specimens taken by Mr. J. Roberts in

* "Forest and Timber Insects in New Zealand," p. 48.

Gollan's Valley on the eastern side of Wellington Harbour. Also found by Commander Walker, at Silverstream, in the same area, and by Commander Patterson at Whangarei. Discovered by Major Broun at Tairua, apparently confined to the North Island.

Ambeodontus tristis (13-18 mm.) Uniform dull dark reddish-brown, very sparsely and irregularly clothed with yellow hairs. The antennae of the male are about two-thirds the length of the body, and those of the female not more than half the length. Very common under rimu bark and in the solid timber, where its larva commits serious depredations. It also attacks kauri and matai, as well as the introduced *Cupressus macrocarpa*. The beetle appears in the autumn. Probably generally distributed.

Agapanthida pulchella (11-13 mm.) Dark glaucous-green; the basal portions of the joints of the antennae (except first) and insertions of femora dull orange-brown. Prothorax short, with moderate discal and lateral protuberances. Elytra broader than prothorax, with rounded shoulders, thence slightly tapering, termination rounded; small black elevations bearing yellow hairs are present near scutellum, across elytra beyond middle and, most conspicuous, just before termination. May be looked for amongst recently-felled rimu trees from September till April. A rare and beautiful species. Several specimens have occurred around Wellington, and others have been taken at Waikouaiti near Dunedin, and at Orepuki in Southland. Evidently widely distributed and possibly commonest in the extreme south. The colouring somewhat resembles that of many of the darker varieties of the beautiful geometer moth *Elvia glaucata*, and it is clear that both moth and beetle are specially adapted for concealment amongst dark green lichens.

Pseudosemnus amabilis (18-20 mm.) A beautiful deep chocolate-brown longicorn, the elytra dappled with very fine whitish down. Some 45 years ago it was comparatively common in the Wellington District, amongst recently-felled rimus, the beetles emerging from the logs in August, and also occurring in the autumn. Recently it has been found at Ohakune, but is evidently becoming very rare or extinct in many places, no doubt owing to the destruction of the forest.

Astetholida lucida (9 mm.) A brilliant purplish-red longicorn, paler towards the extremities of the elytra,

which are heavily punctured on the anterior half. It is occasionally beaten out of forest growth in the late summer and may be confined to the North Island.

Astetholea pauper (8 mm.) A somewhat similar insect, with a shorter and broader prothorax and wholly bright brownish-ochreous. It may be beaten out of foliage about midsummer, and is fairly common around Wellington and probably in the North Island generally.

Astetholea lepturoides (8-10 mm.) Dark yellowish-brown, the elytra fluted, without punctures. Found towards the end of February, but much rarer than either of the two foregoing. Occurs in both islands.

Epheus costifer (15-20 mm.) Prothorax very narrow, irregular, clothed with bright yellow hairs, with four prominent spines; elytra fawn colour, with the posterior two-thirds very narrow; there are four raised ridges on each elytron. Taken by beating forest growth in January. A rare and beautiful species, so far only known from Wellington, Tuakau and Kaeo.

Blosyropus spinosus (22-38 mm.) This magnificent insect has occurred in the Wellington District at Kaitoke and Te Horo. In the South Island it has been found at Bannockburn and Dusky Sound. Perhaps generally distributed throughout New Zealand. Deep chocolate-brown, very irregularly clothed with fine yellowish hairs; an extremely sharp recurved spine is situated on each side of the prothorax. May be immediately recognised by its very large size and the above-mentioned characters. It is a very rare insect, and reckoned a great prize by collectors.

X. batesi (21 mm.) A very distinct species. Head and prothorax reddish-black, clothed with whitish pubescence, except on two small elevations and a median ridge on the pronotum. Elytra smoky yellow with numerous reddish-black punctures, and four wavy, ivory-like, longitudinal lines. Found amongst manuka (*Leptospermum*) from December till March. Discovered by Major Broun at Tairua, subsequently found at Martinborough and Wellington.

Xuthodes punctipennis (14 mm. Plate XII, fig. 1.) This very handsome beetle may be taken in February on white rata blossoms at night, or beaten out of shrubs in the day-time. It has occurred at Tairua, Pohangina and Wellington.

Calliprason sinclairi (9-12 mm. Plate XII, fig. 6.) This very beautiful little green longicorn may be beaten from forest growth in December, January, and first half of February. Fairly common in Wellington District, and probably throughout the North Island. Bred from pupa found in a dead branch of *Hedycarya arborea.*

Stenopotes pallidus (15-20 mm.) An elongate, deep yellowish-brown longicorn, with rather stout legs, the anterior pair pale brownish-ochreous; the elytra are narrowly margined with ochreous-brown, roughly and densely punctured, with two conspicuous longitudinal ribs. Often taken on the blossoms of the white rata at night, and occasionally beaten from forest growth in the day-time. Appears in January, February and March. Has been found in the Wellington and Auckland Districts and is probably generally distributed in the North Island.

Drototelus politus (♂ 10 mm., ♀ 12 mm.) Extremely highly polished with the elytra broad at the base, thence rapidly tapering, slightly dilated at apex. Head and prothorax reddish, the latter with yellow lateral lobes; elytra blackish, the discal portions dull yellow. Legs reddish-brown, with basal third of femora and hind tarsi pale yellow. Female darker and blacker than male. Beaten out of windswept scrub, on hill tops, in January and February. Apparently confined to the immediate neighbourhood of Wellington.

Genus ZORION.

Includes three very beautiful little longicorns, all very highly polished. A fourth duller-looking species occurs in the Chatham Islands.

Zorion guttigerum (5-6½ mm. Plate X, fig. 4.) Very abundant amongst native flowers in the Wellington, Auckland, and Marlborough Districts. Possibly only a variety of the next species which was the first to be described.

Z. minutum (6-7 mm.) Brilliant orange-brown, with a purplish-blue band across each elytron, containing a large oval yellow spot. Beaten from blossoms of all kinds. Generally distributed, but apparently commonest in the South Island, and in the far North. Apparently extremely rare, or absent, from the Wellington District. Varieties, more or less intermediate between this species and *Z. guttigerum,* are often met with.

Z. castum (6-7 mm.) Shining greenish-blue, with yellow elytral spots, and tibiae and tarsi not yellow. Abundant on the flowers of *Dracophyllum* at Waiouru, 2,800 feet, in centre of North Island. Also found on Mount Egmont, and at Lyttelton.

Gnomodes piceus (7 mm.) In form nearest to *Zorion*, but larger. Jet black. Prothorax narrow, cylindrical. Elytra very broad, deeply striated, the striae being heavily punctured towards shoulders. Appears in October, November and December, and may, on very rare occasions, be beaten from the blossoms of the "Bush Lawyer" (*Rubus australis*) and other forest growth. It is apparently confined to the immediate neighbourhood of Wellington.

Gastrosarus nigricollis (♂ 10 mm., ♀ 15 mm.) An extremely active, sun-loving, species taking wing with great rapidity. Its general appearance suggests an ichneumon-fly rather than a beetle. The male has the head and thorax black; the shoulders of the elytra and the legs, except the tarsi, orange brown; the posterior portions of the elytra which rapidly narrow, are metallic violet-black. The antennae are black, with the last three joints yellow. The female is larger and stouter, deep shining orange-yellow, reddish on the head and thorax; the antennae are wholly black. Occasionally beaten out of scrub in November and December. It has occurred at Wellington, Nelson and Christchurch, but is a rare insect. This beetle is almost certainly a mimic of the common and ferocious spider wasp, *Salius wakefieldi.* The larva of *G. nigricollis* is stated to bore into the stems of English laurel, oak, and white birch.

Eburilla sericea (7½-8 mm.) Specially attached to the rimu and may be beaten out of the dead foliage from September till February. It is greyish-chocolate-brown, very prettily marked with deep chocolate-brown.

Coptomma variegatum (♂ 22 mm., ♀ 20 mm.) Antennae of male fully 40 mm. Plate XII, fig. 5 ♂.) This large and very handsome insect has occurred at various localities in New Zealand, especially in the North Island, but, in my experience, is very seldom met with. In an interesting article entitled "The Coleoptera of Canterbury," written by C. M. Wakefield in 1872*, the author states that "*C. variegatum* is, next to *Prionoplus reticularis,* the best known longicorn, frequently taken on

*Trans. N.Z. Inst., V., 295.

posts and rails near Christchurch, though forests is its proper habitation." It is thus evident that this fine beetle is now very much rarer than it was in Wakefield's time. Appears from September till March. Stated to be especially attached to the tawa tree.

Genus NAVOMORPHA.

As its name implies, includes four species of very beautiful boat-shaped longicorns, three of which can immediately be recognised by the beginner:—

N. lineatum (17-23 mm. Plate XII, fig. 4.) Occasionally found amongst forest growth in the spring and early summer. Generally distributed. The larva is stated to attack the introduced *Pinus radiata.*

N. sticticum (20 mm.) A very similar insect, but the cream-coloured hairy stripes are diffused and broken up by small irregular ridges, and the antennae are slightly shorter. Appears from end of December until early in February. Probably attached to ribbon wood (*Plagianthus betulinus*). Discovered by Mr. George Munro at Southern Wairoa (Clevedon), it has since occurred singly at Pohangina, Kaitoke, and Wainui-o-mata, near Wellington. Evidently a very rare beetle.

N. sulcatum (10 - 11 mm.) By far the commonest of the genus. Much smaller and blacker than *N. lineatum;* the light-coloured markings are heavier, but similarly arranged, and greyish instead of cream-coloured. Abundant amongst many forest blossoms from October till January, and evidently generally distributed throughout New Zealand. The larva probably lives in the wood of the wineberry (*Aristotelia serrata.*)

Hexatricha pulverulenta (20 mm.) Superficially somewhat similar in size and colour to *Coptomma variegatum,* but totally distinct in structure. It is a much commoner species. The antennae (except the last five joints) are fringed with long black and cream-coloured hairs, and there are three very conspicuous, shining reddish-brown longitudinal ribs on each elytron. Found amongst forest growth about midsummer. Apparently generally distributed in both islands. This beetle clings with extreme tenacity.

Genus XYLOTELES.

Contains upwards of 33 species, most of which are obscure and hard to discriminate. They are rather elon-

gate, cylindrical, beetles usually brown and bronzy, clothed sparingly with fine light-coloured hairs:—

X. humeratus (6-10 mm. Plate XII, fig. 2.) A very common species, especially in the late summer and autumn, and several specimens will often fall into the umbrella from a single withered branch. Probably generally distributed.

X. griseus. Very like the preceding species paler, with the yellow markings obsolete, or extremely small. It is found in similar situations, but more characteristic of the sea coast.

X. angustulus (9-12 mm.) Larger, very cylindrical, the elytra tapering rapidly towards their posterior extremity; bronzy-brown, the elytra striated, with fine golden pubescence between the striations. Found in dense forest ravines from December till February. Occurs around Wellington and on Mount Egmont.

X. aegrotus (5-6 mm.) Cylindrical, parallel-sided, very pale ochreous-brown, with a few scattered darker brown marks on the elytra. Beaten from Tauhinu (*Cassinia*) on sandhills on the sea coast. Occurs on both sides of Cook Strait.

X. pictulus (4 mm.) A very elegant little species; yellowish-brown and bronzy-black with large patches of white down on thorax and elytra. Found in the forests on the eastern side of Wellington Harbour. Beaten out during December and January. Possibly attached to totara.

Genus SOMATIDIA.

These are rather small, elongate-oval longicorns, stouter, and more rounded in shape than usual. They are found under logs, amongst dead leaves, or beaten from foliage. Some of the species are very difficult to distinguish.

S. antarctica (6-8 mm. Plate XI, fig. 4.) The commonest species, and may be taken as typical. It is met with the whole year through, in quite a variety of situations. The larva feeds on the dead wood of the mahoe (*Melicytus ramiflorus*), *Carpodetus serratus* and probably many other small trees. Generally distributed.

S. grandis (9 mm.) Larger, less strongly punctured, the elytra with two minute black crests. Found under logs, or amongst dead leaves, in the neighbourhood of Wellington, but rarely met with.

S. simplex (7-8½ mm.) Also very like *S. antarctica* but narrower, less punctured, golden yellow, with the black marking on termination of elytra very conspicuous. Beaten from dead foliage around Wellington. First discovered at Moeraki. Apparently rare. Larva found in dead wood of *Melicytus ramiflorus*. Probably only a variety of *S. grandis*.

S. latula (6½-7 mm.) This species has the hinder part of the prothorax more constricted, and the elytra narrower, but strongly dilated in the region of the hind thighs; femora much swollen; general colour brown with faint brassy reflections; the black markings much smaller and less distinct than in *S. antarctica*. A smaller variety (4 mm.) occurs; still darker, and more obscurely marked, with stronger brassy reflections. Found amongst dead leaves, in the late summer and autumn. Fairly common around Wellington. Has also occurred at Maketu.

S. rubella (3½-4 mm.) Junction of the prothorax and elytra very narrow, the prothorax itself almost approaching a globular form; elytra widest near the middle, rapidly tapering before and beyond this; deep reddish-brown, faintly mottled with golden pubescence; a few very obscure dusky markings on the elytra; legs yellowish-brown. Found amongst dead leaves in the autumn. Has occurred around Wellington and at Mount Hutt and McClennan's Bush. Perhaps generally distributed in both islands.

S. parvula (3 mm.) One of the smallest species of the genus, of similar shape to the foregoing; very highly polished, deep bronzy-reddish-brown with very indefinite darker patches on the elytra; the prothorax is very slightly and sparsely punctured; legs yellowish; the third joint of the antennae is distinctly elongate. Discovered by Mr. T. Hall amongst leaf mould at Glenhope, near Nelson. Also taken on Mount Arthur at 3,600 feet. Rare and interesting.

S. o'connori (6-7½ mm.) A very distinct species. Head almost as wide as the prothorax; prothorax narrowed towards head and elytra, and bearing on its summit three, more or less distinct, smooth, rounded elevations; the elytra have no shoulders, are widest in the middle tapering posteriorly, and towards prothorax. General colour dull reddish-brown, variegated with dull yellow, but evidently very variable; anterior half of prothorax often yellowish, also a large irregular yellow patch on disc of the elytra; scutellum, and a small patch near it

on prothorax, often bright yellow, also several small tubercles near the base of each elytron; thighs brown, tibiae yellow, barred with brown, tarsi yellow. Single specimens have occurred at various seasons of the year (one as early as August 24th), and in varied situations, one example having been found in a shed. So far only recorded from the immediate neighbourhood of Wellington. Although described as recently as 1916, I was aware of this form as a distinct species in the early "eighties."

Stenellipsis bimaculata (6-7 mm.) Rather elongate, with elytra very pointed towards termination; chocolate brown, with two large, bright yellow spots on the elytra below the shoulders, and the posterior half variegated with paler brown. Beaten out of foliage in January. Common in the Wellington District.

S. gracilis (8-9 mm.) Elytra less acutely pointed, pale brown, with a blotch of dark chocolate-brown on the shoulders, an oblique transverse bar near middle, and two broad streaks before termination, the spaces between these markings being finely spotted with chocolate-brown. Beaten out of blossoms from middle of December until middle of February. Fairly common around Wellington. Has also occurred at Auckland, Tairua and Whangarei.

S. latipennis (7-10 mm.) A very similar beetle usually larger, with broader elytra; the whole insect is grey, heavily mottled and spotted with blackish-brown. Found generally in the Wellington District, but the rarest of the genus. Also recorded from Tairua and Whangarei.

S. cuneata (6 mm.) Apparently confined to beech forests (*Nothofagus*), where it is often quite common. May be known by its reddish antennae and legs, the femora of which are inflated, and the cloudy, reddish-ochreous, blotch on the side of each elytron near middle. Probably generally distributed in both islands.

Eurychaena fragilis (5-5½ mm.) Probably one of the commonest longicorns in New Zealand. It is parallel-sided, the elytra considerably wider than the cylindrical prothorax; dull greenish-brown with oblique darker transverse bands on each elytron beyond middle. Abundant amongst foliage throughout the summer. Specially attached to the silver tree fern (*Cyathea dealbata*).

Psilocneia linearis (6 mm.) Another very common species, narrower with the elytra more pointed; grey with an obscure brown streak on the sides of the elytra.

P. brouni (8 mm.) Somewhat similar in general appearance, but larger, pale greyish-brown, with a very conspicuous, irregular, chocolate-brown streak on the side of each elytron. A rare species found on the eastern side of Wellington Harbour and probably attached to beech forests (*Nothofagus*).

Tetrorea cilipes (16 mm. Plate XII, fig. 3.) One of our most beautiful longicorns. Specially attached to the native fuchsia, from which specimens may be beaten from the middle of November until the end of March. Probably generally distributed in both islands. Unfortunately the colouring of this beautiful beetle usually fades considerably in the dried specimen. This species stridulates with great vigour.

T. sellata (15 mm.) Elytra broader, parallel-sided, abruptly rounded at extremity and the tubercles in the centre of the prothorax larger; scutellum black; there are two obscure elevations near base of elytra and numerous punctures around scutellum; general colour reddish-brown, or reddish-black, variegated with white pubescence; there are often two large oblique white patches on the elytra near the shoulders; the legs are conspicuously banded with light and dark. A rather rare species, found casually on tree trunks, or beaten out of bush. Has occurred in the immediate neighbourhood of Wellington, at Flora River, near Mount Arthur, and at Greymouth, where it was discovered by Mr. Helms. The larva feeds in the dead branches of *Hedycarya arborea,* and the perfect insect hybernates in a pupal chamber, in the solid wood. Specimens of the beetle fully hardened and mature, may sometimes be cut out of the dead trees in the autumn.

T. discedens (13 mm.) A very similar beetle to the last, but with a small shining spot in the centre of the prothorax, and a minute tubercle on each side of it; the elytra are also less rounded at extremity. It is attached to *Hoheria glabrata,* one of the lace bark trees, and is probably generally distributed in the South Island, where these are found. Discovered by Mr. Helms at Greymouth. Has also occurred at Flora River, Mount Arthur, and in Otago.

Genus HYBOLASIUS.

Over forty species of these small longicorns have been described in New Zealand. Of these the great majority are so much alike that they only appeal to the expert Coleopterist. Most of the species are sparingly clothed with rather long hair.

Hybolasius cristus (5½-8 mm.) This species has two very conspicuous crested ridges at the base of the elytra and a blunt tooth on each side of the prothorax; colour very variable, purplish-brown or greyish-brown, variegated with darker brown; the hinder third of the elytra is always darker, and is bounded anteriorly by two very oblique dark brown marks. Common amongst *Coprosma* shrubs throughout the summer, and evidently generally distributed. This beetle has great clinging power, and once it has taken a good hold can only be dislodged with great difficulty.

H. pedator (6½ mm.) Dull yellowish-brown, paler near the middle of the elytra; the crests of the typical species are replaced by relatively inconspicuous elongate tubercles; the lateral tubercles on the prothorax do not terminate in a spine, and have a patch of yellow down at the base. Also common amongst foliage December till February. Probably generally distributed.

H. viridescens (5-5½ mm.) Known by its flattened form, pale greyish-green colour, prominent basal tubercles, and generally wrinkled surface of the elytra, which have a pinkish shade near middle; the hairs in this species are very long and whitish. Found occasionally in the Wellington District and at Auckland.

H. promissus (6 mm.) Elongate, rather flattened, blackish-brown, with the whole of the central portions of the elytra irregularly suffused with warm yellowish-brown. Beaten out of scrub during the late summer and autumn. Fairly common around Wellington. Has also occurred at Tairua.

H. vittiger (4-5 mm.) Distinguished from the numerous other small species of the genus, by the broad black band along suture, which divides and encloses a paler area on terminal third of elytra.

Poecilippe flavipes (= *Diastomerus tomentosus*) (14 mm.) Broader and stouter than most longicorns, with the basal joint of the antennae longer and slenderer than usual; the femora are much dilated, especially those of the front and middle legs; the whole beetle is densely

clothed with short ochreous-yellow hairs. Beaten out of fuchsia and other shrubs, throughout the summer. Sometimes found very late in the season. Generally distributed. This species stridulates with great energy.

Group VII. RHYNCOPHORA.

Family **BRENTHIDAE.**

Form elongate; rostrum straight, directly continuing the long axis of the body; antennae not elbowed. A family of about 800 species, mostly tropical, remarkable for the excessive length and slenderness of some of its forms, and for the extreme difference in the sexes that frequently exists.

In the higher forms of Brenthidae the rostrum of the female is perfectly cylindrical and polished, and the mandibles are minute, hard pointed processes placed at its tip. This organ is admirably adapted to its purpose; it being used for boring a hole in wood or bark, in which an egg is subsequently deposited. The males in these cases are extremely different. The New Zealand Brenthid, *Lasiorrhynchus barbicornis,* exhibits sexual disparity in an extreme degree: the length of the male is usually nearly twice that of the female, and his rostrum is enormous. Observations made many years ago, by Mr. Helms, elicited the information that the female is indefatigable in her boring efforts, and that the huge male stands near by as a witness, apparently of the most apathetic kind.*

The actual structure of the huge rostrum in the male of *Lasiorrhynchus barbicornis,* with its expanded apex and the antennae arising close to its extremity, clearly indicates that it is not adapted, as in the female, for boring. Its practical use to the insect is therefore not apparent, and like the horn-like projections arising from the top of the head and prothorax in many of the Scarabaeidae, it must have been acquired as an ornament for the purpose of attracting the female during courtship. As Darwin so justly remarks: "This view will at first appear extremely improbable; but we shall hereafter find with many animals standing much higher in the scale, namely fishes, amphibians, reptiles and birds, that various kinds of crests, knobs, horns and combs have been developed apparently for this sole purpose."†

*Sharp, Cambridge Natural History, Insects, Part II, 295-297.

†Descent of Man, Second Edition, 297.

Lasiorrhynchus barbicornis (♂ 18-75 mm.; ♀ 18-47 mm. Plate XV, fig. 1♂, 1a♀, 1b larva.) One of the largest and probably the most interesting beetle found in New Zealand. Apparently generally distributed, but certainly commonest in the North Island.

The larva bores the solid wood of dead lace-bark, karaka, *Hedycarya,* and probably many other trees. It is no doubt as variable in size as the perfect insect. The specimen from which the figure was taken measured 15 mm. in length, in its natural curved position.

General colour ochreous-yellow, darker and more distinctly yellow than in most typical weevil larvae. Head highly polished, yellowish-brown, much darker in front, with labrum and mandibles blackish-brown. Thoracic segments considerably swollen, furnished with very minute, apparently three-jointed, legs. Body segments 5, 6 and 7 relatively slender, thence rapidly becoming much stouter, last two segments slightly less stout; anal extremity very abruptly truncated, and somewhat square at its termination; terminal segment deep yellow; a very prominent lateral ridge on two last segments. Body generally deeply furrowed.

The pupa is enclosed in the usual chamber formed by the larva in the wood. Remains of beetles, which had failed to properly emerge, were found in cells, in a log previously tenanted by larvae. These remains were involved with a larval skin which, when soaked out in water and carefully examined, was found to agree exactly with the larva here figured. Its connection with *L. barbicornis* is thus conclusively proved although no specimen was actually reared. Owing to their extreme tenderness, it is practically impossible to rear any larvae belonging to the weevil tribe, once they are removed from their burrows in the solid wood.*

The perfect beetle may be found from September till March, but is most uncertain in its appearance. It is usually taken singly, standing on tree trunks near the edge of the forest, but on rare occasions quite a number may be found closely associated. I once found sixty specimens on a tree in the Orongorongo Valley, a whole brood having presumably just emerged from the wood. At other times a whole season may pass without our coming across a specimen of this interesting insect.

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*Detailed descriptions of the larva and pupa of *Lasiorrhynchus barbicornis* were made, by Major Broun, as early as 1880. See Trans. N.Z. Inst., XIII, pp. 228-230.

Family **ANTHRIBIDAE.**

Rostrum short and usually broad. Palpi usually not covered, but distinct and flexible. Antennae sometimes long, not elbowed, frequently clubbed, the first joint not very long. Third joint of tarsus small, usually much concealed by being embraced by the second joint. The elytra leave the pygidium uncovered.

This family includes about 800 species, mostly tropical. It is very poorly represented in Europe and North America, but prominent in New Zealand. The beetles live in shrubs, and are generally beaten out of dead twigs, or withered foliage.

Anthribus ornatus (6-8 mm. Plate XIV, fig. 1.) Perhaps the finest species of the genus. It may be beaten out of various shrubs from the middle of December until the middle of February, but is rather rare. Probably generally distributed in the North Island.

A. altus (5½ mm.) Broad, oval, with a very short broad rostrum; the elytra have the basal part on each side of scutellum much elevated, and a more or less distinct circular mark behind this; general colour pale purplish-brown, a fine yellow line on back of head and fore part of prothorax, the central portion of elytra is often clothed with dense yellowish hairs. Beaten out of dense, dead, tangled vegetation, but very uncertain in its appearance. Has occurred around Wellington and at Tairua.

A. vates (6 mm.) Rather narrow, parallel-sided, usually black mottled with grey, but sometimes mostly grey, with a conspicuous black blotch on the elytra beyond middle. Very common under the bark of recently-felled rimu and kahikatea trees. Probably generally distributed in both Islands.

A. huttoni (6 mm.) Very similar to the paler varieties of the last species, but the anterior portion of the prothorax is much narrower. Generally distributed.

A. inornatus (5 mm.) Very like *A. vates,* but uniform black in colour, with the elytra finely striated and punctured. Has occurred at Makara near Wellington, and at Kumara and Greymouth.

A. spinifer (5-7 mm.) The rostrum is long and somewhat dilated at apex, the antennae of the male are nearly as long as the body; the central portions of the elytra are very much elevated and have two recurved spines

on the summit; general colour dull brownish-black. Beaten out of the dead foliage of beech trees (*Nothofagus*) on the ranges around Wainui-o-mata (Wellington). Has also occurred at Tairua.

A. sharpi (4-5 mm.) Much smaller, but in form very like *A. spinifer,* without the elytral elevations and spines; grey mottled with black and white; two clear white marks between eyes on base of rostrum, two similar marks on posterior angles of prothorax, and two others on shoulders of elytra. Found under the scaly bark of rimu trees, sometimes in considerable numbers, but very uncertain in its appearance. Has occurred in the immediate neighbourhood of Wellington and at Tairua.

A. brouni (4 mm.) Rostrum much shorter and wider, and generally a much broader insect; blackish-brown; the summit of prothorax and elytra broadly suffused with pale reddish-brown; legs pale reddish-brown barred with black. A rather obscure species. Beaten out of dead foliage around Wellington very common. Has also occurred at Auckland and Tairua.

A. maurus (4 mm.) A very similar species, but slaty-black mottled and banded with jet black, scutellum and spot on posterior margin of prothorax yellowish-white; posterior edges of elytra broadly margined with pale brown. Found under precisely similar circumstances.

A. bullatus (4 mm.) Very like *A. brouni* and *A. maurus* in general appearance, but with two conspicuous oval, white patches on the base of rostrum. Its habits are identical.

A. rudis (7 mm.) Dull purplish-brown, sometimes greyish, an orange-yellow tuft in centre of prothorax; a very conspicuous patch of white hair on hind margin of prothorax with a black spot on each side of it; elytra with numerous small elevations, bearing on their summits orange yellow hairs. A large and striking species. Beaten out of dead shrubs and sticks around Wellington, but not common. Also found at Tairua and at Flora River, Mount Arthur. Probably generally distributed. Appears from October till March and occasionally met with in the middle of winter.

A. lewisi (5 mm.) Smaller and blacker; the rostrum clothed with whitish grey hairs, and the elytral elevations tipped with dull white or tawny; there is no trace of the clear black spots on hind margin of prothorax, but

the white scutellum and central white mark are very conspicuous. Has occurred on Mount Ruapehu 4,000 feet, Picton, Gordon's Pyramid and Mount Arthur 3,000 to 4,000 feet. Discovered at Broken River by Mr. J. H. Lewis.

A. lanuginosus (4-5 mm.) Pale greyish-glaucous-green; each elytron has two very prominent ridge-like tubercles close to the suture and two smaller tubercles near the extremity; the sides of the elytra are smooth; prothorax variegated light and dark, a row of blackish dots along suture, sides of elytra and rostrum uniformly paler. Common amongst foliage from the middle of December until the middle of February. Generally distributed in the Wellington District, also found at Picton, D'Urville Island and Nelson. The original specimen was found in the Hikuwai Forest near Tairua.

A. phymatodes (4 mm.) A somewhat similar pale greenish-grey variegated species, with much longer antennae, those of the male being nearly half as long again as the body. Appears from December till February. Found around Wellington, on Mount Egmont, and at Tairua.

A. discedens (♂ 4 mm., ♀ 3½ mm.) This species has two short and two long raised ridges on the elytra near the suture. Colour pale purplish-grey, with minute black and whitish markings; the antennae of the male are fully twice as long as the body; of the female barely as long as the body. Found at Porirua and on the eastern side of Wellington Harbour; also at Tairua. Appears from December till February.

A. sandageri (4-5 mm.) Prothorax and elytra very convex and rounded, clothed with pale yellowish-brown hair; there is a very large, somewhat crescentic, polished black area beyond the middle of the elytra, the legs are barred with pale yellowish-brown and black. Found on Stephen's Island, and on the coastal cliffs near Sinclair Head, also at Moeraki. Probably attached to karaka trees. Appears much earlier and later in the season than most of the other species.

A. imitarius (3-4½ mm.) A very similar species, less convex, with narrower prothorax, longer and narrower rostrum; general colour greyer, sometimes slightly violet tinged, two fine oblique black marks on shoulders of elytra, and a large crescentic mark on posterior portion.

Beaten out of dead branches of beech (*Nothofagus*) at Arthur's Pass, and Kinloch, Lake Wakatipu, occurs also at Invercargill. This species seems to be about during most of the year.

A. venustus (4½ mm.) A very beautiful little species, bluish-grey mottled with jet black; a patch of pale brown hair on fore part of prothorax, one large and one small white spot on each posterior angle; scutellum white, two small white dots in middle of each elytron, and a chain of confluent white spots along terminal margin; legs black, barred with white. Beaten out of forest growth at Waimarino, 2,500 feet, on central plateau of North Island. Discovered by Mr. Philpott at Invercargill. Evidently very rare, but generally distributed.

A. crassus (2½ mm.) One of the smaller species; very convex, oblong, the head covered by the prothorax; antennae very short; general colour black, with an irregular dusky ochreous mark in the middle of the elytra. Beaten in some numbers from the underside of a log in bush at Makara, near Wellington. Hops with great activity, and would be likely to elude observation, unless specially worked for by this method. Has occurred sparingly at Tairua, Waikanae and Mount Arthur. Appears from October till February. Seems to be rarely met with.

Etnalis spinicollis (4 mm.) Superficially like a small specimen of some of the spotted varieties of *A. huttoni* and *A. vates*, but may be recognised by the posterior angles of the prothorax being produced outwardly as a spine-like process. Probably generally distributed.

Eugonissus sylvanus (4½-5 mm.) Pale reddish-brown, variegated with black and white, some specimens from high altitudes being very vividly marked; there are dark brown, or black, suffusions on each side of the prothorax at the base; two small spots on the elytra near the shoulders, a very large blotch on each elytron at the side almost joined at the posterior margin. Beaten out of forest growth from January till March. Found on the lower slopes of Mount Ruapehu, throughout the Wellington District, and at Picton. Probably generally distributed.

Proscoporrhinus albifrons (♂ 5½ mm., ♀ 5 mm. Plate XIV, fig. 3 ♂.) Remarkable for the enormous flat white face of the male. Very rare, but apparently generally distributed. Probably attached to Ribbon bark (*Plagian-*

thus betulinus). Has occurred at Lake Horowhenua, Martinborough, Waipapa (Clarence Bridge) and Greymouth.

Exilis lawsoni (♂ 4 mm., ♀ 3 mm.) Rather stout, parallel-sided, with broad head and very stout basal joint to the antennae; the remaining joints, except those forming the club, are enormously elongated, the entire antennae in the male being sometimes four times as long as the body; in the female they are usually much shorter; general colour grey, slightly tinged with greenish. Beaten out of forest growth December till March. Probably generally distributed in the North Island.

E. variabilis (4-4½ mm.) In this species the antennae are generally much shorter, the ninth joint in particular being much abbreviated; there are usually two oblique black marks on the elytra, near middle, sometimes much suffused and forming a large black blotch covering the posterior half. Very common in the immediate neighbourhood of Wellington. Also found at Tairua.

E. spectabilis (♂ 5 mm., ♀ 4 mm.) Distinguished by its larger and more elliptical form; general colour pale reddish-brown. The antennae of the male are nearly four times the length of the body, those of the female being about equal to the length of the body. Beaten from nikau palms and *Freycinetia*. Has occurred around Wellington and at Whangarei.

Araeocerus pardalis (3½-4 mm.) Rostrum very short, eyes large, elytra oblong oval. Colour pale brownish-ochreous, thickly mottled and spotted with black. Beaten out of shrubs in January and February. Has occurred at Tairua and in the Wellington and Nelson Districts.

Family **CURCULIONIDAE.**

Rostrum of very variable length and thickness; the palpi small, nearly always concealed within the mouth, short and rigid. Labrum absent. Antennae nearly always elbowed:—i.e., with the basal joint longer, and so formed that when it is laterally extended the other joints can be placed in a forward direction; terminal joints usually thickened into a more or less distinct club. The larvae are stout, curved grubs, with the skin much furrowed, and without legs; they exhibit great general similarity in form. The vast majority are internal, or subterranean, plant feeders, and some are extremely destructive.

This family includes the true weevils. It is of great extent, upwards of 25,000 species having been described from all parts of the world. The New Zealand species are very numerous, and many of them extremely beautiful.

Cecyropa lineifera (7½ mm. Plate XIII, fig. 1.) Found on the beach above high water mark, but evidently very protectively coloured. Has occurred in some numbers at Titahi Bay near Wellington, and at Lyttelton. I have never seen this insect alive.

Tigones gracilis (6 mm. Plate XIII, fig. 7.) Abundant and generally distributed in both Islands. May be regarded as typical of the genus. It is frequently beaten out of foliage about midsummer. The female is larger, and slightly stouter than the male. The elytral markings are very variable in both sexes, and in some specimens practically absent.

T. aulica (8½ mm.) Larger, uniform pinkish-grey covered with minute brown dots, the elytra very evenly striated, with punctures in the striae. Legs and antennae rather short. Beaten from forest growth, on the lower slopes of Mount Ruapehu, in January, at about 4,000 feet, but rarely met with. It also occurs on Mount Egmont. One of the finest species of the genus.

T. antennalis (6½ mm.) In form very like *T. gracilis* but slightly longer and uniformly covered with fine brassy-grey hair. It is common amongst "Wild Irishman" (*Discaria*) on the flats at the head of Lake Wakatipu.

T. binodula (7 mm.) Warm brown, or greyish-brown. Has wider elytra, suddenly tapering at extremity with two large and two small nodules before termination. Common at Newton's Flat on the Buller River. Discovered at Greymouth by Mr. Helms.

Platyomida hochstetteri (♂ 11 mm., ♀ 13 mm. Plate XIII, fig. 9.) A very beautiful weevil occasionally beaten out of beech trees (*Nothofagus*) in the early summer. The female is larger and duller than the male, and abraded specimens of both sexes are often found of a dull reddish-black colour with little of the highly ornamental clothing remaining. Has occurred at Tairua, and at Kaitoke, near Wellington. Possibly generally distributed in beech forests in the North Island.

P. verrucosa (♂ 11½ mm., ♀ 12½ mm.) A much commoner species. Male dark grey, variegated with lighter

grey; female with broader elytra, dull coppery brown, slightly variegated with dark grey; the prothorax is rugose; the elytra have three rows of tubercles, the pair next to the suture, near the hind slope, being much larger than the others; there are no distinct tubercles on the shoulders of the elytra. Beaten out of scrub November till February. Found in the Wellington District, and on Mounts Ruapehu and Egmont at about 4,000 feet.

P. enysii (12 mm.) Very like *P. hochstetteri* but the rostrum broader and longer; the elytra relatively narrower, with a very small tubercle on each shoulder; there are two small, and two very large tubercles on the hind slope. Discovered by John D. Enys, presumably on the mountains around Castle Hill, West Coast Road, Canterbury. Since found in some numbers at Flora River, Mount Arthur, at about 2,800 feet.

P. amota (8½-9 mm.) Greenish bronze; there are four large, divergent, pointed elevations at the hind slope of the elytra by which the species can be immediately recognised. Common in the Buller Gorge about Newton's Flat; originally found on the Waitakerei Ranges, near Auckland.

P. caudata (9 mm.) Metallic pink, slightly grey in the female, which is a broader insect; the surface of the prothorax is wrinkled; the elytra have three raised ridges, and six rows of very distinct punctures, the median ridges terminate in two large rounded projections on the hind slope, and the outer ridges in two much smaller projections. Beaten in profusion from foliage, on the Tararua Ranges, at about 4000 feet, in January. First discovered by Messrs. O'Connor and Simmonds in that locality, to which it is apparently restricted.

P. simulatrix (10 mm.) Larger and broader, variegated grey and brownish, with hardly any metallic reflections; the elevations on the hind slope of the elytra are slight. Found at Takaka, and in the Buller River Valley. Discovered by Mr. Helms at Greymouth.

Lyperobates rostralis (12 mm.) Deep chocolate-brown, with short broad rostrum; the prothorax is broadest slightly behind the head, thence slightly tapering; the elytra, which are much broader than the prothorax, have numerous small nodules; those at the hind slope overhang, and form an irregular, square-looking projection.

Found amongst leaf mould at Ohakune and Waimarino, Central Plateau of North Island.

Genus CATOPTES.

Comprises a very numerous assemblage of moderate-sized (about 6 mm.) grey weevils with stout anterior thighs, and narrow oval elytra, extremely hard to discriminate, and only of interest to the advanced coleopterist. The commonest species is *C. obliquesignatus* (*obliquis*) found under bark and logs throughout the year. It is brownish-grey with an oblique pale mark on the posterior portion of each elytron.

Echinopeplus insolitus (9-12 mm.) Superficially suggestive of a species of *Platyomida*. Grey, speckled with black; surface rugose; rostrum moderate, with three keels; prothorax short, cylindrical, broader than head; elytra slightly wider than prothorax at base, thence widening posteriorly as far as the hind slope, where each elytron is expanded into an abrupt, somewhat rectangular, projection with pointed angles; beyond this the elytra rapidly taper to termination. Beaten out of various shrubs, from November till February. A rather rare and remarkable species. Has occurred amongst scrub around Wellington, at Picton, and at Takaka.

Inophloeus festucae (10-11½ mm.) A very rotund-looking, chocolate-brown weevil, with a small central and two lateral tuberosities on the hind slope of each elytron, the outermost the largest. Found amongst native grasses on Stephen's Island, and at Makara, near Wellington, but is very uncertain in its appearance.

Phaeophanus o'connori (24-25 mm.) A magnificent chocolate-brown, or deep greyish-brown species, much paler on the sides; the prothorax has a very pronounced central ridge, and two blunt processes near the anterior angles; the elytra a conspicuous nodulous ridge on each side of the suture, and two other similar, but less regular, ridges on each side of this; these ridges terminate in more pronounced tuberosities at the hind slope. Discovered by Mr. A. C. O'Connor on Stephen's Island, in September, feeding on tall fescue and the leaves of trees. Apparently an early spring species restricted to Stephen's Island.

Anagotus helmsi (18 mm.) A large, very handsome, somewhat spider-like weevil, found in beech forests in

both islands. The thorax is oblong-cylindrical with prominent raised nodules largest in front. Each elytron has three large nodules, arranged in a row on the disc, two on the hind slope, and numerous much smaller nodules on the sides. General colour dull greyish-green, finely variegated with blackish, the head, nodules and suture reddish-brown, often much suffused. Legs long, dull reddish-brown, with paler band on each femora. Apparently rather rare, but generally distributed.

Sargon hudsoni (18 mm.) Deep ochreous-grey; the head and prothorax relatively small, the latter hardly longer than broad with deep central furrow; the elytra long, moderately broad, parallel-sided, tapering at hind slope to blunt point; each elytron has four conspicuous raised ridges, the two outermost being the most elevated, and terminating at the hind slope. Found on speargrass blossoms, in hot sunshine, on Mount Holdsworth, Tararua Range, at about 4,000 feet. Apparently seldom met with. Old specimens become almost black as the result of abrasion.

Phaedropholus o'connori (22-23 mm. Plate XVI, fig. 5.) Another magnificent weevil, coppery-reddish-brown, or bright yellowish-brown; the rostrum is stout, much dilated towards mouth. Discovered by Mr. A. C. O'Connor amongst *Astelia* on the Tararua Ranges at about 4,000 feet, where it appears to be quite common, if searched for at night.

Phoxoteles graniger (15 mm.) Somewhat similar in general appearance, but much smaller and narrower; the rostrum is less dilated, and has two distinct keels; general colour dark brownish-black, with a few irregular patches of greyish scales, especially on the underside; the elytra have five or six rows of regular depressions as well as a number of obscure tubercles. First discovered by Mr. S. W. Fulton on Mount Maungatua, Otago. Has subsequently been found on the Watchman and on Stephen's Island. Rare and interesting.

Heterotyles argentatus (10 mm.) Rather elongate; the antennae rise from a dilated area about the middle of the otherwise slender rostrum; the end of first joint is swollen and the two succeeding joints longer than the others; prothorax almost globular; elytra square at base, thence tapering to moderate point; general colour reddish-black, thickly, but irregularly, clothed with silvery gray scales. Discovered on the Waitakerei Ranges, near

Auckland. Has also occurred on Mount Arthur, and at Otira. Beaten in abundance from tangled vegetation at the foot of the Humboldt Range, head of Lake Wakatipu. Probably generally distributed.

Rhadinosomus acuminatus (9½-11 mm. Plate XIII, fig. 8.) Quite unlike any other New Zealand weevil. It is occasionally found in numbers on *Haloragis erecta,* a small herbaceous plant, with serrate leaves, locally abundant on dry hills, and on the sea coast. Has occurred on the eastern side of Wellington Harbour, at Feilding and at Tairua, near Thames.

Lyperobius hudsoni (18-21 mm. Plate XIII, fig. 2.) Found very sparingly on high mountains in the southern portion of the South Island between 4,000 and 6,000 feet. Several specimens have been taken on the Humboldt Range at the head of Lake Wakatipu. A very similar species, *L. fallax,* occurs on Mount Arthur, and on the mountains around Arthur's Pass.

L. huttoni (25-26 mm.) Larger with relatively shorter and broader rostrum; the elytra have six rows of deep punctiform impressions; general colour black slightly tinged with reddish, almost without clothing. Found in the midst of clumps of speargrass on the coast hills about Wellington. Difficult to obtain, without special apparatus, owing to the formidable array of spines presented by the plant. First discovered by Captain Hutton, at Tarndale at the head of Wairau River, Nelson.

Lyperopais mirus (10-13 mm.) The rostrum much longer and more slender than in *Lyperobius;* the prothorax almost globular; the elytra elongate-oval with six deeply punctured striae; in the male, the lower extremity of the hind femur and upper end of the hind tibiae are furnished with teeth, which nearly meet; colour reddish-black, in fresh specimens more or less clothed with dull coppery-red scales, and in these three paler lines are visible on the prothorax. Found in great abundance on native grasses on Mount Peel (Nelson) at about 5,500 feet, but most uncertain in its appearance. Has also occurred on Mount Arthur, and on Gordon's Pyramid in the same locality.

Genus PHRYNIXUS.

Comprises a number of moderate-sized weevils, with the surface usually very uneven, and furnished with numerous excrescences; the clothing consists of dense

squamae, which frequently retain minute particles of earth, or other refuse. The species are found under logs in wet places, and when adhering thereto almost exactly resemble pellets of earth. The discrimination of the species is an extremely difficult task, even in the hands of a weevil specialist. The allied genera *Bradypatae* and *Erymneus* also include somewhat similar beetles.

Cuneopterus conicus (12-14 mm.) Elongate, cone-shaped, the insect gradually increasing in width from the apex of the rostrum to the hind-slope of the elytra. Colour deep chocolate-brown; the prothorax has several irregular ridges, and the elytra a variable number of nodules and ridges; these are most pronounced towards hind slope, which is sudden and oblique; the summit of the hind slope is very irregular and its edges are often fringed with reddish scales. Found adhering to the under-surface of logs. Has occurred on Mount Egmont and at Otira and Greymouth. Rare and very remarkable. The larger form from Mt. Egmont was described as a distinct species under the name of *C. tenuicornis*.

Clypeorrhynchus gracilipes (9 mm.) Rostrum moderate, slightly dilated at apex; the prothorax rather small, somewhat conical, with four ridges, the outer pair irregular; femurs moderately dilated, otherwise legs slender; the elytra much broader than prothorax, ovate, rather pointed at extremity, hind slope gradual; slightly striated, with a few punctures; general colour dull brownish-black, with a few tufts of paler brown hairs. Has occurred at Maori Creek near Greymouth, Waiho Gorge, and Humboldt Range, Lake Wakatipu.

Phygothalpus sulcipennis (6½ mm.) Reddish-black, without clothing; the prothorax is short oval, with a deep wide central groove; the elytra slightly wider, about twice the length of prothorax, tapering to rounded point, with indefinite hind slope; moderately striated, with punctures in the striae. Found by Mr. H. Hamilton on Vanguard Peak, and Bold Peak, Humboldt Range, Lake Wakatipu, under stones, at an altitude of 6,500 feet. The genus *Phygothalpus* seems to be characteristic of high mountains in the South Island.

Nestrius serripes (5-6 mm.) Prothorax much swollen in front covered with very large punctures; elytra narrower, and less than twice the length, pointed, with indefinite hind-slope, finely striate, with obscure punctures; legs stout, especially anterior femora; dull reddish-

black with scanty yellowish-brown clothing. Found amongst dead leaves at Wainui-o-mata, and other localities around Wellington, also at Mount Pirongia.

Rystheus hudsoni (6-11 mm.) Rostrum thin and curved, considerably longer than the prothorax; prothorax rather short, cylindrical, narrowed near head, rugose with broad central groove; elytra also rugose, parallel-sided, slightly increasing in width as far as hind slope which is abrupt, and has at its summit two large elevations fringed with reddish scales; legs rather slender. Has occurred on Mount Egmont 3,000 feet, Waiho Gorge and Lake Te Anau.

R. fulvosetosus (9-10 mm.) A larger and much more striking species; the prothorax is densely punctured; the elytra have four raised ridges and the suture all bearing tufts of reddish-orange scales; the hind-slope is very abrupt, and covered with clusters of reddish-orange scales. Discovered by Mr. C. E. Clarke at Waiho Gorge. A rare and very interesting insect.

Tocris latirostris (14-17 mm.) Rostrum short and very broad; antennae short; legs moderate; the prothorax very short and hardly wider than the head, its surface rugose and very uneven; the elytra are longer than the head and prothorax combined, their base wider than the prothorax, the broadest portion being behind the posterior thighs; the hind-slope is steep but not abrupt; there are about 6 rough raised ridges on the elytra with large punctiform impressions between them; colour black with a few thin patches of very fine whitish hairs. Found on Old Man Range Central Otago, Ben Lomond Lake Wakatipu, and Minaret Peaks West of Lake Wanaka, 6,000 feet.

T. pascoi (14-16 mm.) Usually more or less covered with very fine, pale, pinkish-white down; each elytron has three prominent, bare, raised ribs, with a row of punctures on the sides of each rib, and on each side of the suture. Found in some numbers, resting on native grasses, between 5 and 6 in the afternoon, on Bold Peak Lake Wakatipu, at about 4,000 feet. Has also occurred on Mount Earnslaw and the Minaret Peaks. *T. laevicostata* and *T. hamiltoni* seem to be very similar species.

Philacta maculifera (6½ mm.) Rostrum thin, curved, about 2 mm. in length; prothorax small, with the sides round; elytra rotund, almost egg-shaped, twice the width, and nearly thrice the length of the prothorax, each

elytron has three or four fine punctured striae; general colour pale yellowish-brown, highly polished and thinly clothed with whitish hairs, the ground colour forming a few dark oblong spots towards the extremity of the elytra. Discovered by Commander Walker on the sea beach at Lyttelton, to whom I am indebted for specimens of this very elegant weevil.

Genus Dorytomodes.

This genus was instituted by Sir Guy Marshall, in 1926, for the reception of a numerous assemblage of small weevils, formerly included by Major Broun under the headings of *Dorytomus* and *Erirrhinus*. Many of them are very elegant little beetles, and some are quite common and easily recognised.

Dorytomodes trilobus (4½ mm. Plate XIII, fig. 6.) Common amongst blossoms in the Wellington District from October till March; occurs also at Auckland.

D. aciphyllae (5 mm.) Rostrum red-brown; prothorax deep reddish-brown; elytra yellow, a triangular patch of reddish-brown around the scutellum, and another very irregular and often much suffused patch across the middle; the prothorax is finely punctured; the elytra very evenly punctured in rows. A rare and easily recognised species beaten from *Astelia* and *Aciphylla* in sub-alpine localities. Has occurred on Mount Egmont, 3,000 feet, on the ranges on the eastern side of Wellington Harbour, 2,500 feet, and at Flora River Mount Arthur, 2,800 feet.

D. maorinus (4½ mm.) Legs and prothorax light reddish-brown; the elytra yellowish-brown, without markings; the prothorax is finely but densely punctured; the elytra striate with even rows of punctures between the striae. May be beaten from the foliage of *Dracophyllum longifolium*, often abundant. Has occurred on the Tararua Ranges, and Mount Arthur, about 3,500 feet. Probably generally distributed on mountains in both islands.

D. decussatus (2½-3 mm.) Deep red-brown, with yellow elytra; a red-brown patch around scutellum, two patches on each side about middle, and one terminal. Abundant amongst Veronica blossoms, in March, at Karori, near Wellington.

D. limbatus (3 mm.) A very rotund-looking little weevil, pale brownish-yellow, the prothorax, and a very

variable patch at base of elytra often red-brown, or blackish-brown; the elytra are very wide in contrast to the prothorax and are evenly punctured in rows. Extremely abundant amongst the flowers of the bush lawyer (*Rubus australis*) in October, also in the blossoms of rangiora (*Brachyglottis repanda*) which flowers at the same time. Probably generally distributed.

D. discoideus (3½ mm.) Immediately known by the large, almost circular, bright yellow patch on the elytra sharply margined with dark brown; legs and prothorax, except two small patches, yellowish-brown, rostrum darker. Has occurred on Mount Egmont, at Waimarino, around Wellington and at Whangarei. Rare and interesting, but probably generally distributed in the North Island.

D. acceptus (3½ mm.) Pale orange-brown, very prettily variegated with darker brown; there is a paler band in the middle of the prothorax, and two conspicuous, but irregular, chains of dark brown spots across the elytra, at one-half and three-quarters. Beaten out of foliage, from October till March, but not very often met with. Apparently generally distributed in the North Island and Nelson District.

D. eustictus (4 mm.) A very striking species, densely clothed with fine golden-brown hairs; the elytra have two white streaks, parallel to suture, from base to near apex; several elongate white patches below shoulders; a deep brown patch, from near hind thighs to before apex, and two smaller dark brown spots beyond this. Attached to the Native broom (*Carmichaelia*), when in flower in December and January, from which it is sometimes beaten in great numbers. Has occurred at the French Pass near Nelson, and in the Mount Cook area, also at Taieri in Otago. Probably generally distributed in the South Island wherever the Native broom occurs.

D. veronicae (4-4½ mm.) Body deep red-brown, densely clothed with golden hairs, and sometimes one or two obscure blackish spots on the elytra; legs yellowish brown. Size and general colouring very variable. Specimens from lowland localities seem to be smaller, and the hairy clothing whitish. Beaten in profusion from Veronica blossom, especially in sub-alpine localities, in both islands.

Neomyota rubida (3 mm.) Rostrum moderately stout, about the same length as the somewhat conical prothorax; antennae inserted near apex of rostrum; the elytra are

much wider than the base of the prothorax, with square shoulders and abrupt rounded termination; prothorax finely punctured; elytra finely striated and punctured; general colour brown, often orange-brown or red-brown, rarely yellowish; some large, irregular, patches of fine yellowish hairs on the elytra, and on the sides and median line of the prothorax. Beaten out of rata (*Metrosideros robusta*) throughout the summer; often very common. Probably generally distributed in the North Island.

N. pulicarnis (3 mm.) Very similar in shape but with longer elytra; bright yellowish-brown, often with suffused reddish-brown blotches on the middle of the elytra; the puncturation of the prothorax is coarser, and the hairy clothing extremely sparse. Found commonly in beech forests. Probably generally distributed in both islands.

Xerostygnus binodulus (10 mm.) Antennae arising near the end of the moderately long rostrum; prothorax small, short, with rounded sides; elytra elongate, parallel-sided, with two small rounded projections below summit of hind-slope; dull greyish-brown, the elytra striated, with obscure punctures; the whole insect is densely clothed with small round scales. Found by sweeping native grasses in scrubby forest. Has occurred at Lake St. John, Auckland, Wainui-o-mata and Hutt Valley, Wellington.

Phorostichus linearis (4½-5 mm.) Elongate; rostrum slender, much longer than the prothorax, which is almost cylindrical; elytra about one and a half times as long as prothorax, considerably wider, parallel-sided, hind-slope indefinite; striated with fine punctures; general colour bright fawn colour; prothorax yellowish with white median stripe; elytra elegantly variegated with white; a suffusion on shoulders reaching to about one-third, two oblique stripes beyond this, meeting on suture at about two-thirds, and continued on the suture itself to termination; several small white marks on terminal third. Beaten from flowers of rangiora (*Brachyglottis repanda*) around Wellington, where it is decidedly rare. Has also occurred at Whangarei and on Mount Egmont. Found in profusion on blossoms of the Native broom (*Carmichaelia*) at the French Pass, in December, and in sub-alpine scrub, on the lower slopes of Mount Arthur, 3,000 to 4,000 feet, in January.

Praolepra squamosa (4 mm.) Rostrum slender, about twice the length of the prothorax; antennae inserted about one-third from its apex; elytra oval, fully twice length of prothorax and considerably wider; general colour brassy-grey with blackish spots; the elytra with numerous tufts of fine whitish bristles, those on and near the hind slope larger than the rest; two small subterminal tubercles. Extremely abundant on all flowers from October till February. Probably generally distributed in both islands.

P. varia (4-4½ mm.) Yellowish-brown, densely and evenly clothed with golden-ochreous hairs, generally with a row of elongate dark brown spots down the middle of each elytron, but no tufts, or tubercles. Variable in size. Found under the same circumstances as the foregoing, but possibly confined to the North Island.

Aneuma conspersa (4½ mm.) Very like *Praolepra* in shape, reddish-orange-brown, the elytra variegated with yellow and dark purplish-brown; an oblique purplish-brown bar on each elytron near middle. Found in subalpine regions by beating *Phyllocladus alpinus*. Rare at Waimarino on the central plateau of the North Island, but abundant at Arthur's Pass, at about 3,000 feet. Probably generally distributed in such localities. Discovered by Mr. T. Hall near Mount Algidus.

Tysius amplipennis (4 mm.) Rostrum slender and rather short; antennae arising near its apex, also slender; prothorax small, narrow, cylindrical, with slight constriction behind front margin; elytra very broad, shoulders square, apex pointed, nearly three times as long as prothorax, finely striated, with three slightly raised ridges; general colour greenish-grey, variegated with brown and blackish, tending to form an oblique-margined patch, covering sides and termination of elytra; a few whitish bristles towards hind-slope. Very abundant amongst foliage from December till March. Probably generally distributed in both islands.

Cyttalia dispar (6½-7 mm.) Chestnut brown to dark brown. Antennae moderate, inserted near end of rostrum; head and prothorax rather small, finely punctured. Legs moderate, intermediate and hind tibiae with prominent spines beneath. Elytra broad, somewhat heart-shaped, acutely pointed, with six fine closely punctured striations. The whole insect sparsely clothed with very fine, short, ochreous-brown hairs. Very common amongst

spear-grass blossoms on mountains throughout the South Island at about 4,000 feet above sea-level.

C. griseipila (6 mm.) Smaller and darker in colour, but otherwise a very similar weevil. Found in November, amongst spear-grass blossoms, on the coast hills around Wellington.

Caenophanus carbonarius (8-8½ mm.) Very similar in shape to the foregoing, but much larger. Dark bluish-black, the prothorax with purple reflections. The elytra are smooth and shining with six very distinct striations, the four outermost striae with numerous punctures. Abundant in January, amongst spear-grass blossoms, on Mount Arthur at about 4,300 feet.

Hypotagea lewisi (3-4 mm.) A beautiful little red-brown weevil with the hind portion of the elytra densely variegated with bright ochreous hairs. Legs slight, anterior pair the stoutest. Rostrum elongate, slender, with antennae arising near the tip. Beaten out of forest growth. Generally distributed, but apparently more frequently found in sub-alpine regions.

Genus Eugnomus.

A numerous and very varied assemblage of moderate to small weevils of very attractive appearance. Most of the species frequent flowers, and are at their maximum abundance before midsummer. The energetic collector will probably obtain most of the species here mentioned, during his first season.

Eugnomus elegans (4 mm. Plate XIV, fig. 4.) One of our most beautiful species, found commonly in Gollan's Valley on the eastern side of Wellington Harbour, where it may be beaten from the blossoms of *Weinmannia racemosa* during the early summer. Discovered by Major Broun at Tairua.

E. monachus (5-5½ mm.) Larger and stouter, with shorter legs and relatively broader elytra; these are rather deeply striated, and usually have variable elongate, white markings on the hind-slope. The blue colouring, characteristic of the previous species, is absent. Beaten out of various blossoms in forest, during the early summer, but especially partial to those of *Weinmannia racemosa.* Apparently common and generally distributed in both islands.

E. interstitialis (3½-4 mm.) Smaller, but otherwise somewhat similar to the last species. General colour brownish-black, legs reddish, elytral striations even and deep. In most specimens the elytra are slightly variegated posteriorly, with paler oblong marks between the striae. Found amongst blossoms, in forest and scrub. Generally distributed in the North Island, also recorded from D'Urville Island.

E. lituratus (4-5 mm.) In this species the elytra are less acutely pointed than in most of the allied forms. General colour black, but immediately recognisable by the very large patch of light yellowish-fawn, or cream-colour, which covers almost the entire upper surface of the elytra. Found amongst the blossoms of *Weinmannia racemosa* and other flowering shrubs, during the early summer. Perhaps confined to the North Island.

E. picipennis (5½-6½ mm.) Moderately stout, black, or brownish-black; elytra large, pointed, elevated before middle, with long and very steep hind-slope; striations very deep on elevated portion. Central portion of prothorax, and elytral ridges more or less densely clothed with white, or yellowish-white hairs, and two conspicuous white lines at pointed tip of elytra. A very common and elegant species, beaten out of forest growth throughout the summer. Generally distributed in the North Island.

E. nubilans (5-5½ mm. Plate X, fig. 7.) One of the commonest species of the genus in the Wellington District, constantly beaten out of foliage during the whole summer. The larva feeds in rimu logs when in an early and rather dry state of decay. The four species immediately following bear a considerable general resemblance to this species.

E. fervidus (4½-5 mm.) Bright fawn colour often with an interrupted white band across hind-slope of elytra; sides of prothorax and scutellum bright yellow. Extremely variable in size and colour, hence very puzzling to the collector but a long series will show every gradation. Many specimens have a broad shaded dark-brown band across the hind-slope, and a sprinkling of dark and light patches all over the elytra. A smaller form also occurs much suffused with grey. Paired specimens are often met with, and are instructive as indicating the range of variation in regard to the sexes. The species is very common and generally distributed in the North Island.

and in the northern portions of the South Island. Beaten from forest growth throughout the summer.

E. maculosus (4½-5 mm.) A very striking and distinct species. The elytra are much more acutely pointed than in *E. nubilans* and deeply striated. Head and prothorax dull yellowish-brown darker on the sides. Elytra pale pinkish brown; two deep chocolate-brown blotches between the shoulders, a streak on suture and a very wide, rather irregular, transverse band before hind-slope extending to extremities on each side; central portion of hind-slope yellow. Found in the immediate neighbourhood of Wellington, but decidedly rare. Bred, by R. C. Cooper, from larvae in log of *Pinus radiata.*

E. dennanensis (5 mm.) A very similar species, but much more variable and duller in colour; the chocolate-brown markings are smaller and less distinct and do not extend beyond the summit of hind-slope. Found on mountains in both islands from 3,000 to 4,000 feet. Usually taken by beating speargrass blossoms.

E. fasciatus (4½ mm.) Much smaller and relatively broader than *E. nubilans.* The striations on the elytra are fine and shallow. General colour brilliant orange-brown; a dark purplish-chocolate-brown transverse band across elytra on level with posterior legs; hind-slope variegated. Beaten from *Coprosma* and other blossoms during October and November. A very striking little weevil. Discovered by Major Broun at Tairua; occasionally met with around Wellington, commonest at Makara.

E. aenescens (6½-8 mm.) Elongate, relatively narrow and more parallel-sided than other members of genus; elytra very finely punctured in rows; elytral extremities rounded, hind-slope indefinite. General colour metallic-green, blue, golden-bronze, or purple, with black, or sometimes reddish, legs. A very beautiful and variable species, abundant on Mount Arthur, in January, from 3,000 to 4,500 feet, usually taken on speargrass blossoms. In this case the colour varieties have been regarded as distinct species. See Systematic Index, Chapter IV.

E. robustus (8-9 mm.) The largest, and much the most robust-looking species of the genus, cinnamon-brown, head and prothorax darker; the sides of the prothorax covered with yellowish-down; elytra large, with about seven fine striations, otherwise smooth, and dull; a small spine-like ridge on each elytron just before hind-slope. So far only found on Mount Arthur at about

4,500 feet. This weevil clearly imitates, in shape and colour, a faded leaf of the mountain veronica, amongst which it is found.

Oreocharis pullata (5½ mm.) Rather dull blue, or brownish; the prothorax coarsely and closely punctured; elytra striate, punctured; tibiae of posterior legs incurved. Found commonly around Wellington, amongst veronica blossoms, during the late summer and autumn. Apparently somewhat variable. Probably generally distributed.

Genus HOPLOCNEME.

Small weevils with broad, rounded head, short rostrum, broad elytra, the hind tibiae much dilated, with large spine beneath. The species, which are very puzzling, frequent blossoms, and are most in evidence in early summer.

H. hookeri (4½-5 mm.) Moderately stout; bronze; elytra strongly striate with fine punctures in striae; legs yellowish-brown. Beaten out of shrubs on Mount Egmont at about 3,000 feet.

H. punctatissima (4 mm.) Smaller, with narrower elytra, the sculpture consisting of fine punctures, arranged in rows. Beaten out of shrubs around Wellington, fairly common.

H. cyanea (5 mm.) Bright metallic blue, sometimes purplish; elytra very broad; hind tibiae much dilated with very large spine beneath; head and prothorax coarsely punctured; elytra with close punctures arranged in rows. A smaller and narrower form, dull purple, is accounted a variety of this. Both are very abundant amongst blossoms, in the Wellington District, from November till January, and occur on the Tararua Ranges to about 4,000 feet.

H. vicina (4½ mm.) Quite distinct from the foregoing. Brownish-black; elytra with prominent raised ridges near shoulders and before hind slope. Posterior tibiae less dilated. Found on mountains in both islands. Has been recorded from Tararua Ranges and Arthur's Pass 3,000-4,000 feet.

Genus STEPHANORRHYNCHUS.

Includes a number of fantastic and most attractive weevils, of fairly large size. The head is constricted behind the eyes, which thus appear prominent. The legs are moderately long, with the femora much swollen and

furnished with a large tooth on the underside; the tibiae are strongly curved, both these characteristics being exaggerated in respect of the hind legs. The species frequent flowers or foliage.

Stephanorrhynchus tuberosus (7½-8 mm. Plate XIII, fig. 5.) Common and generally distributed. May be beaten out of all kinds of foliage during December, January and February. Found from the sea-level to about 4,000 feet. The colouring is extremely variable, ranging from pale grey, through various shades of brown, to almost black, but the peculiar elytral protuberances and the very large spine on the underside of the hind tibiae are distinctive. A long series of this most interesting insect is needed to fully appreciate its peculiarities. When feigning death this weevil has a ludicrous resemblance to a trussed fowl.

S. osculator (5½-6 mm.) Much smaller than the foregoing, stouter, with a relatively shorter rostrum, otherwise an extremely similar species. Found under similar circumstances, and probably generally distributed.

S. lawsoni (♂ 4½ mm., ♀ 5½ mm.) Of very slender build, with long thin legs; head elongate, dilated behind eyes; prothorax conical, much attenuated and constricted in front; each elytron with two narrow, raised protuberances, the posterior the larger. General colour blackish, variegated with dark straw-colour. Apparently confined to the North Island, where it seems to be common and generally distributed. Found amongst various foliage during the late summer and autumn. When disturbed feigns death, as is usual with weevils, but in this species the legs and rostrum are held in a very peculiar position, causing the whole insect to closely resemble one of the dried shreds of slugs' excreta commonly met with on leaves, and this simulation is probably protective.

S. crassus (4-4½ mm.) Stout with rather short rostrum and thick legs. Each elytron has a sharp curved ridge, which combines with its fellow to form the rim of a large craterform depression in the middle of the insect. Colour variable, dark grey, or purplish-brown, with paler and darker brown markings. Very distinct and easily recognised. Beaten from the blossoms of various species of *Pittosporum* during the spring and early summer. Discovered by Major Broun at Tairua. Common around Wellington, and possibly generally distributed through the North Island.

S. attelaboides (*curvipes;* 7-8 mm.) In form very like *S. tuberosus,* but with the elytral protuberances much smaller and narrower. General colour grey, or pale brownish-grey. Occurs commonly in both islands. Probably generally distributed.

S. insolitus (7-8 mm.) Posterior portion of head with very deep groove. Elytra oval, with no distinct protuberances, their sculpture consisting of linear series of small feeble projections. Colour pale brownish-grey, without definite markings. Beaten from speargrass blossoms, on the coast-hills around Wellington, in November, and, so far, not taken elsewhere.

S. costifer (8-9 mm.) Allied to the last species, but larger, stouter and darker in colour. Head and thorax with deep median groove. Elytra with three broad raised ridges, otherwise striate-punctate. General colour brownish-grey, with the depressed portions darker. A very distinct and interesting species. Found on Mount Arthur, at an elevation of about 4,500 feet, where it is sometimes very abundant amongst speargrass blossoms, in January. The general appearance of the insect is suggestive of a gigantic caraway seed.

Pactola variabilis (3-4 mm.) In form very like a diminutive *Stephanorrhynchus,* but the rostrum is much shorter and broader, and the head is not constricted behind to form a neck; the femora of the hind legs are greatly dilated, and the tibiae very strongly bowed. The elytra are broad, square in front, rounded posteriorly; there are distinct protuberances near the shoulders, about middle, and a row of small tubercles at the summit of the hind slope. The colouring is extremely variable; black, often with striking pale yellowish, or whitish markings, dark brown, pale brown, or grey, generally much variegated, but sometimes almost unicolorous. A very long series is needed to show the range of variation in this respect. Beaten from *Nothopanax arboreum,* often in considerable numbers. Common and generally distributed. Despite its great variation in colour, the species may be immediately recognised by the oblong-oval elytra and extremely dilated posterior femora.

P. demissa (2½ mm.) Much smaller, narrower, with pointed elytra; pale brown, with the sides of the elytra spotted and variegated with blackish. Would hardly be recognised as belonging to the same genus. Occasionally dislodged from foliage during the early summer.

Rhinorrhynchus rufulus (4 mm.) A remarkable little weevil, reddish-brown, with the body densely clothed with pale ochreous hairs. The head is broad with very large eyes; the rostrum as long as head and thorax, very slender; antennae inserted near middle of rostrum; basal joint not elongated to form a scape, the last three joints moderately dilated forming a distinct elongate club. Prothorax cylindrical, with rounded sides. Elytra oblong, moderately broad, about as long as rostrum, head and prothorax combined. Common amongst forest growth at Kinloch (head of Lake Wakatipu). Also found at Makara near Wellington, and at Tairua, but apparently very rare in the North Island.

Subfamily BELINAE.

Agathinus tridens (12-14 mm. Plate XIII, fig. 4.) This very handsome weevil is occasionally beaten out of young rimu trees about midsummer. It is also found in subalpine regions to about 4,000 feet, where it is usually commoner, and larger in size, than in the lowlands. The clothing varies from whitish to warm brownish-ochreous. In this species, and in the allied genus Pachyura, the basal joint of the antenna is not elongated, hence the usual "elbow" is not present.

Pachyura metallica (7-7½ mm.) Elongate, parallel-sided, with broad head, and rather short, slender rostrum. Prothorax short. Elytra fully twice as long as rest of beetle, covered with fine, but irregular, transverse ridges. General colour brilliant crimson-metallic, often with green reflections, the elytra sometimes ornamented with transverse bands of whitish hairs. Beaten out of the foliage of rimu and totara, in the early summer, often abundant around Wellington. Has also occurred in the South Island.

P. sumptuosa (9-11 mm.) Much larger, metallic green tinged with crimson, with transverse bands of whitish hairs much more distinct. Found commonly amongst *Phyllocladus alpinus* on the mountains around Lake Wakatipu. Also around Wellington, in the same situations as the last species, of which it may prove to be a varietal form.

P. stictica (8-9 mm.) Somewhat flattened, not cylindrical, elytra much broader than prothorax, parallel-sided. Head and rostrum dull black, clothed with numerous pale brownish-ochreous hairs; rest of body pale

reddish-brown, very irregularly clothed with pale brownish-ochreous hairs, more or less vacant spaces present on summit of prothorax, behind shoulders, and before hind slope. Legs and antennae dull ochreous-red. Beaten from subalpine vegetation in both islands. Has occurred on the central plateau of the North Island, Mount Arthur to 4,000 feet, Buller River and Otïra Gorge.

P. violacea (6½-7 mm.) Dull violet-metallic with coppery reflections. Head and prothorax relatively shorter and broader than in the preceding species. Elytra also stouter, slightly constricted behind shoulders, coarsely punctured, with a few very small irregular patches of white hairs. Four specimens, beaten out of a young miro tree, at Karori, in 1902, but not since met with. Apparently very rare.

Subfamily SCOLOPTERINAE.

Includes a small assemblage of very interesting knobbed and spinose weevils, of most distinctive appearance, essentially characteristic of New Zealand.

Scolopterus tetracanthus (7-8 mm.) Shining black, with bronzy and reddish reflections. The shoulder of each elytron is produced into an acute cone, and there is a sharp spine at the summit of the hind slope, which is very steep; surface of elytra very deeply punctured in rows. Beaten out of forest growth during the summer. Apparently generally distributed throughout the North Island, but not nearly so common as the next species.

S. penicillatus (6-6½ mm.) Smaller, with the cones on the shoulders of the elytra much less pronounced and not so acute; the punctures are much shallower. Also beaten out of forest and scrub throughout the summer. Common and generally distributed in both islands.

Nyxetes bidens (9-11 mm.) Shining black, legs reddish. Larger than the species of *Scolopterus;* more cylindrical, without conical projections on the shoulders of the elytra. A very large, sharp, conical spine on each elytron, towards the side near middle; the surface of the elytra is striated, with very regular punctures impressed therein, the interstices distinctly raised. Occasionally beaten out of forest growth from December till March. Probably widely distributed in both islands. A very striking and interesting species. The sharp spines of this, and the allied species, are no doubt objectionable to birds and other

enemies, and the conspicuous black colouring acts as a warning signal.

Amylopterus prasinus (4½-5½ mm. Plate XV, fig. 3.) This extremely beautiful and most fantastic weevil may be beaten out of many native shrubs from November till March, but is commonest in the late summer. It seems to have a preference for *Myrtus bullata*. Generally distributed in the Wellington District and probably throughout the North Island.

Ancistropterus quadrispinosus (5-5½ mm.) More elongate than the last species, with longer and more slender legs; the hind femur is only slightly dilated and bears on its undersurface a minute spine. Head and prothorax blackish, with whitish median line. Elytra warm brown, sometimes suffused with black; two fine white streaks on hind slope; a black hooked spine on each shoulder, and a sharp black spine on each side of suture near middle. Legs warm brown; tarsi black. Very distinct and remarkable. May be beaten out of various shrubs during January and February, white rata (*Metrosideros perforata*) and ribbon woods apparently preferred. A rather rare species, but probably generally distributed in the North Island. Has occurred around Wellington, on the central plateau (Waimarino) and at Tairua.

A. pilosus (6-6½ mm.) Larger and much stouter with much blunter spines; rather dull brownish-black, usually spotted with pale yellowish-brown, especially along the suture; the elytra are striated, each stria being heavily punctured. Beaten out of forest growth from November till February. A rare species. Has occurred in Gollans's Valley on the eastern side of Wellington Harbour, at Pohangina Reserve, and at Tairua, where it was discovered by Major Broun.

Gonoropterus spinicollis (7 mm.) Prothorax with a sharp divergent spine on each side immediately behind head. Elytra very broad, with blunt projection on shoulders, and a very large stout divergent process on each side of suture, coarsely punctured in rows. Hind femora strongly dilated, with very acute spine beneath. Colour deep yellowish-brown, the elytra irregularly spotted with blackish. A local species, beaten in some numbers from *Geniostoma* in Gollan's Valley, on the eastern side of Wellington Harbour. Single specimens have also occurred in other localities around Wellington, at

Waimarino, and at Wanganui, where it was discovered by Dr. Marshall.

Oropterus coniger (4½-5 mm.) Bright orange brown. Each elytron with very large conical protuberance nearer margin than suture, projecting sideways; surface strongly striate-punctate. Hind femur scarcely dilated. Abundant amongst fuchsia during the early summer. Generally distributed.

Subfamily CRYPTORRHYNCHINAE.

Genus PSEPHOLAX.

Includes a number of moderate-sized, robust, oval and very convex weevils, with short stout rostrum. The shape of the legs as shown in the figure is characteristic. In this, and in all the genera comprising the subfamily Cryptorrhynchinae, the prosternum is furnished with a deep canal into which the retracted rostrum is closely packed when the insect is quiescent. The legs are, at the same time, folded up so tightly that they collectively form a large blunt projection on the underside of the body. In this position most of the species closely resemble a fragment of wood, bark, or even a small stone, and their extremely hard integument increases the resemblance, and constitutes a further protection from enemies. Most of the species of Psepholax are very puzzling.

Psepholax barbifrons (7-8 mm. Plate XIV, fig. 5, 5a larva.) This is one of the commonest species of the genus and may be immediately known by the cluster of stiff reddish bristles situated on the frons of the male insect.

The larva is about 12 mm. in length, very stout, fat, and always curved. Head large, highly polished, dull yellow-ochreous. Body much furrowed, with numerous irregular rounded lobes ventrally. Thoracic segments produced ventrally as larger rounded lobes, but no legs. General colour very pale brownish-ochreous, almost white posteriorly. Anal extremity very obtuse. Alimentary canal faintly indicated by series of darker markings.

This larva feeds in the solid, sound, dead wood of ngaio, *Suttonia australis*, kohekohe, and probably many other small trees. It is quite helpless when removed from its burrows in the wood and, as with most weevil larvae, when once disturbed invariably dies. Specimens of the perfect insect were found, in company with the larva, in September, and a specimen was actually reared from a portion of the infected tree at the end of the following December.

P. sulcatus (8 mm.) Very similar to the last species, but without red bristles on frons and rostrum. The grooves on elytra are deeper and the elytra more constricted posteriorly. Probably generally distributed.

P. coronatus (8-9 mm.) Black. A broad band of pale yellow scales on each side of prothorax; and a similar transverse band near base of elytra. Apex of elytra rounded; in male? with a circle of stout erect spines on posterior half. May be cut out of solid ribbon wood, karaka, and other trees. Generally distributed but rare.

P. simplex (5 mm.) One of the smallest of the genus; oblong, with legs relatively short and slender. Rostrum very broad and short. Dark brown, variegated with pale yellowish-brown clothing. Apparently attached to *Nothopanax.* Rare but probably generally distributed.

Oreda notata (9-11 mm.) Very stout, velvety black, spotted with bright yellow, the whole surface densely covered with scales. The elytra are striate with deep punctures. May be cut out of dead wood of tawa, karaka, hinau, *Suttonia* and probably many other trees. Very distinct and immediately recognisable. Common and generally distributed, but rarely observed in the open. The general appearance of the insect strongly suggests a bird's dropping containing the seeds of the common fuchsia, and this resemblance may have a protective value to the beetle.

Mesoreda setigera (7-8 mm.) Oblong, convex, parallel-sided; the prothorax suddenly narrowed next to the head. Rostrum about as long as head and prothorax. Antennae short, stout, arising beyond middle of rostrum; club prominent, but not abrupt. Chocolate-brown, variegated with pale brown, the whole surface densely covered with scales. Occasionally cut out of dead tawa and other trees in the winter; rarely taken at large in the summer. Apparently generally distributed in the North Island.

M. laminata (5-6 mm.) A very similar weevil, smaller and less parallel-sided, more vividly variegated in colour. Is often beaten out of forest growth, in both islands, about midsummer.

Aldonus celator (11-12 mm.) Rostrum rather slender, nearly as long as head and prothorax. Antennae rather short, originating near end of rostrum, club indefinite. Prothorax nearly hemispherical, constricted behind head, elytra parallel-sided, rather pointed posteriorly. General

colour, greyish-ochreous speckled and mottled with black. Prothorax finely rugose, with faint central keel. Elytra finely striated; a number of very irregular broken transverse black marks cross elytra from before middle to termination. May be cut out of solid wood of *Myrtus bullata,* kohekohe, *Hedycarya,* and many other trees in company with its larva and pupa. The pupa is enclosed in a capacious chamber, the entrance being securely plugged with consolidated frass. Early in March four beetles were found in cells of this description, pinkish-grey in colour, partially hardened and comatose, but otherwise perfectly formed. Had they been left undisturbed, they would no doubt have remained in the pupal chambers until the following spring or summer. These pupal chambers, as usual, provided ample space for the beetle to expand its wings before emergence. *A. celator* is probably common and generally distributed throughout the North Island.

Indecentia nubila (5-7 mm.) Prothorax rounded, dilated behind head, much broader than the elytra which are parallel-sided, suddenly narrowed at hind slope, and square at apex; hind slope very steep. Surface extremely irregular, covered with brown or yellowish exudation. Legs rather long and slender. Quite unlike any other weevil. Has occurred around Wellington and at Auckland.

Ectopsis ferrugalis (14-17 mm.) Rostrum as long as head and prothorax. Antennae moderate, arising near tip. Prothorax broader than long, the anterior angles rounded but very prominent. Elytra same width as prothorax, parallel-sided; hind slope abrupt, oblique, precisely resembling the cut end of a stick. General colour cinnamon brown, variegated with greenish-grey, the hind slope paler, and coloured exactly like the section of a small branch. A very handsome and remarkable weevil attached to *Nothopanax arboreum,* but uncertain in its appearance. On very rare occasions it has been beaten in large numbers from dead specimens of that tree. Has occurred at several localities around Wellington, at Waimarino, 2,800 feet, and at Blenheim.

Sympedius vexatus (8-9 mm.) Smaller, and of somewhat similar form to the last species, but hind slope indefinite, and termination of elytra narrowed and rounded. Anterior femora very stout. The whole insect very densely clothed with dull golden-brown scales; there

are numerous irregular, black, transverse marks near base of elytra. Beaten out of forest growth, from October till February; fairly common. When this beetle falls into the umbrella its limbs are so completely folded up and hidden, that the novice will fail to recognise it. Its resemblance to a very hard fragment of bark, or wood, is almost perfect.

S. testudo (4½ mm.) This insect when folded up is almost hemispherical. Grey, with darker transverse markings. May be beaten out of ngaio in November. Common at Makara and probably generally distributed amongst coastal scrub wherever ngaio is abundant.

Crisius binotatus (8-9 mm. Plate XV, fig. 2.) May be taken as a representative of the numerous interesting weevils belonging to *Crisius, Tychanus, Tychanopais* and allied genera. Beaten out of forest growth around Wellington from December till February, but not often met with.

C. ornatus (7-8 mm.) Similar to the last species but smaller and without the brush-like protuberances on the elytra. These are very rich yellowish-brown, with a fine curved black transverse line level with the hind femora. Found under logs around Wellington, but apparently very rare. Should be specially looked for in the early spring. I once took ten specimens, on September 18th, under logs, from a recently felled miro tree, at Makara.

Genus TYCHANUS.

These are stout, rather oblong, weevils of moderate size, densely clothed with scales, the surface in many species diversified with nodules. Owing to their highly protective form and colouring they are very hard to find, but nevertheless include some of our most attractive weevils. Mr. A. C. O'Connor has achieved great success in collecting these insects by sifting dead leaves in the autumn.

Tychanus ferrugatus (6-8 mm.) Deep red; elytra variegated with whitish between intermediate and hind legs and bearing about 6 rows of black punctures. Legs black. Very handsome. Has occurred at Tairua and Levin. Apparently very rare.

T. costatus (7-7½ mm.) Red-brown; a definite black-edged cream-coloured patch on each elytron between intermediate and hind-legs. Discovered by Mr. H. Sim-

monds at Silverstream, near Wellington. A very similar yellowish-brown form, probably identical, occurs on Stephen's Island.

Genus ACALLES.

A very extensive series of small or very small weevils. The rostrum is of moderate length and thickness, and the short elbowed antennae arise near its centre. The prothorax is usually narrowed immediately behind the head, otherwise broad and convex. The elytra are broad, oval, convex, often furnished with more or less prominent nodules. The clothing consists of close fitting scales and there are frequently numerous erect scales or bristles in addition. These are especially noticeable on the legs. When disturbed the antennae, rostrum and legs are tightly folded up and the insect often remains motionless for a considerable time. The species are admitted to be extremely puzzling, even by specialists.

Acalles australis (4-5 mm.) Ashey-brown variegated with darker brown, extremity of elytra rather pointed: a raised edge on each side of suture and several nodules on sides and near summit of hind slope. Very variable. Apparently common and generally distributed.

A. intutus (4-5 mm.) Dark brown variegated with black but otherwise very similar to the last. Generally distributed.

A. hystriculus (3 mm.) In this very common species the whole of the body and legs are densely clothed with elongate bristles. General colour brown, two yellowish bars on prothorax reaching past the base of elytra, a black transverse mark on elytra before hind slope followed by a yellowish mark; a pale mark on suture near apex. Beaten out of bushes from November till March. Often very abundant. Easily recognised.

A. concinnus (4½-5 mm.) Pale brown with black markings densely clothed with scales and bristles. Elytra very broad near hind thighs. Raised ridges on prothorax and basal half of elytra; two prominent nodules at summit of hind slope connected by crescentic black mark. Beaten out of forest growth November till March. Has occurred around Wellington and on the Waitakerei Range, near Auckland. More distinct than many of the species.

Xenacalles triangulus (4-4½ mm.) This species may be immediately known by its very pointed elytra with a large black triangular mark on the summit. General

colour dark yellowish-brown, variegated with darker brown. Common amongst forest and scrub during the late summer. Apparently generally distributed.

Hatasu dorsale (8-10 mm.) Rostrum moderate, black, the short antennae arising at about ¾ towards apex. Body pale brown, with very broad, deep brown dorsal stripe, its edges very irregular. Legs pale brown, ringed with darker brown. Elytra deeply punctured in rows, with irregular raised ridge of tubercles on each side of suture. A large and very handsome species, found under karaka logs on the sea coast around Wellington. Has also occurred at Broken River, and on Stephen's Island.

H. tuberosus (12 - 16 mm.) Much larger, stouter, and more rounded; the prothorax suddenly tapering about two-thirds from base, and bearing four rounded tubercles. Elytra covered with rounded tubercles, the largest near suture. General colour dull greyish-brown. Found under logs, or walking about at night, Flora River Mount Arthur, 3,000 feet. A very distinct and striking species.

H. hudsoni (8 mm.) Much smaller, with the elytra abruptly narrowed behind. Dull fawn-colour speckled and mottled with black; whitish patches on sides of prothorax, shoulders, and across elytra beyond middle; tubercles present on each side of suture only. Femora broadly banded with whitish. Found at Flora River Mount Arthur, beaten out of dead branches amongst forest and scrub at 3,000 feet.

Rhynchodes ursus (10-28 mm. Plate X, fig. 5.) This very large stoutly-built, ponderous-looking weevil is generally distributed throughout New Zealand. It varies greatly in size, colour, and in the amount and nature of its clothing. Male specimens are covered with short scale-like hairs, whilst females are clothed with longer, deep brown, or grey, shaggy hair. Old individuals are occasionally met with quite black and shining, and almost destitute of any clothing whatsoever. There is practically no doubt that the forms described as *R. saundersi, R. squameus,* and *R. atra* are only varieties of *Rhynchodes ursus.*

The larva, which is stout and soft without legs, like all weevil larvae, tunnels through the solid trunk and branches of dead beech, and rimu trees, feeding on the sound wood, and the pupa is found in similar situations.

The perfect beetle may be taken throughout the summer. It is usually met with singly, when it may sometimes be observed walking on the trunks of the trees, which constitute the food of its larva. A wounded tree exuding sap is, however, very attractive, and quite a number of specimens may sometimes be found assembled together, feasting on the exudation. The magnificent giant ichoneumon-fly, *Rhyssa fractinervis,* is parasitic on the larva of this insect and often may be seen flying around dead beech trees tenanted by the weevil larvae.

Euthyrrhinus squamiger (9-10 mm.) In general form very like a diminutive specimen of *Rhynchodes ursus,* but with anterior legs relatively longer. Prothorax finely rugose. Elytra with rounded lobe on each side of scutellum, and three slightly raised ribs on each side of suture. General colour bluish-grey, variegated with whitish. Extremely uncertain in its appearance. Apparently specially attached to the introduced willow. I took one specimen under willow bark at Nelson in January, 1882. Sixty specimens were found by Mr. A. C. O'Connor in an old willow tree at Martinborough in January, 1919, the insect not having been heard of in the interval, or since that time, so far as I am aware. Prior to 1880 Major Broun cut two specimens out of a rewarewa (*Knightia excelsa*) at Tairua. It is remarkable that this weevil was amongst the insects collected in the very early days, during the voyage of the "Erebus" and "Terror."

Mitrastethus bituberculatus (7-9 mm.) Rostrum moderate, about as long as prothorax, the short antennae arising near middle. Prothorax broad, convex, with rounded angles, abrupt constriction in front, and two more or less distinct depressions on back. Elytra oblong rounded behind, with two rounded protuberances on hind slope, broader than prothorax, striate, each stria regularly punctured. Usually dark red and shining, but fresh specimens are covered with a dense clothing of pale yellowish-brown scales, the prominent parts often bare; rows of erect scales are sometimes present on the interstices of the elytra. Found under bark of newly felled trees, especially when very wet. Formerly abundant in the forests of the Manawatu. Has occurred more recently at Kaitoke, Tararua Mountains, and Waimarino. Major Broun states it is attached to the kauri.

Paranamocerus spiculus (♂ 8-9 mm., ♀ 7 mm.) In the male the antennae are as long as the body, the basal

joint being half the length of the entire antennae. Rostrum long, slender, the antennae in male arising near tip; in female considerably beyond middle. Prothorax conical. Anterior legs longer and stouter than the rest. Scutellum pale in colour, very conspicuous. Elytra slightly wider than prothorax, about twice as long; numerous tubercles, except on summit near suture. General colour grey-brown, variegated with darker brown and black. Formerly found at Karori near Wellington, also at Tairua. Recently beaten out of *Nothopanax* on the slopes of Mount Egmont and Mount Ruapehu, at about 4,000 feet. The elongate elbowed antennae of the male are very distinctive. Rare and interesting.

Subfamily COSSONINAE.

This is the best defined subfamily of the Rhyncophora. The species are small, or very small, with the body always elongate and linear, often cylindrical. A revision of the New Zealand Cossoninae, with illustrations, containing descriptions of all genera and species, was prepared by Major Broun in 1908 and may be found in the Transactions of the New Zealand Institute, Vol. XLI, page 151.

Pentarthrum zealandicum (4-5 mm. Plate XIV, fig. 2.) This species may be taken as typical of the whole subfamily. Found abundantly tunnelling the dead wood of karaka, *Melicytus ramiflorus* and many other trees. Generally distributed.

P. melanosternum (3½ mm.) Stouter and much smaller, dull reddish-brown, not shining. Also found in *Melicytus*, but much rarer. Occurs in both islands.

Torostoma apicale (5-5½ mm.) Black, stout, cylindrical; hind slope very steep, terminal margins of elytra strongly reflexed. The differences in the length and breadth of the rostrum are sexual. Generally distributed. Tunnels in the solid timber of rimu and kahikatea, and may be very destructive. It is possible that some of the injury, usually attributed to *Anobium*, may be due to this insect.

The four species which follow may be beaten out of the great fallen sheathing leaves of the nikau palm (*Rhopalostylis sapida*), especially in the early spring, when they are in a more or less moist condition. The leaves should be vigorously beaten until the basal portions are well broken, this operation being performed over a large sheet of stout brown paper. The minute beetles will fall

on the paper when they can be transferred to the collecting bottle in the usual way. All four species are easily recognised.

Stenotrupis wollastonianum (4½-5 mm.) Very narrow, parallel-sided, somewhat flattened, extremity of rostrum dilated, antennae very short, arising near its base. Head and prothorax finely punctured. Elytra finely striated, with slight transverse rugosities. Legs short and stout. Colour deep reddish-brown, darker on head and prothorax.

S. debilis (3 mm.) Much smaller, paler in colour, tinged with ochreous; the antennae inserted near middle of rostrum, and legs relatively longer.

Arecocryptus bellus (♂ 5-6 mm., ♀ 4-4½ mm.) Rostrum in male slender, nearly as long as elytra. Antennae arising at apex, the basal joint long and slender and about equal in length to the remaining joints. Prothorax oval, dilated at sides, broader than elytra, coarsely punctured. Elytra parallel-sided, closely punctured in rows. Legs rather long, the anterior pair longest and stoutest. Female smaller with antennae inserted near middle of rostrum. General colour dull yellowish-brown. A very remarkable species, quite unlike anything else.

Arecophaga varia (4-5 mm.) Rostrum slender, about as long as thorax. Antennae moderate, arising at about ½ in female, ¾ in male. Body broad, much flattened. Prothorax with rounded sides, densely and very regularly punctured. Elytra hardly wider than prothorax, about 1½ times as long, oblong, rounded posteriorly, with deep striations regularly punctured. Legs moderate, rather stout. General colour blackish-brown, often paler, tinged with dull red or yellowish. Legs and antennae reddish.

Mesoxenophasis brouni (2½-3 mm.) Bright yellowish-red. Rostrum rather short and stout; antennae short, arising beyond middle. Prothorax oval, the sides rounded. Elytra with rounded angles widest near posterior extremity, faintly striated, with a few conspicuous punctures in the rows. Legs moderate. Occasionally beaten from the foliage of kiekie (*Freycinetia banksii*) from September till April. An elegant little weevil, remarkable for its very rounded outlines.

Microtribus huttoni (3 mm.) Very similar in general form but without a scutellum. Very dark red-brown, almost black. Prothorax coarsely punctured. Elytra

shining, faintly punctured in rows. Beaten out of dead flax leaves on the sea coast at Paekakariki. Apparently rarely met with, but widely distributed in both islands.

Inosomus rufopiceus (4 mm.) Convex, cylindrical, very stout, with short broad rostrum, and very short antennae arising about middle. Prothorax very coarsely punctured. Elytra striated, deeply and very regularly punctured in the striae; hind slope steep, covered with stiff yellowish bristles; posterior edges of elytra dentate. Legs moderate. Dark blackish-brown to black, antennae and legs dark red. Found under bark, but very much rarer than formerly. Generally distributed. In superficial appearance very like a Scolytid.

Family **SCOLYTIDAE.**

Body cylindrical, usually truncated behind. Head more or less retracted into prothorax, with extremely short broad rostrum. Antennae with large thick club. Most of the species live in the bark, or wood of trees, and some are very destructive.

Subfamily SCOYLTINAE.

Pachycotes ventralis (5 mm. Plate XIII, fig. 3.) May be taken as typical of the subfamily. It is occasionally found between the leaves of the kiekie (*Freycinetia banksii*). Apparently generally distributed. Much rarer than formerly.

Dendrotrupes vestitus (2-3 mm.) A somewhat similar beetle but much smaller and very variable in size. Found under bark the whole year through. Head and prothorax dark brown, punctured, the latter with smooth central ridge. Elytra paler brown, with blackish, strongly punctured striae, bearing rows of fine bristles, especially towards termination.

Subfamily PLATYPINAE.

Platypus apicalis (6 mm. Plate X, fig. 6.) Another bark frequenting beetle, usually found dead and in a mutilated condition. Rare, but apparently generally distributed. The species of Platypus are remarkable for their cylindrical form, and the great length of the basal joint of the tarsi.

Family **AGLYCYDERIDAE.**

A very small and extremely aberrant family of beetles of which two species occur in New Zealand, one in the

Canary Islands and one or two in New Caledonia. The tarsi are three-jointed, the second joint lobed; head not prolonged to form a beak.

Aglycyderes wollastoni (3 mm. Plate X, fig. 3.) Apparently generally distributed, and associated with the tree fern *Cyathea dealbata.* It has occurred at Tairua, on the eastern side of Wellington Harbour, on D'Urville Island and at Picton.

Group VIII. LAMELLICORNIA.

Family **LUCANIDAE** (Stag Beetles).

Mandibles generally large and projecting like antlers in the males. Antennae elbowed, and fitting into excavations on the sides of the head. The basal joint is long, and there are several pectinated or serrated immovable joints at the end. The abdomen has five segments. These imposing beetles fly about chiefly at night, and feed upon the exuding sap of trees. The larvae live on old decaying trees, or their roots, and often require several years for their transformations.

Male stag beetles have been observed fighting for the possession of the females by means of their remarkable mandibles. Nevertheless, it is probable that these striking appendages are more of the nature of sexual ornaments, than actual weapons of offence, or defence. Their extreme variability in size, often amongst individuals belonging to the same species (i.e., *Lissotes helmsi*) indicates that they are not essential to the wellbeing of the possessor.

Lissotes reticulatus (15-19 mm. Plate XVII, fig. 3, 3a larva, 3b male pupa.) This handsome insect, which is probably our commonest stag beetle, has occurred at several localities in the Wellington District, and at Motupiko near Nelson. It is probably generally distributed throughout New Zealand.

The larva feeds on decayed wood in contact with the soil, apparently preferring roots, or buried tree stumps, especially when in the soft, red stage of decay.

The length of this larva, when fully extended, is about 40 mm., but it nearly always lies curved on its side in the lamellicorn fashion. Stout, especially posteriorly. Head and thoracic segments small; head deep ochreous, highly polished; antennae 4-jointed, basal joint short, stout, second elongate, slightly enlarged towards extremity, third clavate, fourth minute pointed.

Legs ochreous, with coxae elongated, femur long slender, abruptly enlarged at lower extremity, tibia short, tarsus a single claw-joint only; a few short bristles on femur and subsequent joints. A small crescentic spiracle on prothoracic segment. There are very prominent, white, dorsal and lateral humps on body segments 5, 6, 7 and 8, with crescentic yellow spiracles at the sides; these are hardly visible on segments posterior to this. General colour of body, whitish, with bluish-black, or deep brown, alimentary canal showing through. Segments 6, 7, 8 and 9 have clusters of rather conspicuous red bristles on dorsal portion, but these become much smaller and less numerous on the other segments. Posterior segments very large; anal segment small and strongly protruding.

The larva constructs an almost globular cocoon of particles of earth, or decayed wood, moderately firmly joined together, and neatly smoothed inside. Within this it passes the pupal state, sufficient room being available for the expansion of wings and elytra inside the cocoon. In the male pupa, which is the sex figured, the terminal appendages are remarkably conspicuous.

Lissotes elegans (14-15 mm.) Probably one of the most beautiful species of the genus, highly polished, violet black, with the depressed and punctured portions clothed with golden scales, the arrangement of such being somewhat similar to that in *L. reticulatus*. It is, however, distinctly narrower and smaller than that species. Found in forest, on the lower slopes of Mount Arthur, 2,500 to 4,000 feet.

L. novae-zealandiae (*punctulatus*) (♂ 18 mm., ♀ 12-13 mm.) In this species the head, mandibles and prothorax of the male are very much larger, and more massive, than in the female; the general colour is very deep dark reddish-brown, and the whole surface of the insect is closely punctured, except on four smoother longitudinal elytral ridges. There is no clothing of any description. This species is much more secretive in its habits than *L. reticulatus*, and must be specially searched for by removing the scaly bark of rimu trees at the ground level, and below the ground. In this situation it may sometimes be taken in some numbers. It is also found under the bark of living beech trees (*Nothofagus*). Occurs in the Wellington District. Possibly generally distributed.

The transformations of this species very closely resemble those of *L. reticulatus*.

L. helmsi (♂ without mandibles 20-27 mm., ♀ 24 mm.) This very large species is evidently variable in size, especially in the male, and in that sex the mandibles

also vary in size and stoutness. The head and prothorax are very wide, especially in the male (11-15 mm.), deep brownish-black with numerous minute punctures; the elytra are short and broad, with four longitudinal series of dense, erect, reddish-brown setae, and the raised side-margins are similarly clothed, the surfaces between being distinctly punctured. Apparently common in Southland and Stewart Island, at the base of the trunks of kahikatea trees (*Podocarpus dacrydioides*). The original specimen was discovered by Mr. R. Helms at Greymouth.

L. acmenus is extremely similar to *L. helmsi* and may be identical. It is slightly smaller, narrower, and more highly polished. Discovered at Invercargill by Mr. G. Howes.

L. ithaginis (♀ 21 mm.) Smaller and flatter than the preceding species, the elytra without distinct ribs. Found on the Remarkable Mountains near Queenstown, Lake Wakatïpu; also on Halodroma Islet, Mokohinou Group, where it was discovered by Mr. Sandager.

Mitophyllus irroratus (♂ 12 mm., ♀ 10 mm. Plate XVI, fig. 1, 1a larva.) This fine beetle is fairly common in forest districts in the North Island. It has also occurred at Picton. The species known as *M. curvidens* seems to be identical.

The larva is found in damp, powdery, decayed wood, under fallen logs of hinau, karaka, and other trees. It always rests in a curved position, on its side, never straight, but is more elongate in build than most lamellicorn larvae.

Its length, when stretched out, is about 25 mm. Of the usual lamellicorn type, except that the body is considerably attenuated in the middle. The head is ochreous-brown; rest of body whitish-ochreous, highly polished, and covered with extremely minute brownish hairs; a few isolated brownish bristles. There are apparently ten distinct segments posterior to the thorax. The last four segments are much suffused with purplish-brown, due no doubt, to the contents of the lower intestine. There are two very distinct yellowish-brown spots on the back of segment 12.

This larva feeds in the wood during the late autumn, winter, and spring, and the beetle appears towards the end of summer.

M. parryanus (= *M. zealandicus*, Broun, 15 mm. Plate XVI, fig. 3, 3a larva.) Warm brown or fawn colour, without patches of hoary pubescence between the black spots on the elytra, the hairs in this species being uniformly fawn. Probably generally distributed in the

North Island, and has also occurred on Mount Arthur, in the South Island. In the autumn mature specimens may be found enclosed in sealed burrows, in branches of the kohe kohe (*Dysoxylum spectabile*) where they spend the winter.

The larva, which feeds in dead branches of kohe kohe, *Carpodetus serratus* and probably other small trees, closely resembles that of *M. irroratus,* but is larger, and much suffused with bright yellowish-brown.

M. foveolatus (13-14 mm.) Probably the handsomest species of the genus. Is confined to mountainous regions, having been found on the Mount Arthur plateau and Mount Earnslaw (at elevations of about 4,000 feet). It is quite common in the firstnamed locality and is probably attached to alpine beeches (*Nothofagus*). Its general colour is purplish-black, with numerous isolated patches of bright yellow scales.

M. insignis (11 mm.) Another mountain species, smaller, black, with minute patches of pale yellow scales and the mandibles of the male slenderer than in *M. foveolatus.* It is a much rarer insect than any of the foregoing.

M. cylindricus (9 mm.) Deep red; thorax heavily punctured, elytra striated, and also thickly punctured, clothed with slight yellowish pubescence. A rare species in the Wellington District. Its larva is very similar to the larva of *M. irroratus,* but smaller and whiter. Both larva and perfect insect inhabit decayed wood, when in the soft, deep red stage of decay, and the colouring of the beetle is very protective in this situation.

M. gibbosus (8½-10 mm.) Sutural region and shoulders of elytra much raised. Female with very small conical head. Antennae of male furnished with three elongate processes, considerably longer than the rest of the antennae. Sides of prothorax reflexed, summit with two prominent tubercles. Colour of male brownish-black, faintly variegated paler, with a few isolated whitish spots on elytra; scutellum whitish. Female variegated with white and rusty brown. A very rare and interesting species, easily known by the raised suture of the elytra. Beaten out of shrubs, in hot sunshine, from December till March. Has occurred around Wellington, at Kaitoke, and at Whangarei.

Dendroblax earlianus (20-26 mm.) Very robust, broad, convex, deep chocolate-brown. Mandibles hollowed above,

and deeply punctured. Head small, flattened, densely punctured. Prothorax rounded, somewhat narrowed behind, its whole surface densely, but rather irregularly punctured. Elytra nearly twice as long as head and prothorax, considerably broader, somewhat rectangular with rounded termination; surface very coarsely and irregularly punctured; several more or less prominent raised ribs less punctured. Space between prothorax and elytra, underside, and basal portions of legs clothed with rusty yellow hairs. A very large and striking species. Flies freely at evening dusk in December. Fairly common in the Wainui-o-mata Valley on the eastern side of Wellington Harbour. Has also been found at Ohau, Manawatu. In the South Island it has occurred in the Buller Gorge.

Family **SCARABAEIDAE** (Chafers).

The leaflets of the antennae are well co-adapted and are susceptible of separation. The legs are formed for digging. The elytra usually leave the pygidium uncovered. The number of visible ventral segments of the abdomen is generally six. This is one of the most important families of insects, of which over 14,000 species are known, and about 90 occur in New Zealand. Many are renowned for beauty and richness of colouring, and as some of them are highly remarkable on account of the males being armed with horns, they are figured in many works on Natural History. Four subfamilies are represented in New Zealand, but authorities are by no means agreed as to the classification of this extensive family.

Subfamily DYNASTINAE.

Front coxae oblique, enclosed in excavations. Antennae ten-jointed. The males have often horny processes on the head and pronotum.

Pericoptus truncatus (21-27 mm. Plate XVII, fig. 5, 5a larva.) This large and very massive-looking beetle is occasionally found amongst sand on the sea-beach, just above high-water mark. It has occurred at Wanganui, and throughout the Wellington District, and is almost certainly to be found on the sea-coast elsewhere, but no definite records are available.

The larva is a large and very stout grub. It nearly always rests in a curved position on its side, but is capable, when disturbed, of crawling along in the usual

way, with considerable rapidity. It may be found, quite plentifully, under logs on the beach, which have been cast up by the sea above high-water mark, and hence have been exposed to a prolonged soaking of sea-water. The larvae are usually found in cavities, in the sand, directly under the log and, from the quantities of frass always present, it is certain that they feed on the wood. Large holes, made by the larva, are also constantly observed on the undersides of the logs in juxtaposition to the cavities in the sand, and occasionally larvae are found in a burrow in the middle of the log itself. This larva is endowed with great strength and if enclosed with some sand in a small tin box, where it can exert effective pressure, it will force open the lid and escape!!

The length of the larva, when stretched out, is fully 55 mm. It is very stout, of the usual lamellicorn type. Head deep reddish-brown, dull and slightly rugose. Legs moderately stout, with rather long coxae and femora, but short tibiae; a single-jointed tarsus (claw). Spiracles large, deep yellowish-brown, present on prothorax and eight abdominal segments. Anterior and mid body much furrowed. Side portions of thoracic and eight abdominal segments produced into lateral lobes above which the spiracles are situated. Last two abdominal segments smooth. Ten visible abdominal segments. General colour dull ochreous-white; a deep yellowish patch on side of prothorax; legs yellowish-brown; three posterior segments deep blackish-grey, with contents of alimentary canal showing through. Surface of larva clothed with numerous short, deep red bristles, especially dorsally; bristles much less numerous on last three segments, except around anus, where there is a thick tuft of longer bristles.

Four other species of Pericoptus have been described in New Zealand. They are all very similar beetles, but distinguished by the shape and structure of the head. See Annals and Magazine of Natural History Series VII, Volume XIV, page 55.

Subfamily MELOLONTHINAE.

Antennae with from seven to ten joints, ending in a fan, which is usually larger in the males than in the females. The clypeus is divided by a suture from the front. The claws are either equal, or else the hind tarsi have only one claw. These beetles live on plants and flowers, and many species appear occasionally in very large numbers, and may then do a considerable amount of damage to trees and plants, on the roots of which the larvae feed.

Chlorochiton suturalis (20 mm. Plate XVII, fig. 2, 2a larva, 2b pupa.) This fine green chafer is very com-

mon around Wellington, from the end of December until the middle of January, and is probably generally distributed throughout New Zealand. It usually frequents grassy places, where it flies freely at evening dusk, often in considerable numbers.

The larva, which is of the usual form characteristic of the family, is subterranean in habit, feeding on the roots of grasses and other plants. It is generally observed lying on its side, curved in the form of a semicircle. The head is highly polished, bright brownish-ochreous, with the mandibles brown; the antennae are five-jointed. The legs are rather long, thickly clothed with reddish bristles. There are thirteen distinct segments in addition to the head. With the exception of the last four segments, each has a deep suture across the back. The general colour of the larva is pale ochreous with the posterior portions black, due to the contents of the alimentary canal showing through.

The pupa is enclosed in an oval cell in the earth constructed by the larva. It is bright brownish-ochreous, and very deeply sculptured. Whilst the larva probably lives in the ground for more than a year, the pupa state only lasts for about two months.

C. prasinus (22 mm.) Very like *C. suturalis,* but of a darker green with the scutellum shorter and the striations of the elytra obviously punctured. Found rarely around Wellington, also on Mount Egmont, where it is probably common.

Costleya discoidea (18 mm.) Also like *C. suturalis* but smaller, tinged with yellowish-brown with very strong green reflections. Elytra deeply striated and strongly punctured. Found on Mount Arthur and Mount Peel at elevations of about 5,000 feet. Probably attached to the high mountain grasses.

C. simmondsi (16 mm.) Very similar in form to *C. discoidea,* but with the front of the head, sides of the prothorax, and the whole of the elytra, bright ochreous-brown, the remaining portions, including the legs, being darker brown. Discovered by Mr. Simmonds on the Tararua Mountains, at an altitude of about 4,500 feet.

Scythrodes squalidus (17-19 mm.) Black, hardly shining. Head broad, sparsely punctured. Prothorax wide, anterior angles projecting forwards as far as eyes, sides margined, narrowed towards front; more densely punctured than head. Elytra with thick reflexed rims;

nine broad striae, most prominent towards suture, which is distinctly elevated. A few isolated black bristles. Superficially most suggestive of one of the *Tenebrionidae*. Found on high mountains in Otago. Discovered by Mr. G. M. Thomson on Mount Tyndall at 6,000 feet. My specimens were taken by Mr. J. H. Lewis on the Old Man Range at 4,000 feet. Rare and remarkable.

Xylostignus piceus (9 mm.) Very convex. Black, with slight bronzy reflections; legs and antennae reddish. Head moderate almost smooth. Prothorax with projecting anterior angles, thickly and finely punctured; elytra with very faint traces of striae, not quite so densely punctured as prothorax. First found on a small sandstone island in Whangarei Harbour, afterwards taken on Tiritiri by Mr. Sandager, from whose collection my two specimens were derived. A peculiar and very interesting species, apparently confined to islands off the coast in the far North.

Pyronota festiva (8-9 mm.) Probably the most abundant lamellicorn beetle in New Zealand, often erroneously called a "ladybird." In general form very like a diminutive *Chlorochiton suturalis* but relatively narrower. Elytra deeply striated with very feeble punctures. The colour varies considerably; usually a rather pale, but very vivid green, rarely glistening brownish-ochreous; there is often a dark median stripe on the prothorax and sometimes a golden yellow stripe on suture.

P. laeta (9-10 mm.) Broader and larger, with the elytral striations shallower. Uniform very rich dark green. Legs red, club of antennae black. A high mountain species found on Mount Arthur at about 4,500 feet.

P. edwardsi (8-10 mm.) A very similar species, with the legs, antennae and under-surface almost black. Also a high mountain species. Apparently generally distributed in the South Island.

P. lugubris (8-10 mm.) Upper surface entirely black. Legs and antennae (except club) dull red. Elytral striations deep, with obscure punctures. Found on Mount Egmont and generally on mountains in the South Island.

Eusoma costella (10 mm.) Rather elongate, parallel-sided, more flattened than usual with posterior extremity rounded. Dark brownish-ochreous, spotted and speckled with black, with slight purplish reflections. A rare species, possibly attached to rimu. Has occurred at Tairua,

Whangarei and Wellington. *E. aenalis* is a very similar insect found on the West Coast of the South Island.

E. piliventis (8 mm.) Smaller and much paler in colour; bronzy-ochreous, with rows of irregular blackish spots on the elytra. Discovered by Mr. A. C. O'Connor at Martinborough.

Sericospilus advena (11-13 mm.) A very interesting beetle, narrower and more parallel-sided than an Odontria, but broader and larger than the species of Eusoma. Head and prothorax dark brown, the latter with paler margins. Elytra slightly rugose, with indistinct ribs; bronzy-ochreous, in some lights golden and lustrous; there are rows of black markings between the ribs; each mark is somewhat rectangular, its corners emitting fine wavy lines which often join the spot to its neighbours. Apparently generally distributed in the South Island, especially in the high country south of Nelson, and on the West Coast. This beetle has close allies in Patagonia.

Genus ODONTRIA.

Includes a numerous assemblage of moderate-sized chafers, most of them densely clothed with fine hair and of attractive appearance. Some of the species are puzzling.

Odontria obscura (13-15 mm. Plate XVII, fig. 4.) One of the commonest species around Wellington. Usually dark velvety brown, densely clothed with yellowish hairs, the elytra with rows of obscure darker spots. A smaller, and more fawn coloured form occurs at Clarence River, Marlborough. Flies freely at evening dusk, from October till February, and often captured at sugar.

O. xanthosticta (13-15 mm.) A very similar species. Deep brown, clothed with numerous yellowish-brown hairs, and with many more or less distinct small yellow spots on the surface beneath. Very velvety in appearance. Has occurred commonly around Wellington, and at Whangarei. Flies at evening dusk. Often taken in the middle of winter.

O. smithii (14 mm.) Head and prothorax rich reddish-brown, the clypeus paler. Elytra uniform bright fawn colour, evenly striated, with fine punctures on the interstices; the whole insect, except head, clothed with yellow hairs, and the anterior portions with erect yellowish-red bristles. A very elegant little species, found at Porirua

near Wellington, and at Ashburton, where it was discovered by Mr. W. W. Smith. It is attracted by blossoms and sugar. Very rarely observed in the daytime.

O. marmorata (16-18 mm.) Larger and relatively narrower than any of the preceding species. Very rich velvety red-brown; the head thinly covered with large deep punctures; the thorax and elytra with a few obscure, small blackish markings. Found in February, on veronica blossoms, at night, on the Tableland of Mount Arthur, 4,200 feet. Has also occurred in Hawkes Bay.

O. monticola (17 mm.) A very similar species, but a little broader. The elytra are slightly dilated posteriorly, and the general colour yellower with the fine dark markings often more distinct. Common on veronica blossoms, at night, Humboldt Range and Mount Earnslaw, Lake Wakatipu, 3,500 to 4,000 feet.

O. zealandica (10-11 mm.) Smooth and shining with no clothing, except a few isolated bristles. Head and thorax rather small, dark yellowish-brown and finely punctured. Elytra very convex, bulging much on sides, with four slightly raised longitudinal lines, and fine punctures between; yellowish-brown. Common and generally distributed. Sometimes very destructive to cultivated grasses. The larva, which is subterranean, is popularly known as the grass grub.

O. sylvatica (15 mm.) Another very sparsely clothed species. Head very dark reddish-brown, coarsely punctured. Prothorax blackish-brown, very finely punctured. Elytra very convex, dilated posteriorly, very dark brown tinged with yellow; each bears nine fine striae and fine punctures between the striae. The clothing consists of a few very fine hairs, and erect reddish bristles, the latter being almost confined to the sides of the prothorax. Has occurred at Whangarei Heads, Marsden Point, and Tokaanu. Apparently very local. I am indebted to Mr. A. C. O'Connor for my specimens.

Subfamily APHODIINAE.

Small more or less convex, oblong beetles, with concealed labrum and mandibles. They feed amongst dung, and decaying vegetable refuse, and are useful scavengers.

Saprosites (Aphodius) exsculptus (5-5½ mm. Plate XVII, fig. 1, 1a larva, 1b pupa.) This little beetle is

very common amongst decayed wood and is probably generally distributed throughout the country. It is especially abundant in dead karaka trees on the sea coast near Wellington living, in company with its larva, in the powdery stratum between the bark and the wood.

The length of the larva is about 6 mm. It is of the usual lamellicorn type, the skin very deeply wrinkled, with a prominent lateral ridge, and a few very short reddish bristles. The head is reddish-ochreous, highly polished; rest of body very pale whitish-ochreous, with blackish-brown alimentary canal showing through, especially posteriorly.

The pupa is about 5 mm. long, whitish-ochreous. Head and prothorax very large, strongly punctured; elytron cases deeply striated; legs prominent, the anterior pair directed forwards. Found amongst refuse under decayed bark, but not in the solid wood.

Saprosites (Aphodius) communis (3½ mm.) Much smaller than the last species, but otherwise very similar. The prothorax is less punctured, especially near the head and on the disc; on each side there are several confluent punctures, forming an ill defined pit. Found in similar situations to *S. exsculptus,* often in considerable numbers.

Proctophanes sculptus (5-5½ mm.) An introduced species. Broader and stouter than either of the foregoing; jet black and shining; the prothorax densely punctured, and the elytra deeply striated, with very fine punctures in the rows. Found on very rare occasions amongst stable refuse, etc. It is remarkable that this beetle has not become more abundant in New Zealand.

Phycochus graniceps (3 mm.) A most aberrant member of the family, shining black, or reddish-black, very convex, with the elytra almost globose, rather faintly striated. It is found amongst seaweed on the coast around Auckland. This little beetle is somewhat suggestive of an extremely diminutive species of *Pericoptus.*

Subfamily COPRINAE (Dung Beetles).

The terminal club of the antennae has from three to seven movable plates, and the labrum is prominent. The elytra completely cover the abdomen. These beetles generally live in dung, or decaying vegetable matter, and their larvae are often found very deep in the ground. Owing to the complete absence of large terrestrial mamalia, the New Zealand representatives of this subfamily are few and

insignificant. The familiar English Dor beetle (*Geotrupes*) and the Egyptian Scarabaeus are typical examples of the Coprinae.

Saphobius setosus (6 mm. Plate VII, fig. 6.) Common under logs, and amongst dead leaves round Flora River, Mount Arthur at about 3,000 feet. Also found at Greymouth, and possibly generally distributed in the South Island.

S. nitidulus (4-4½ mm.) Smaller and without the setiform clothing characteristic of the last species. The inner edge of the front tibia is not indented. Found amongst dead leaves around Wellington. Has also occurred at Whangarei Heads.

Onthophagus granulatus (7-8 mm.) An introduced species of somewhat similar build to Saphobius but very much stouter with longer legs and larger prothorax. Bronzy-green, with coppery reflections. The elytra have about six rows of small raised tubercles. Found very rarely amongst horse and cow dung. It is astonishing that this beetle has not become abundant in settled districts. I have not seen more than half a dozen specimens in 50 years!

O. posticus (7 mm.) A very similar, but much handsomer species. Prothorax deep green finely punctured. Elytra almost smooth, with fine striations; the interstices are alternately dull red and deep green. Found in fields and other cultivated places, but generally speaking extremely rare, although Mr. W. W. Smith reported it as common in Taranaki, where it occurred under the dry bark of Eucalyptus.* Evidently introduced from Australia.

*Naturalisation of Animals and Plants in New Zealand, 284.

CHAPTER IV.

A Systematic Index of New Zealand Beetles.

The systematic index of New Zealand beetles which follows is, to a great extent, a reprint of the index published in the Transactions of the New Zealand Institute for the year 1922 (Vol. LIV, page 353). Since that time, thanks to the assistance kindly given by Mr. K. G. Blair, Sir Guy Marshall, and several other entomologists (to all of whom, however, no responsibility for errors is assigned) a number of corrections have been inserted, and a good many valuable notes on classification and synonomy added. The whole index has also been rearranged, in accordance with the classification of Coleoptera, given in Dr. Imms's latest text-book of Entomology, edition 1930. This is an excellent system, mainly due to Ganglbauer, and is founded on the structure and affinities of the perfect insects taken in conjunction with those of the larvae, being, in the last-named respect, a great advance on any classification previously published.

As far as possible, it is believed the index contains a reference to every species of New Zealand beetle yet described, but no doubt, amongst such a host, accidental omissions have occurred. It is still to be clearly understood that the list is merely an index, not a revision, or a synonymical list, although, as already stated, synonyms have been inserted in cases where it has been possible to ascertain them. The author is confident that the index will be as useful in the future as it has been in the past:—Firstly, in enabling collectors to refer to descriptions they may desire to consult, and:—Secondly, as a basis for the systematic arrangement of collections. Descriptions of most of the genera will be found under the reference to the first species in each genus.

However desirable the publication of a fully revised synonymical catalogue of our New Zealand Beetles may be at the present time, the fact remains that such a work has not been yet undertaken by specialists, although ten

years have elapsed since the first issue of this provisional index. It is, therefore, clear that the reprint of the list in its present form is the best that can be done in the meantime.

ABBREVIATIONS.

A. *Annals and Magazine of Natural History.*
B. *Bulletin, New Zealand Institute.*
C. *Manual of New Zealand Coleoptera, 1880-93.*
E. *Transactions of the Entomological Society of London.*
S. *Subantarctic Islands of New Zealand.*
T. *Transactions of the New Zealand Institute.*
* *Introduced Species.*

Order COLEOPTERA.

Sub-order I.—ADEPHAGA.

Group CARABOIDEA.

Family CICINDELIDAE.

Cicindela Linnaeus, 1735.
tuberculata Fabricius. C. 2.
huttoni Broun. C. 2.
laticincta White. C. 3.
wakefieldi Bates. C. 3 (a).
douei Chenu. C. 3 (b).
parryi White. C. 4.
dunedinensis Castelnau. C. 4.
feredayi Bates. C. 4.
austromontana Bates. C. 5.
perhispida Broun. C. 4.
campbelli Broun. C. 817.
helmsi Sharp. C. 975.
incognita Horn. *Deutsche Ent. Zeit.*, 1892, 82.
novaseelandica Horn. *Deutsche Ent. Zeit.*, 1892, 83.
circumpictoides Horn. *Deutsche Ent. Zeit.*, 1900, 207.
waiouraensis Broun. B. 1, iii, 146.
halli Broun. B. 1, v. 350.
hamiltoni Broun. B. 1, vii, 594.
ezonata Broun. B. 1, vii, 594.

(a) = *C. dunedinensis* Castelnau.
(b) = *C. klugi* Dejean. (Mexico).

Family CARABIDAE.

Subfamily MIGARDOPINAE.

Amarotypus Bates, 1872.
edwardsi Bates. C. 6.

Subfamily SCARILINAE.

Clivina Latreille, 1810.
rugithorax Putzeys. C. 7.

Subfamily CNEMACANTHINAE.

Mecodema Blanchard, 1853.
sculpturatum Blanchard, C. 8.
howittii Castelnau. C. 8.
rectolineatum Castelnau. C. 8.
impressum Castelnau. C. 9.
lucidum Castelnau. C. 9.
crenicolle Castelnau. C. 9.
simplex Castelnau. C. 9.
alternans Castelnau. C. 10.
crenaticolle Redtenbacher. C. 10.
spinifer Broun. C. 10.
fulgidum Broun. C. 653.
constrictum Broun. C. 653.
rugicolle Broun. C. 745.
venator Broun. C. 817.
litoreum Broun. C. 875.
ducale Sharp. C. 976.
rugiceps Sharp. C. 976.
metallicum Sharp. C. 977.

Trichosternus Chaudoir, 1865.
antarcticus Chaudoir. C. 31.
guerinii Chaudoir. C. 32.
capito White. C. 32.
sylvius Bates. C. 35.
aucklandicus Broun. C. 33.
differmipes Bates. C. 33.
lobipes Bates. C. 34.
temukensis Bates. C. 34.
rectangulus Chaudoir. C. 35.
planiusculus White. C. 36.
humeralis Broun. C. 750.
enysi Broun. C. 752.
cephalotes Broun. C. 825.
alternus Broun. C. 877.
urquharti Broun. C. 877.
virens Broun. C. 937.
compressus Sharp. C. 987.
polychaetus Broun. C. 987.
smithii Broun. C. 1322.
hampdenensis Broun. C. 1323.
crassalis Broun. C. 1395.
walkeri Broun. A. 7, xi, 602.
akaroensis Broun. A. 7, xi, 603.
bucolicus Broun. A. 7, xi, 604.
rectalis Broun. C. 1146.
haplopus Broun. C. 1323.
hudsoni Broun. A. 7, xiv, 44.
dissentaneus Broun. B. 1, i, 6.
coelocephalus Broun. A. 8, ii, 405.
hanmerensis Broun. A. 8, ii, 406.
ordinarius Broun. A. 8, ii, 407.
halli Broun. B. 1, iii, 149.
blandellus Broun. B. 1, iv, 274.
wallacei Broun. T. xliv., 390.

Zeopoecilus Sharp, 1886 .
calcaratus Sharp. C. 989.
achilles Sharp. C. 990.
putus Broun. C. 750.
princeps Broun. C. 820 and 990.
optandus Broun. A. 8, ii, 408.

Pterostichus Bonelli, 1809.
(Species like *Trichosternus*, but without prosternal setae.)
fultoni Broun. C. 751.
waihourensis Broun. C. 821.
monticola Broun. C. 821.
aeruginosus Broun. C. 822.
asperatus Broun. C. 822.
chloris Broun. C. 823.

Pterostichus—continued.
grassator Broun. C. 823.
maiaei Broun. B. 1, v, 363.
amicus Broun. C. 824.
fusulus Broun. C. 824.
curvipes Broun. C. 878.
optabilis Broun. C. 913.
meritus Broun. C. 914.
angulatus Broun. C. 914.
meliusculus Broun. C. 915.
agriolis Broun. C. 915.
erraticus Broun. C. 915.
deceptus Broun. C. 916.
curtulus Broun. C. 916.
suspicax Broun. C. 917.
amplicollis Broun. C. 918.
sandageri Broun. C. 988.
haplopus Broun. C. 1323.
vagans Broun. C. 825.
dentiferus Broun. C. 36.
kirkianus Broun. A. 7, xi, 604.
memes Broun. A. 7, xi, 605.
prasignis Broun. A. 7, xi, 606.
setiventris Broun. A. 7, xi, 606.
oneroaensis Broun. A. 8, ii, 413.
flectipes Broun. A. 8, ii, 413.
fossalis Broun. B. 1, iii, 149.
pascoi Broun. B. 1, iv, 275.
aciphyllae Broun. B. 1, v, 361.
hamiltoni Broun. T. xliv, 390.

(Thorax with two setae on each side).
prolixus Broun. C. 35.
integratus Bates. C. 40.
cavelli Broun. C. 991.
procerulus Broun. C. 827.
ovatellus Chaudoir. C. 39.
perbonus Broun. A. 8, ii, 418.
placidulus Broun. C. 658.
impiger Broun. C. 879.
mordax Broun. C. 938.
longiformis Sharp. C. 991.
sternalis Broun. C. 658.
oscillator Sharp. C. 995.
lepidulus Broun. A. 8, ii, 419.
perfidiosus Broun. C. 995.
hunuensis Broun. C. 996.
maorinus Bates. C. 41.
disparalis Broun. C. 1324.
edax Broun. C. 1326.
arduus Broun. C. 1395.
scitipennis Broun. C. 1396.
sharpianus Broun. A. 6, xii, 163.

Gaioxenus Broun, 1910.
pilipalpis Broun. B. 1, i, 8.
Taenarthrus Broun, 1914.
philpotti Broun. B. 1, ii, 85.
Zabronothus Broun, 1893.
striatulus Broun. C. 1327.
rufipes Broun. C. 1328.
oblongus Broun. B. 1, i, 8.
major Broun. T. xliv, 393.
aphelus Broun. T. xliv, 394.
Hypharpax MacLeay, 1825.
antarcticus Castelnau. C. 49.
abstrusus Bates. C. 49.
**australasiae* Dejean.
**australis* Dejean.
Syllectus Bates, 1878.
anomalus Bates. C. 52.

Subfamily HARPALINAE.

Harpalus Latreille, 1804.
novae-zealandiae Castelnau. *Trans. R. Soc. Vict.*, 1867, 108.
antarcticus Castelnau. *Trans. R. Soc. Vict.*, 1867, 107.
Allocinopus Broun, 1903.
sculpticollis Broun. A. 7, xi, 608.
ocularius Broun. A. 8, ii, 344.
smithi Broun. T. xliv, 391.
castaneus Broun. T. xliv, 392.
latitarsis Broun. T. xliii, 95.
angustulus Broun. T. xliv, 392.
Euthenarus Bates, 1874.
brevicollis Bates. C. 53.
puncticollis Bates. C. 53.
cilicollis Broun. T. xxxiv, 176.
huttoni Broun. T. xxxiv, 177.

Subfamily ZOLINAE.

Zolus Sharp, 1886.
helmsi Sharp. C. 1001.
atratus Broun. C. 1002.
femoralis Broun. A. 6, xiv, 311.
carinatus Broun. C. 754.
subopacus Broun. B. 1, iv, 277.
ocularius Broun. B. 1, v, 365.
labralis Broun. B. 1, vii, 599.
Megadromus Motschulsky, 1865.
viridilimbatus Motschulsky. *Bull. Mosc.*, iv, 251.
Synteratus Broun, 1909.
ovalis Broun. S. 85.

Subfamily POGONINAE.

Oopterus Guérin, 1841.
laevicollis Bates. C. 54.
patulus Broun. C. 655.
fulvipes Broun. C. 936.
sobrinus Broun. C. 936.
collaris Broun. C. 1002.
pallidipes Broun. C. 1003.
puncticeps Broun. C. 1398.
clivinoides Guérin. *Voy. Pole Sud, Zool.*, iv, 43, and S. 86.
plicaticollis Blanchard. *Voy. Pole Sud, Zool.*, iv, 44, and S. 87.
latipennis Broun. A. 7, xi, 609.
probus Broun. A. 7, xi, 610.
parvulus Broun. A. 7, xi, 610.
pygmeatus Broun. A. 7, xix, 56.
nigritulus Broun. A. 8, ii, 342.
frontalis Broun. A. 8, ii, 342.
sculpturalis Broun. A. 8, ii, 343.
basalis Broun. B. 1, iv, 273.
minor Broun. B. 1, v, 364.
latifossus Broun. B. 1, v, 364.
suavis Broun. B. 1, v, 365.
laevigatus Broun. T. xliv, 389.
tripunctatus Broun. S. 87.
marrineri Broun. S. 88.
tarsalis Broun. S. 89.
elongellus Broun. S. 89.
Kenodactylus Broun, 1909.
capito Broun. S. 91.
Cyclothorax MacLeay, 1873.
rotundicollis White. C. 54.
insularis Motschulsky. C. 29.
Tarastethus Sharp, 1883.
puncticollis Sharp. C. 1004.
laeviventris Sharp. C. 1004.
alpinalis Broun. C. 1005.
debilis Sharp. C. 1005.
cinctus Broun. C. 1005.
sulcicollis Bates. C. 28.
seriatoporus Bates. C. 28.
placens Broun. C. 28.
simplex Broun. A. 7, xi, 457.
laevicollis Broun. A. 7, xi, 458.
pretiosus Broun. B. 1, i, 6.
strenuus Broun. A. 6, xiv, 308.
dubius Broun. A. 6, xiv, 309.
simulans Broun. A. 6, xiv, 309.
southlandicus Broun. A. 8, ii, 350.
carbonarius Broun. A. 8, ii, 351.

Scopodes—continued.
tardus Broun. C. 757.
pustulatus Broun. C. 757.
laevistriatus Broun. C. 829.
bryophilus Broun. C. 882.
cognatus Broun. C. 882.
antennalis Broun. C. 882.
nigrinus Sharp. C. 1011.
basalis Broun. C. 1012.
speciosus Broun. C. 1012.
virdis Broun. A. 7, xi, 612.
nigripes Broun. B. 1, i, 11.
instabilis Broun. B. 1, v, 371.

Family DYTISCIDAE.

Homoeodytes Sharp, 1882.
***hookeri* White. C. 75.**
scutellaris Sharp. C. 1331.
Rhantus Sharp, 1882.
pulverosus Stephens = *C. rufimanus* White. C. 74; C. 1333.
plantaris Sharp. C. 1333.
Lancetes Sharp, 1882.
lanceolatus Clark. C. 1335.
Antiporus Sharp, 1882.
uncifer Sharp. C. 1330.
Antiporus—continued.
wakefieldi Sharp. C. 71.
duplex Sharp. C. 72.
strigosulus Broun. C. 72.
nitidicornis Broun. C. 73.
Bidessus Sharp, 1882.
impressus Sharp. C. 1329.
plicatus Sharp. C. 1329.
huttoni Sharp. C. 1329.
Huxelhydrus Sharp, 1882.
syntheticus Sharp. *Trans. Roy. Dub. Soc.*, 1882.
virgatus Broun. C. 1014.
Copelatus Erichson. Sharp, 1882.
sharpi Broun. C. 1014 and 939.

Family GYRINIDAE.

Gyrinus, Linnaeus, 1733.
huttoni Pascoe. C. 76.

Family RHYSODIDAE.

Rhysodes Dalman, 1823.
aterrimus Broun. C. 214.
eminens Broun. C. 215.
orbitosus Broun. C. 215.
proprius Broun. C. 216.
pensus Broun. C. 215.

Sub-order II. **POLYPHAGA.**

Group **BRACHELYTRA.**

Family STAPHYLINIDAE.

Subfamily ALEOCHARINAE.

Falagria Mannerheim, 1830.
micans Broun. C. 96.
subopaca Broun. C. 1405.
Ocalea Erichson, 1837.
socialis Broun. C. 90.
crepera Broun. A. 6, xiv, 380.
Baeostethus Broun, 1909.
chiltoni Broun. S. 97.
Aleochara Gravenhorst, 1802.
puber Broun. C. 90.
semifusca Broun. A. 6, xiv, 386.
subaenea Fauvel. C. 91.
Protopristus Broun, 1909.
minutus Broun. A. 8, iii, 226.
Calodera Mannerheim, 1830.
flavescens Broun. C. 93.
optabilis Broun. C. 94.
aeraria Broun. C. 94.
thoracica Broun. C. 95.
Calodera—continued.
fulgens Broun. C. 95.
algophila Broun. C. 941.
sericophora Broun. A. 6, xiv, 381.
wallacei Broun. T. xliv, 596.
granifer Broun. A. 6, xiv, 381.
diversa Broun. A. 6, xiv, 382.
fultoni Broun. T. xliv, 596.
vestita Broun. A. 6, xiv, 383.
tumidella Broun. A. 6, xiv, 383.
bituberculata Broun. A. 6, xiv, 384.
fungicola Broun. A. 6, xiv, 384.
rufipennis Broun. C. 92.
Tachyusa Erichson, 1837.
fuscicornis Broun. C. 92.
Homalota Mannerheim, 1825.
cornigera Broun. C. 91.
atriceps Broun. C. 89.
**sordida* Marsham.
Polylobus Solsky, 1851.
sternalis Broun. C. 88.

Pachycorynus Motschulsky, 1858.
dimorphus Fauvel. *Rev. Ent. Soc. Fr.*, 1892, 92.

Metoponcus Kraatz, 1857.
brouni Sharp. C. 106.
fulvipes Broun. C. 106.
rufulus Broun. C. 106.

Cafius Leach, 1830.
litoreus Broun. C. 108.
maritimus Broun. C. 109.
quadri-impressus (fem.) White. C. 105. No. 194 = *caviceps* (male) Broun. C. 942.
algophilus Broun. A. 6, xiv, 419.

Othius Stephens, 1832.
adustus Broun. C. 101.
angustus Broun. C. 1026.
puncticeps Broun. A. 6, xiv, 419.

Philonthus Leach, 1832.
**aeneus* Rossi.
**scybalarius* Nordmann.
**affinis* Roth.
**nigritulus* Gravenhorst.

Subfamily PAEDERINAE.

Lithocharis Lacordaire, 1835.
zealandicus Redtenbacher. C. 114.
mandibularis Broun. C. 114.
ventralis Broun. C. 115.
caecus Broun. A. 6, xiv, 424.
granipennis Broun. B. 1, i, 16.
longipennis Broun. T. xliv, 399.

Phanophilus Sharp, 1886.
comptus Broun. C. 1026 and 114.

Hyperomma Fauvel, 1878.
dispersum Fauvel. C. 1408.
mandibulare Broun. C. 1409.
duplicatum Broun. C. 1409.
sanguineum Broun. A. 6, xiv, 425.
tenellum Broun. A. 8, iii, 227.
subcaecum Broun. B. 1, vi, 481.
lobatum Broun. B. 1, vi, 481.
picipenne Broun. B. 1, vi, 482.
discrepans Broun. B. 1, vi, 483.
flavipes Broun. B. 1, viii, 681.

Dimerus Fauvel.
stilbus Broun. B. 1, i, 15.
bisulciceps Broun. B. 1, v, 374.
vicinus Broun. B. 1, vi, 483.
whitehorni Broun. T. xliv, 400.

Subfamily OXYTELINAE.

Coprostygnus Sharp, 1886.
sculptipennis Sharp. C. 1027.
optandus Broun. C. 1409.
curvipes Broun. B. 1, vi, 484.
picipennis Broun. B. 1, vi, 485.

Holotrochus Erichson, 1840.
ferrugineus Broun. C. 1034.
brevipennis Broun. C. 1034.
laevigatus Broun. B. 1, i, 16.
caecus Broun. B. 1, i, 17.
gracilis Broun. B. 1, i, 17.
nitidorsis Broun. B. 1, i, 17.
montanus Broun. B. 1, i, 18.
setigerus Broun. T. xliv, 401.

Phloeoneus Erichson, 1840.
cordicollis Broun. A. 7, xix, 57.

Bledius Leach.
bidentifrons **Broun. T. xliv,** 401.

Oxytelus Gravenhorst, 1802.
**rugosus* Fabricius.

Subfamily OMALINAE.

Omalium Gravenhorst, 1802.
hebes Broun. C. 116.
sulcithorax Broun. C. 116.
agrestis Broun. C. 117.
spedix Broun. C. 117.
pullum Broun. C. 120.
tibiale Broun. C. 120.
litoreum Broun. C. 942.
sagoloide Sharp. C. 1035.
actobium Broun. C. 1035.
cariniferum Broun. C. 1036.
antipodum Broun. C. 1036.
chalmeri Broun. C. 1037.
micrarthrum Broun. C. 1037.
cognatum Broun. C. 1038.
monilifer Broun. C. 1038.
debile Broun. C. 1039.
prolixum Broun. C. 1039.
stenosoma Broun. C. 1040.
tenellum Broun. C. 1410.
fusciventre Broun. A. 6, xiv, 426.
australe Broun. A. 6, xiv, 426.
philpotti Broun. A. 6, xiv, 427.
perplexum Broun. A. 6, xiv, 428.
nemobium Broun. B. 1, i, 18.
laetipenne Broun. B. 1, i, 19.
longiceps Broun. B. 1, ii, 89.
hilarum Broun. B. 1, ii, 90.
sanguineum Broun. B. 1, ii, 90.

Phaganophana—continued.
papalis Broun. B. 1, iv, 312.
sinuata Broun. B. 1, iv, 313.
Sciacharis Broun, 1893.
fulva Broun. C. 1062.

Family SILPHIDAE.

Necrophilus Latreille, 1829.
prolongatus Sharp, C. 760.
Camiarus Sharp, 1876.
thoracicus Sharp. C. 148.
indiscretus Broun. C. 149.
convexus Sharp. C. 150.
estriatus Broun. T. xliv, 415.
Zenocolon Broun, 1917.
laevicollis Broun. B. 1, v, 387.
Inocatops Broun, 1893.
compactus Broun. C. 1066.
flectipes Broun. C. 1067.
nigrescens Broun. C. 1339.
concinnus Broun. C. 150.
spinifer Broun. B. 1, v, 383.
granipennis Broun. B. 1, v, 384.
elongellus Broun. B. 1, v, 384.
separatus Broun. B. 1, v, 385.
impressus Broun. B. 1, vi, 520.
Microsilpha Broun, 1886.
litorea Broun. C. 890.
Asphaerites Broun, 1893.
nitidus Broun. C. 1068.
Catopsolius Sharp, 1886.
laevicollis Sharp. C. 1069.
Isocolon Broun, 1893.
hilaris Broun. C. 1070.
frontale Broun. B. 1, vi, 521.
modestum Broun. B. 1, vi, 521.
oruruensis Broun. B. 1, viii, 683.
Choleva Latreille, 1796.
antennalis Broun. C. 152.
alacris Broun. C. 152.
granifer Broun. C. 890.
fulvitarsis Broun. C. 946.
lugubris Sharp. C. 1069.
relata Broun. C. 1339.
phyllobia Broun. C. 1433.
monticola Broun. C. 1434.
hunuensis Broun. C. 1434.
marginalis Broun. A. 6, xv, 87.
suturalis Broun. A. 6, xv, 88.
nemoralis Broun. A. 8, iii, 230.
caeca Broun. T. xliv, 414.
castanea Broun. T. xliv, 415.
brunneipes Broun. T. xliv, 97.
avivorus Broun. S. 101.
Choleva—continued.
crenatella Broun. B. 1, vii, 609.
flectipes Broun. B. 1, vii, 609.
curvigera Broun. B. 1, vii, 610.
Zeagyrtes Broun, 1917.
vitticollis Broun. B. 1, v, 386.
Allocatops Broun, 1893.
ovalis Broun. C. 1435.
Mesocolon Broun, 1880.
clathrata Broun. C. 153.
liturata Broun. C. 154.
puncticeps Broun. C. 154.
undulata Broun. C. 154.
bicolor Broun. C. 155.
nebulosa Broun. C. 155.
maculifer Broun. C. 156.
hirtalis Broun. C. 156.
punctulata Broun. C. 157.
torva Broun. C. 157.
domestica Broun. C. 158.
varia Broun. C. 946.
strigicollis Broun. B. 1, vii, 610.
nitidulus Broun. B. 1, vii, 611.
labralis Broun. B. 1, vii, 611.
Baeosilpha Broun, 1895.
rufescens Broun. A. 6, xv, 85.
Mesagyrtes Broun, 1895.
scabripes Broun. A. 6, xv, 86.
Silphotelus Broun, 1895.
nitidus Broun. A. 6, xv, 84.
obliquus Broun. T. xliv, 416.
Clambus Fisher, 1820.
domesticus Broun. C. 762.
vestitus Broun. C. 762.
suffusus Broun. C. 762.

Family TRICHOPTERYGIDAE.

Trichopteryx Kirby, 1826.
inconspicua Matthews. C. 1436.
Ptenidium Erichson, 1845.
lawsoni Matthews. C. 1437.
posticale Broun. C. 1437.
proprium Broun. C. 1438.
cavelli Broun. C. 1438.
Actidium Matthews, 1868.
lineare Matthews. C. 1439.
Actinopteryx Matthews, 1872.
australis Matthews. C. 1440.
Ptinella Motschoulski, 1844.
fauvelli Matthews. *Mon. Trichop. Suppl.*, 19.

Family CORYLOPHIDAE.

Anisomeristes Matthews, 1886.
sharpi Matthews. *Ent. Mon. Mag.*, 1886, xxii, 425.

Soronia Erichson, 1843.
hystrix Sharp. C. 172.
optata Sharp. C. 172.
morosa Broun. C. 1074.
micans Broun. C. 1074.
oculator Reitter. B. 1, i, 24.
Carpophilus Leach, 1830.
**hemipterus* Linnaeus
**mutilatus* Erichson.
Omosita Erichson, 1843.
spinipes Broun. C. 173.
scutellaris Broun. C. 173.
**colon* Linnaeus.
Neocercus Broun, 1919.
electus Broun. B. 1, vi, 523.
Xenoscelis Wollaston, 1864.
prolixus Sharp. C. 174.
Priates Broun, 1881.
optandus Broun. C. 669.
Ips Fabricius, 1776.
minimus Sharp. C. 1078.
Cyclaxyra Broun, 1893 (substituted for *Cyclomorpha*).
politula Broun. C. 668.
impressa Bruon. B. 1, iv, 314.
Platipidia Broun, 1893.
asperella Broun. C. 1075.
Priasilpha Broun, 1893.
obscura Broun. C. 1078.
Inopria Broun, 1919.
halli Broun. B. 1, vi, 524.
notata Broun. B. 1, vi, 525.

Subfamily RHIZOPHAGINAE.
Lenax Sharp, 1877.
mirandus Sharp. C. 175.

Family CUCUJIDAE.
Chaetosoma Westwood, 1851.
scaritides Westwood. C. 767.
Chaetosomodes Broun, 1919.
halli Broun. B. 1, vii, 615.
Diagrypnodes Waterhouse, 1876.
wakefieldi Waterhouse. C. 217.
Dryocora Pascoe, 1868.
howittii Pascoe. C. 218.
Dendrophagus Schönherr, 1809.
umbrinus Smith. *Cat. Coleop. Brit. Mus.*, 12.
capito Pascoe. C. 219.
Parabrontes Redtenbacher, 1867.
silvanoides Redtenbacher. C. 220.
setiger Broun. C. 768.
Cryptamorpha Wollaston, 1854.
brevicornis White. C. 221.
curvipes Broun. C. 221.
Cryptamorpha—continued.
suturalis White. C. 222.
lateritia Broun. C. 222.
rugicollis Broun. B. 1, i, 39.
picturatus Reitter. B. 1, i, 39.
Picrotus Sharp, 1886.
thoracicus Sharp. C. 1098.
sanguineus Broun. C. 1098.
pensus Broun. B. 1, i, 40.
Brontopriscus Sharp, 1886.
sinuatus Sharp. C. 1099.
pleuralis Sharp. C. 219.
Cathartocryptus Sharp, 1886.
obscurus Sharp. C. 1100.
Saphophagus Sharp, 1886.
minutus Sharp. C. 1101.
ferrugineus Broun. C. 1102.
Tularthrum Broun, 1893.
lineatum Broun. C. 1103.
Thortus Broun, 1893.
ovalis Broun. C. 1345.
Silvanus Latreille.
**surinamensis* Linnaeus.
**unidentatus* Fabricius.

Family EROTYLIDAE.
Cryptodacne Sharp, 1878.
synthetica Sharp. C. 641.
lenis Broun. C. 641.
vagepunctata Broun. C. 813.
vittata Broun. C. 873.
pubescens Broun. C. 1319.
ferrugata Broun. B. 1, i, 78.
ocularia Broun. T. xlv, 163.
Triplax Paykull, 1798.
brouni Pascoe. C. 642.
Thallis Erichson, 1842.
polita White. C. 643.
Tritomidea Shuck, 1840.
rubripes Reitter. B. 1, i, 78.

Family CRYPTOPHAGIDAE.
Telmatophilus Heer, 1841.
depressus Sharp. C. 224.
nitens Sharp. C. 224.
olivascens Broun. C. 1104.
vestitus Broun. B. 1, i, 25.
Cryptophagus Herbst, 1792.
australis Redtenbacher. C. 225.
rubellus Broun. C. 225.
rutilus Broun. C. 226.
vestitus Broun. C. 226.
sylvanus Broun. C. 227.
angulifer Broun. C. 227.
hispidulus Broun. C. 227.
discoideus Broun. C. 1345.
distinctus Broun. C. 1346.
tumidus Broun. C. 1445.

(a) *Ectomida laceratus* Pascoe = *T. indentatus* Wollaston.

(b) *P. integer* Sharp = *P. Scaber* Fabricius.

Subfamily PYCNOMERINAE.

Pycnomerus Erichson, 1842.
sophorae Sharp. C. 208.
simulans Sharp. C. 209.
simplex Broun. C. 209.
minor Sharp. C. 209.
ellipticus Broun. C. 210.
rufescens Broun. C. 766.
basalis Broun. C. 766.
carinellus Broun. C. 896.
caecus Broun. C. 896.
hirtus Broun. C. 897.
lateralis Broun. C. 897.
arboreus Broun. C. 927.
cognatus Broun. C. 951.
marginalis Broun. C. 1093.
sinuatus Broun. C. 1094.
impressus Broun. C. 1094.
longulus Sharp. C. 1095.
helmsi Sharp. C. 1095.
sulcatissimus Sharp. C. 1095.
latitans Sharp. C. 1096.
angulatus Broun. C. 1443.
frontalis Broun. C. 1443.
elongellus Broun. C. 1444.
longipes Broun. C. 1444.
depressiusculus White. *Voy. Ereb. and Terr., Ins.*, 18.
nitiventris Broun. A. 7, xi, 617.
arcuatus Broun. B. 1, ii, 98.
ocularius Broun. B. 1, ii, 99.
suteri Broun. A. 8, iii, 393.
ruficollis Broun. A. 8, iii, 394.
tenuiculus Broun. B. 1, iii, 180.
reversus Broun. T. xliv, 421.
candidus Broun. T. xliv, 421.
mediocris Broun. T. xliii, 99.
parvulus Broun. B. 1, vii, 614.

Pycnomerodes Broun, 1886.
peregrinus Broun. C. 952.

Subfamily CERYLONINAE.

Philothermus Aubé, 1843.
nitidus Sharp. C. 211.
sanguineus Broun. C. 211.
notabilis Broun. C. 211.
bicavus Reitter. B. 1, i, 39.

Family COCCINELLIDAE.

Coccinella Linnaeus, 1735.
tasmanii White. C. 645.
coriacea Broun. C. 1319.
novae-zealandiae Colenso. T. xx, 40.
**11-punctata* Linnaeus.
**californica* Mannerheim.
**sanguinea* Linnaeus.

Leis Mulsant, 1851.
antipodum Mulsant. C. 645.
**conformis* Boisduval.

Rhizobius Stephens, 1831.
**ventralis* Erichson.

Cranophorus Mulsant, 1851.
venustus Pasoce. C. 650.

Orcus.
**chalybeus* Boisduval.
**australasiae* Boisduval.

Scymnus Kugelann, 1794.
eximius Broun. C. 646.
flavihirtus Broun. C. 646.
acceptus Broun. C. 647.
macrostictus Broun. T. xliii, 114.
consors Broun. C. 647.
tristis Broun. C. 647.
pallidiceps Broun. C. 648.
fagus Broun. C. 648.
terrenus Broun. C. 648.
rarus Broun. C. 649.
suffusus Broun. C. 649.
minutulus Broun. C. 649.
picinus Broun. C. 649.
sedatus Broun. C. 813.
villosus Broun. C. 814.
circularis Sharp. *Insect Life*, 1889, 365.
prolongatus Broun. B. 1, iii, 264.
halli Broun. B. 1, iii, 265.
circularis Sharp. B. 1, iii, 265.
nigritulus Broun. B. 1, iii, 265.

Novius.
**cardinalis* Mulsart.

Hippodamia.
**convergens* Guérin.

Holopsis Broun, 1886.
nigellus Broun. C. 814.
pallidus Broun. C. 815.
lawsoni Broun. C. 815.
pictulus Broun. C. 1503 .
rotundatus Broun. C. 1503.

Cryptolaemus.
**montrouzeri* Mulsart.

Veronicobius Broun, 1893.
hirtus Broun. . C. 1393.

Family DERMESTIDAE.

Trogoderma Latreille, 1892.
serrigerum Sharp. C. 240.
signatum Sharp. C. 240.
maestum Broun. C. 241.
granulatum Broun. C. 900.
punctatum Broun. C. 953.
suffusum Broun. C. 953.

Saphydrus—continued.
antennatus Sharp. C. 1016.
longulus Sharp. C. 1016.
monticola Broun. C. 1401.
consonus Broun. B. 1, vi, 478.
collaris, Broun. B. 1, vi, 478.
Rygmodus White, 1846.
modestus White. C. 80.
pedinoides White. C. 80.
incertus Broun. C. 81.
opimus Broun. C. 82.
cyaneus Broun. C. 659.
puncticeps Broun. C. 757.
femoratus Sharp. C. 1016.
tibialis Broun. C. 1017.
ovalis Sharp. C. 1017.
limbatus Broun. C. 1335.
alienus Broun. C. 1401.
nigripennis Broun. A. 7, xi, 612.
Tormus Sharp, 1884.
helmsi Sharp. C. 1019.
nitidus Broun. C. 1402.
Tormissus Broun, 1893.
marginatus Broun. C. 1021.
magnulus Broun. C. 1021.
Thomosis Broun, 1904.
†*guanicola* Broun. A. 7, xiv, 274, and S. 100.
Hydrostygnus Sharp, 1884.
linsi Sharp. C. 1020.
frontalis Broun. C. 84.
minor Broun. C. 1020.
bifoveatus Broun. C. 1021.
Hydrobius Leach, 1817.
**assimilis* Hope.
Exydrus Broun, 1886.
flavicornis Broun. C. 84 and C. 940.
gibbosus Broun. C. 84 and C. 940.
Stygnohydrus Broun, 1893 (a).
nitidus Broun. C. 1336.
femoralis Broun. B. 1, i, 12.
posticalis Broun. B. 1, v, 371.
Gitocyloma Broun, 1915.
nigratus Broun. B. 1, iv, 278.
Cyloma Sharp, 1872.
lawsonus Sharp. C. 85.
thomsonus Sharp. C. 1022.
guttulatus Sharp. C. 1022.
stewarti Broun. A. 6, xiv, 370.

(a). **Stygnohydrus basalis** Broun = *Tormus nitidus* Broun.

† From Bounty Islands.

Namostygnus Broun, 1909.
rufipes Broun. S. 99.
Cylomissus Broun, 1903.
glabratus Broun. A. 7, xi, 613.
Cyclonotum Dejean, 1833.
**marginale* Sharp. C. 83.
Psephoboragus Broun, 1893.
signatus Broun. C. 1403.
lineatus Broun. C. 1404.
dispar Broun. B. 1, i, 13.
Zeadolopus Broun, 1903.
spinipes Broun. A. 7, xi, 614.

Adolopus Sharp, 1884.
helmsi Sharp. C. 1023.
badius Broun. C. 86.
altulus Broun. C. 86.
vicinus Broun. C. 939.
rugipennis Broun. C. 939.
montanus Broun. C. 1336.
convexus Broun. C. 1404.
australis Broun. A. 8, iii, 223.
tibialis Broun. A. 8, iii, 224.
Cercyodes Broun, 1893.
laevigatus Broun. C. 941.
Cercyon Leach, 1817.
**flavipes* Fabricius.
Hydraenodes Broun, 1919.
spinipennis Broun. B. 1, vi, 479.
Paracymus.
**nitidiusculus* Broun.
Horelophus.
walkeri d'Orch. B. 1, vi, 480.

Group SERRICORNIA.

Family DASCILLIDAE.

Byrrhodes Sharp, 1878.
gravidus Sharp. C. 307.
Byrrhocryptus Broun, 1893.
urquharti Broun. C. 1137.
Cyprobius Sharp, 1878.
nitidus Sharp. C. 308.
undulatus Broun. C. 775.
terrenus Broun. A. 6, xv, 236.
Cyphanus Sharp, 1878.
laticeps Sharp. C. 309.
punctatus Sharp. C. 309.
capax Broun. C. 309.
mollis Sharp. C. 310.
debilis Sharp. C. 310.
granulatus Broun. C. 311.
medius Broun. C. 311.
mandibularis Broun. C. 776.
dubius Broun. C. 1139.
scaber Broun. C. 1139.

Cyphon—continued.
plumatellus Broun. B. 1, iv, 320.
burrowsi Broun. B. 1, iv, 320.
pachymerus Broun. T. xliv, 432.
Amplectopus Sharp, 1886.
ovalis Sharp. C. 1138.
latulus Broun. C. 1351.
fuscus Broun. C. 1351.
pallicornis Broun. C. 1456.
Cyphotelus Sharp, 1878.
augustifrons Sharp. C. 325.

Family EUCINETIDAE.

Eucinetus Gemain, 1908.
ater Porter.
Apeosina Broun, 1881.
stewarti Broun. C. 693.
tener Broun. C. 693.
Cryptomera Broun, 1893.
***nigra* Broun.** C. 1359 (a).

Family MALACODERMIDAE.

Asilis Broun, 1893.
fulvithorax Broun. C. 326.
nigricans Broun. C. 327.
subnudus Broun. C. 327.
tenuiculus Broun. C. 327.
striatus Broun. C. 328.
tumidus Broun. C. 684.
piliventer Broun. C. 684.
laevigatus Broun. C. 901.
coloratus Broun. C. 1147.
collaris Broun. B. 1, i, 33.
brevicornis Broun. B. 1, i, 34.
opaculus Broun. B. 1, i, 34.
cgmontensis Broun. B. 1, i, 35.
punctipennis Broun. B. 1, i, 35.
parallelus Broun. B. 1, i, 36.
pilicornis Broun. A. 8, iii, 401.
sinuellus Broun. A. 8, iii, 402.
granipennis Broun. A. 8, iii, 402.
interstitialis Broun. A. 8, iii, 403.
apicalis Broun. A. 8, iii, 404.
flavipennis Broun. B. 1, iii. 191.
Metriorhynchus Guêrin, 1830.
rufipennis Fabricius.

Family MELYRIDAE.

Dasytes Paykull, 1798.
minuta Fabricius. (= *subcyaneus* Broun). C. 328.

(a) = ***Eucinetus ater* Porter.**

Dasytes—continued.
wakefieldi Sharp. C. 329.
cinerohirtus Broun. C. 329.
obscuricollis Broun. C. 330.
laticeps Broun. C. 330.
stewarti Broun. C. 684.
constrictus Broun. C. 781.
occiputalis Broun. C. 782.
cheesemani Broun. C. 902.
opaculus Broun. C. 902.
helmsi Sharp. C. 1147.
oreocharis Broun. C. 1148.
littoralis Broun. C. 1351.
aethiops Broun. C. 1352.
nigripes Broun. A. 6, xv, 238.
veronicae Broun. B. 1, i, 36.
laevulifrons Broun. B. 1, ii, 109.
aurisetifer Broun. A. 8, iii, 404.
anacharis Broun. A. 8, iii, 405.
fuscitarsis Broun. B. 1, iii, 192.
philpotti Broun. B. 1, iv, 321.
pittensis Broun. T. xliii, 101.
violascens Broun. B. 1, vii, 617.
clavatus Broun. B. 1, vii, 617.
Arthracanthus Broun, 1886.
planifrons Broun. C. 781.
fulvipes Broun. B. 1, iii, 192.
fossicollis Broun. B. 1, iii, 193.
atriceps Broun. B. 1, iii, 193.
foveicollis Broun. T. xliv, 433.
Halyles Broun, 1886.
nigrescens Broun. C. 783.
brevicornis Broun. C. 783.
semidilutus Broun. C. 783.

Family CLERIDAE.

Paupris Sharp, 1877.
aptera Sharp. C. 331.
Metaxina Broun, 1909.
ornata Broun. A. 8, iii, 408.
Parmius Sharp, 1877.
longipes Sharp. C. 331.
debilis Sharp. C. 332.
rugosus Broun. C. 1148.
violaceus Broun. T. xliv, 434.
Pelonium Spinola, 1844.
pustuliferum Westwood. *P.Z.S.*, 1852, 52, pl. 24, fig. 8.
Balcus Sharp, 1877.
niger Sharp. C. 333.
signatus Broun. C. 333.
Eumede Pascoe, 1876.
aeraria Pascoe. C. 334.

(a) = *Dorcatoma oblonga* Broun.

Talerax Sharp, 1877.
distans Sharp. C. 279.
capax Broun. C. 674.
niger Broun. C. 675.
rusticus Broun. C. 675.
foveatus Broun. C. 676.
tenuis Broun. C. 772.
micans Broun. C. 1350.
spinitarsis Broun. B. 1, i, 28.
dorsalis Broun. T. xliv, 428.

Drasterius Eschscoltz, 1829.
nigellus White. C. 279.

Melanus Broun, 1881.
sculptus Broun. C. 677 (a).

Agalba Broun, 1893.
ruficornis Broun. C. 1120.
nigrescens, Broun. C. 1121.
cylindrata Broun. C. 771.

Subfamily ELATERINAE.

Protelater Sharp, 1877.
***elongatus* Sharp.** C. 305.
huttoni Sharp. C. 305.
guttatus Sharp. C. 305.
picticornis Sharp. C. 306.
opacus Sharp. C. 306.
nigricans Sharp. C. 772.
vitticollis Broun. C. 956.
atriceps Broun. C. 957.
urquharti Broun. C. 1121.
costiceps Broun. C. 1121.
pubescens Broun. C. 1122.
diversus Broun. T. xliv, 428.

Geranus Sharp, 1877.
collaris Pascoe. C. 302.
***lineicollis* White.** C. 304.
***fulvus* Sharp.** C. 303 (b).
***similis* Sharp.** C. 303 (b).

Parinus Sharp, 1877.
villosus Sharp. C. 301.

Corymbites Latreille, 1834.
***antipodus* Candèze.** C. 299.
dubius **Sharp.** C. 299.
***strangulatus* White.** C. 300.
megops White. C. 300.
***olivascens* White.** C. 300.
agriotoides Sharp. C. 301.
irregularis Sharp. C. 1128.
canaliculatus Broun. C. 1129.
munroi Broun. C. 1130.
fulvescens Broun. T. xliv, 429.
***vitticolis* Broun.** T. xliv, 430.
approximans Broun. T. xliv, 430.
sternalis Broun. T. xliv, 431.

(a) = *Drasterius nigellus* White.
(b) = *G. lineicollis* White ♀.

Asymphus Sharp, 1886.
insidiosus Sharp. C. 1132.
mundus Sharp. C. 1129.

Agriotes Eschscholtz.
**lineatus* Linnaeus.

Exoeolus Broun, 1893.
rufescens Broun. C. 1134.
punctatus Broun. C. 1134.
obsoletus Broun. C. 1135.

Ochosternus Candèze, 1863.
zealandicus White. C. 298.

Elatichrosis Hyslop, 1921.
polita Sharp. C. 296.
reversa Sharp. C. 297.
barbata Candèze. C. 297.
elongata Sharp. C. 298.
livens Broun. C. 681.
valida Broun. C. 681.
setigera Broun. C. 682.
brevicollis Broun. C. 682.
castanea Broun. C. 683.
certa Broun. C. 683.
fulvipes Broun. C. 683.
impressa Broun. C. 1133.
aeneola Candèze. ***Mem. Belg.***, xvii, 1865, 54 (a).
eximia Broun. A. 6, xii, 288.
dubitans Broun. T. xliv, 429.

Zeaglophus Broun, 1895.
pilicornis Broun. A. 6, xv, 235.

Hypnoidus Stephens.
powelli Sharp. C. 295.
humilis Sharp. C. 295.
frontalis Sharp. C. 295.
longicornis Sharp. C. 296.
thoracicus Sharp. C. 296.
meinertzhageni Broun. C. 680.
montanus Broun. C. 773.
sandageri Broun. C. 774.
pallipes Sharp. C. 1122.
picticornis Broun. C. 1122.
monticola Broun. C. 1124.
sternalis Broun. C. 1124.
basalis Broun. C. 1125.
fuscipennis Broun. C. 1125.
attenuatus Broun. C. 1453.
deterius Broun. C. 1454.

Oxylasma Broun, 1881.
pannosum Broun. C. 679.
tectum Broun. C. 680.
basale Broun. C. 957.
carinale Broun. C. 1130.
vittiger Broun. C. 1452.

(a) = *Corymbites olivascens* White.

Group HETEROMERA.

Family TENEBRIONIDAE.

Subfamily OPATRINAE.

Subfamily ULOMINAE.

(a) = *bidwelli* Hope.
(b) = *tenebrionoides* White.

Subfamily TRACHYSCELINAE.

Chaerodes White, 1846.
trachyscelides White. C. 357.
laetus Broun. C. 358.
concolor Sharp. C. 358.
fuscatus Broun. A. 6, xv, 241.

Subfamily DIAPERINAE.

Menimus Sharp, 1876.
batesi Sharp. C. 361.
puncticeps Broun. C. 361.
oblongus Broun. C. 362.
caecus Sharp. C. 362.
crassus Sharp. C. 363.
crinalis Broun. C. 363.
dubius Broun. C. 363.
obscurus Broun. C. 364.
thoracicus Broun. C. 364.
curtulus Broun. C. 785.
piceus Broun. C. 786.
striatulus Broun. C. 842.
sinuatus Broun. C. 842.
vicinus Broun. A. 6, xii, 288.
laevicollis Broun. A. 6, xv, 242.
humeralis Broun. B. 1, i, 41.
aemulator Broun. B. 1, i, 42.
pubiceps Broun. B. 1, vi, 541.
lineatus Broun. T. xliv, 436.

Subfamily HELAEINAE.

Cilibe Brême, 1842.
opacula Bates. C. 368.
nitidula Bates. C. 369.
otagensis Bates. C. 370 and var. *grandis* Bates.
elongata Brême. C. 371 and var. *granulipennis* Bates.
pascoei Bates. C. 372.
humeralis Bates. C. 373.
thoracica Bates. C. 373.
brevipennis Bates. C. 374.
granulosa Brême. C. 375.
rugosa Bates. C. 375.
tibialis Bates. C. 376.
impressifrons Bates. C. 376.
buchanani Broun. C. 377.
huttoni Sharp. C. 378.
marginalis Broun. C. 1155.
phosphugoides White. *Voy. Ereb. and Terr., Insects*, 11 (a).
costella Broun. A. 7, xv, 544.
lateralis Broun. A. 8, iii, 408.
smithiana Broun. A. 8, iii, 409.

(a) = *elongata* Brême.

Cilibe—continued.
saragoides Pascoe. T. xli, 148.
subcostata Sharp. T. xli, 149.
major Sharp. *Ent. Mo. Mag.* 1903, 106.

Subfamily TENEBRIONINAE.

Tenebrio Linnaeus.
**obscurans* Fabricius.
**molitor* Linnaeus.

Zolodinus Blanchard, 1853.
zelandicus Blanchard. C. 379.

Lorelus Sharp, 1876.
priscus Sharp. C. 381.
pubescens Broun. C. 381.
crassicornis Broun. C. 786.
quadricollis Broun. C. 786.
latulus Broun. B. 1, i, 43.
tarsalis Broun. B. 1, i, 43.
marginalis Broun. B. 1, i, 43.
sternalis Broun. B. 1, i, 44.
nigrescens Broun. B. 1, i, 45.

Demtrius Broun, 1895.
carinulatus Broun. A. 6, xv, 243.

Subfamily CNODALONINAE.

Artystona Bates, 1873.
erichsoni White. C. 384.
wakefieldi Bates. C. 385.
rugiceps Bates. C. 385.
obscura Sharp. C. 1154.
collaris Sharp. C. 1154.
obsoleta Sharp. C. 1154.
interrupta Redtenbacher. *Reise Novara, Coleop.*, 128 (a).
philpotti Broun. B. 1, i, 45.
tinctella Broun. B. 1, i, 46.
vicina Broun. B. 1, i, 46.

Arthopus Sharp, 1876.
brouni Sharp. C. 383.

Philpottia Broun, 1915.
maculatus Broun. B. 1, iv, 323.
mollis Broun. C. 960.

Chalcodrya Redtenbacher, 1868.
variegata Redtenbacher. C. 403.

Onysius Broun, 1886.
anomalus Broun. C. 843 (b).
pulcher Broun. C. 1357.

Subfamily ADELIINAE.

Mesopatrum Broun, 1893.
granulosum Broun. C. 1355.
dubium Broun. B. 1, v, 396.

(a) = *erichsoni* White.
(b) = *Malacodrya pictipes* Sharp.

Family OEDEMERIDAE.

Selenopalpus White, 1846.
cyaneus Fabricius. C. 420.
chalybeus White. *Voy. Ereb. and Terr.*, 13.
subviridis White. *Voy. Ereb. and Terr., Insects*, 13 (a).
aciphyllae Broun. C. 845.
rectipes Broun. A. 8, iii, 413.

Thelyphassa Pascoe, 1876.
strigipennis White. C. 420.
latiuscula Broun. C. 421.
lineata Fabricius. C. 421.
pauperata Pascoe. C. 422.
nemoralis Broun. C. 845.
longicornis Broun. C. 1459.
thoracica Broun. A. 6, xii, 290.
reversa Broun. A. 6, xii, 291.
stictica Broun. B. 1, ii, 199 (b).
brookesi Broun. B. 1, v, 397 (c).
diaphana Pascoe. C. 422.
obscura Broun. C. 422.
conspicua Broun. C. 790.
limbata Broun. C. 961.
fuscata Broun. A. 7, xii, 70.
longicollis Broun. A. 7, xii, 70.
chathamensis Brookes. *Records Canterbury Museum*, ii, 5, 287.

Dammarobius Broun, 1886.
mollis Broun. C. 846.

Baculipalpus Broun, 1880.
rarus Broun. C. 423.
maritimus Broun. A. 8, iii, 414.

Nacerdes.
**melanura* Schmidt.

Family PYTHIDAE.

Salpingus Gyllenhal, 1810.
perpunctatus Broun. C. 398.
bilunatus Pascoe. C. 398.
angusticollis Broun. C. 399.
unguiculus Broun. C. 399.
lautus Broun. C. 400.
hirtus Broun. C. 789.
simplex Broun. C. 789.

(a) = *cyaneus* White, ♀; also *chalybeus* White = *cyaneus* ♂.
(b) = *Sessinia nigronotata* Bohem. Introduced from Australia.
(c) = *S. macleayi* Champion. Introduced from Australia.

Salpingus—continued.
quisquilius Broun. C. 789.
fossulatus Broun. C. 1459.
ornatus Broun. A. 6, xv, 245.
cognatus Broun. B. 1, i, 49.
rugulosus Broun. B. 1, i, 50.
tarsalis Broun. B. 1, i, 51.
simplex Broun. B. 1, i, 51.
semilaevis Broun. B. 1, iii, 196.
atrellus **Broun. B. 1, iii, 196.**
denticollis Broun. B. 1, iii, 196.
aterrimus Broun. B. 1, vi, 542.
nigricans Broun. B. 1, vii, 618.

Lagrioida Fairmaire et Germain, 1860.
brounii Pascoe. C. 408.

Family MELANDRYIDAE.

Ctenoplectron Redtenbacher, 1868.
fasciatum Redtenbacher. C. 401.
fuliginosum **Broun. C. 402.**
maculatum **Broun. C. 691.**
costatum **Broun. C. 691.**
vittatum **Broun. C. 844.**
coloratum **Broun. C. 959.**
dignum **Broun. C. 960.**

Allopterus Broun, 1886.
reticulatus **Broun. C. 790.**
ornatus **Broun. C. 401.**
instabilis **Broun. C. 844.**
cavelli **Broun. C. 1356.**
simulans **Broun. B. 1, i, 52.**

Hylobia Broun, 1880.
velox **Broun. C. 404.**
undulata **Broun. C. 404.**
nebeculosa **Broun. C. 404.**
pulla **Broun. C. 405.**
nigricornis **Broun. C. 405.**
calida **Broun. C. 405.**
bifasciata **Broun. C. 406.**
minor **Broun. C. 406.**
cylindruta **Broun. C. 406.**
usitata **Broun. C. 407.**
nigella **Broun. C. 407.**
sexnotata **Broun. B. 1, iv, 324.**
acuminata **Broun. B. 1, iv,** 325.
arboricola **Broun. B. 1, iv, 325.**
plagiata **Broun. T. xliv, 439.**

Doxozilora Broun, 1909.
punctata **Broun. A. 8, iii, 412.**

Axylita Broun, 1914.
sericophora **Broun. B. 1, ii,** 112.

Group PHYTOPHAGA.

Family CHRYSOMELIDAE.

Subfamily EUMOLPINAE.

Eucolaspis, Sharp, 1886.
brunneus Fabricius. C. 622.
pallidipennis White. C. 622.
puncticollis Broun. C. 623.
jucundus Broun. C. 623.
subaeneus Broun. C. 624.
sculptus Broun. C. 624.
merus Broun. C. 624.
brevicollis Broun. C. 625.
atroceruleus Broun. C. 625.
ocraceus Broun. C. 1303.
coloratus Broun. C. 1303.
montanus Broun. C. 1304.
vittiger Broun. A. 6, xii, 391.
picticornis Broun. A. 6, xii, 391.

Atrichatus Sharp, 1886.
ochraceus Broun. C. 625 and 1305.
aeneicollis Broun. A. 6, xv, 419.
nitidulus Broun. A. 8, iv, 286.

Pilacolaspis Sharp, 1886.
wakefieldi Sharp. C. 1306.
huttoni Broun. C. 626.
rugiventris Broun. B. 1, iii, 258.
angulatus Broun. T. xlv, 160.
latipennis Broun. T. xlv, 160.

Peniticus Sharp, 1876.
suffusus Sharp. C. 627.
antiquus Sharp. C. 627.
robustus Broun. C. 628.
plicatus Broun. B. 1, vii, 663.

Subfamily CRYPTOCEPHALINAE.

Arnomus Sharp, 1876.
brouni Sharp. C. 619.
curtipes Broun. C. 1390.
marginalis Broun. C. 1390.
viridicollis Broun. A. 8, iv, 286.
signatus Broun. A. 8, iv, 287.
fulvus Broun. B. 1, iv, 342.
vicinus Broun. B. 1, iv, 342.

Alema Sharp, 1876.
paradoxa Sharp. C. 620.
puncticollis Broun. C. 620.
spatiosa Broun. C. 621.

Eualema Broun, 1903.
walkeri Broun. A. 7, xii, 86 (a).

Scaphodius Chapuis, 1874.
compactus Sharp. C. 1302.

Subfamily CHRYSOMELINAE.

Allocharis Sharp, 1882.
marginata Sharp. C. 1306.
morosa Broun. C. 1307.
limbata Broun. C. 1307.
praestans Broun. B. 1, v, 462.
subsulcata Broun. B. 1, v, 462.
nigricollis Broun. B. 1, v, 463.
picticornis Broun. B. 1, v, 463.
media Broun. B. 1, v, 463.
fuscipes Broun. B. 1, v, 464.
robusta Broun. B. 1, v, 464.
tarsalis Broun. B. 1, v, 465.

Chalcolampra.
speculifera Sharp. B. 1, i, 77.

Aphilon Sharp, 1876.
enigma Sharp. C. 629.
pretiosa Broun. C. 630.
punctata Broun. C. 630.
minuta Broun. C. 631.
monstrosa Broun. C. 874.
sobrina, Broun. C. 875.
praestans Broun. C. 1309.
convexa Broun. C. 1310.
latulum Broun. C. 1310.
scutellaris Broun. C. 1501.
laticollis Broun. A. 6, xii, 392.
impressa Broun. B. 1, iii, 258.
sternalis Broun. B. 1, vii, 664.

Caccomolpus Sharp, 1886.
globosus Sharp. C. 1308.
plagiatus Sharp. C. 1308.
pullatus Broun. C. 1309.
maculatus Broun. C. 1309.
ornatus Broun. B. 1, i, 77.
flectipes Broun. B. 1, iii, 259.
nigristernis Broun. B. 1, v, 465.
hallianus Broun. B. 1, v, 466.
fuscicornis Broun. B. 1, v, 466.
substriatus Broun. B. 1, v. 467.
tibialis Broun. B. 1, v, 467.
viridescens Broun. B. 1, v, 468.
subcupreus Broun. B. 1, vi, 589.
amplus Broun. B. 1, vi, 590.

(a) = *Chalcolampra speculifera*, Sharp. B. 1, i, 77.

Liogramma Bates, 1874.
zelandica Blanchard. C. 568.
Bethelium.
signiferum Newman. C. 569 (a).
Didymocantha Newman, 1840.
picta Bates. C. 569.
aegrota Bates. C. 569.
brevicornis Broun. C. 570.
clavipes Broun. C. 808.
quadriguttata Sharp. C. 1272.
jucunda Broun. C. 1272.
binotata Broun. C. 1273.
vittata Broun. C. 1273.
pallida Broun. A. 6, xii, 388.
cognata Broun. B. 1, i, 73.
hudsoni Broun. B. 1, ii, 140.
media Broun. T. xlv, 152.
oedemera Broun. T. xlv, 153.
fuscicollis Broun. T. xlv, 153.
Eburida White.
sublineata White. C. 568.
robusta Sharp. C. 1271.
Oemona Newman, 1842.
hirta Fabricius. C. 570 and 1275.
villosa Fabricius. C. 1275 (b).
simplicollis Broun. C. 571 and 1276.
humilis Newman. C. 1274 (b).
inaequalis Sharp. C. 1275.
mutica Sharp. C. 1276.
plicicollis Sharp. C. 1276.
debilis Sharp. C. 1277.
sublineata Broun. A. 8, iv, 281.
separata Broun. B. 1, vii, 659.
Leptachrous Bates, 1874.
strigipennis Westwood. C. 572.
Votum Broun, 1880.
mundum Broun. C. 573.
Pseudocalliprason Broun, 1880.
marginatum White. C. 574.
Ambeodontus Lacordaire, 1869.
tristis Fabricius. C. 574.
Agapanthida White, 1846.
pulchella White. C. 575.
scutellaris Pascoe. C. 575.
Ophryops White, 1846.
pallidus Broun. C. 576 (c).

(a) = *Didymocantha diversicornis* White.
(b) = *Oemona hirta* Fabricius ♀.
(c) = *O. dispar*, Sharp.

Ophryops—continued.
pallidus White, *Voy. Ereb. and Terr.*, 19.
dispar Sharp. C. 576 and C. 1277.
nigropictus Broun. C. 1278.
testaceus Broun. C. 1278.
lentiginosus Broun. C. 1279 (d).
Pseudosemnus Broun, 1893.
amabilis Broun. C. 1280.
Hesperophanes Mulsant, 1839.
unicolor Fabricius. *Mantissa Insectorum*, 147.
Astetholea Bates, 1874.
pauper Bates. C. 577.
lepturoides Bates. C. 577.
aubreyi Broun. C. 577.
Astetholida Broun, 1880.
lucida Broun. C. 578.
Epheus Broun, 1886.
costifer Broun. C. 871.
Blosyropus Redtenbacher, 1868.
spinosus Redtenbacher. C. 579.
Pteroptychus Aurivillius, 1912.
rugosus Broun. C. 809 (a).
Xuthodes Pascoe, 1875.
punctipennis Pascoe. C. 580.
apicalis Sharp. C. 580 (b).
batesi Sharp. C. 581.
divergens Broun. C. 581 (c).
lepidus Broun. C. 1280.
Calliprason White, 1846.
sinclairi White. C. 582.
Neocalliprason Brookes, 1925.
elegans Brookes. T. lvii, 565.
Stenopotes Pascoe, 1875.
pallidus Pascoe. C. 583.
Cacodrotus Broun, 1893.
bifasciatus Broun. C. 1281.
Drotus Sharp, 1877.
elegans Sharp. C. 583.
Drototelus Broun. 1903.
politus Broun. A. 7, xii, 82.
Zorion Pascoe, 1867.
minutum Fabricius. C. 584.
guttigerum Westwood. C. 585.
castum Broun. C. 1281.
opacum Sharp. T. xli, 150.
Gnomodes Broun. 1893.
piceus Broun. C. 1282.

(d) = *Ophryops pallidus* White.
(a) = *Blosyropus simpliceps* Broun.
(b) = *X. punctipennis* Pascoe.
(c) = *X. punctipennis* Pascoe ♂.

Somatidia—continued.
albicoma Broun. C. 1500.
proxima Broun. A. 6, xii, 390.
picticornis Broun. A. 6, xv, 418.
testudo Broun. A. 7, xiv, 127.
websteriana Broun. A. 8, iv, 281.
heterarthra Broun. A. 8, iv, 282.
crassicollis Broun. B. 1, viii, 706.
testacea Broun. A. 8, iv, 283.
maculata Broun. B. 1, vi, 587.
sericophora Broun. A. 8, iv, 283.
lineifera Broun. A. 8, iv, 284.
rubella Broun. B. 1, iii, 254.
suturalis Broun. B. 1, iii, 255.
ruficornis Broun. B. 1, iii, 255.
halli Broun. B. 1, iii, 256.
waitei Broun. T. xliii, 113.
vicina Broun. T. xliii, 114.
spectabilis Broun. B. 1, v, 456.
flavidorsis Broun. B. 1, v, 457.
suffusa Broun. B. 1, v, 457.
femoralis Broun. B. 1, v, 458.
oscillans Broun. B. 1, v, 458.
obesula Broun. B. 1, v, 459.
laevinotata Broun. B. 1, v, 460.
parvula Broun. B. 1, v, 461.
longula Broun. B. 1, vi, 588.
vittigera Broun. B. 1, vi, 588.
pennulata Broun. B. 1, vi, 589.
thoracica Broun. T. xlv, 154.
nodularia Broun. T. xlv, 155.
discoidea Broun. T. xlv, 155.
posticalis Broun. T. xlv, 156.
corticola Broun. T. xlv, 156.
pinguis Broun. T. xlv, 157.
placita Broun. B. 1, vii, 660.
origana Broun. B. 1, vii, 661.
oedemera Broun. B. 1, vii, 661.
o'connori Broun. B. 1, vii, 662.
commoda Broun. B. 1, vii, 662.

Stenellipsis Bates, 1874.
bimaculata White. C. 604.
gracilis White. C. 604.
latipennis Bates. C. 605.
pumila Pascoe. C. 605.
cuneata Sharp. C. 1289.

Psilocnaeia Bates, 1874.
linearis Bates. C. 606.
brouni Bates. C. 606 (a).

(a) *Ent. Mo. Mag.* xiii, 1876, p. 54.

Spilotrogia Bates, 1874.
maculata Bates. C. 607.
hilarula Broun. C. 607.

Eurychaena Bates, 1874.
frabilis Bates. C. 608.
feredayi Bates. C. 608.
acutula Broun. C. 608.

Tetrorea White, 1846.
cilipes White. C. 609.
discedens Sharp. C. 1294.
longipennis Sharp. C. 1293.
sellata Sharp. C. 1294.
maculata Broun. T. xlv, 157.

Hybolasius Bates, 1874.
cristus Fabricius. C. 610.
lanipes Sharp. C. 610.
pedator Sharp. C. 610.
wakefieldi Bates. C. 611.
concolor Broun. C. 611.
viridescens Bates. C. 611.
promissus Broun. C. 612.
simplex Bates. C. 612.
modestus Broun. C. 613.
variegatus Broun. C. 613.
cristatellus Bates. C. 614.
bellicosus Broun. C. 614.
parvus Broun. C. 614.
vegetus Broun. C. 744.
fasciatus Broun. C. 744.
brevicollis Broun. C. 811.
pictarsis Broun. C. 812.
pusillus Broun. C. 812.
apicalis Broun. C. 872.
piceus Broun. C. 872.
deplanatus Sharp. C. 1297.
castaneus Broun. C. 1297.
finitimus Broun. C. 1298.
albihirtus Broun. C. 1298.
gnarus Broun. C. 1298.
femoralis Broun. C. 1299.
thoracicus Broun. C. 1299.
rufescens Broun. C. 1300.
dubius Broun. C. 1389.
optatus Broun. A. 6, xii, 389.
trigonellaris Hutton. T. xxx, 158.
cognatus Broun. A. 7, xii, 82.
laticollis Broun. A. 7, xii, 83.
gracilipes Broun. A. 7, xii, 84.
genalis Broun. A. 7, xii, 84.
varipes Broun. A. 8, iv, 284.
ciliatus Broun. B. 1, ii, 140.
vittiger Broun. B. 1, ii, 141.
lineiceps Broun. B. 1, iii, 257.
sculpturatus Broun. B. 1, iv, 341.

Dysnocryptus Broun, 1893.
plagiatus Broun. C. 1258.
testaceus Broun. C. 1259.
pallidus Broun. C. 1259.
maculifer Broun. C. 1260.
nigricans Broun. C. 1260.
inflatus Sharp. C. 562.
dignus Broun. C. 563.
rugosus Sharp. C. 563.
setigerus Broun. B. 1, vii, 658.
Araeocerus Pascoe, 1876.
pardalis Pascoe. C. 559.
Xenanthribus Broun, 1893.
hirsutus Broun. C. 1270.
Doticus.
**pestilens* Olliff.

Family CURCULIONIDAE.

Subfamily OTIORRHYNCHINAE.
Nicaeana Pascoe, 1877.
modesta Pascoe. C. 428.
concinna Broun. C. 847.
cinerea Broun. C. 931.
servina Broun. C. 1360.
tarsalis Broun. C. 1460.
infuscata Broun. A. 8, iv, 52.
catoptoides Broun. B. 1, iii, 200.
placida Broun. B. 1, iii, 201.
gracilicornis Broun. B. 1, iii, 201.
crassifrons Broun. B. 1, v, 398.
nesophila Broun. T. xlv, 97.
cordipennis Broun. B. 1, vii, 619.
Aphela.
pictipes Broun. A. 7, xii, 75.
Stygeopetes Broun, 1893.
littoralis Broun. C. 1176.
Thotmus Broun, 1910.
halli Broun. T. xliii, 103.
Cecyropa Pascoe, 1875.
tychioides Pascoe. C. 437.
maritima Broun. C. 438.
brevipennis Broun. C. 438.
alba Broun. C. 698.
varia Broun. C. 698.
discors Broun. C. 699, and A. 7, xiv, 106.
setigera Broun. C. 905.
macularia Broun. C. 961.
albicans Sharp. C. 1175.
fumosa Broun. C. 1175.
alternata Broun. A. 7, xiv, 105.
lineifera Broun. A. 7, xii, 72.
Cecyropa—continued.
striata Broun. A. 7, xii, 73.
sulcifrons Broun. B. 1, v, 398.
striatella Broun. B. 1, v, 399.
jucunda Broun. B. 1, v, 400.
laticollis Broun. B. 1, v, 400.
litorea Broun. B. 1, vi, 343.
Nonnotus Sharp, 1886.
griseolus Sharp. C. 1177.
eclectus Broun. C. 1177.
pallescens Broun. C. 1178.
albicans Broun. C. 443.
albatus Broun. C. 694.
nigricans Broun. T. xlv, 98.
Tigones Broun, 1881.
caudata Broun. C. 855.
osculans Broun. C. 856.
certa Broun. C. 856.
grisea Broun. C. 856.
aulica Broun. C. 1180.
cervina Broun. C. 857.
variegata Broun. C. 1181.
scutellaris Broun. C. 1181.
cruda Broun. C. 1182.
antennalis Broun. C. 1182.
diversa Broun. C. 1183.
rufula Broun. C. 1183 (a).
cavelli Broun. C. 1361.
obscura Broun. C. 1361.
cuspidata Broun. C. 694.
plana Broun. C. 700.
dispar Broun. A. 7, xiv, 107.
philpotti Broun. B. 1, i, 57.
humeralis Broun. B. 1, iii, 202.
flectiscapus Broun. B. 1, iii, 202.
nasalis Broun. B. 1, v, 401.
citimus Broun. B. 1, v, 401.
thoracica Broun. B. 1, v, 402.
variata Broun. B. 1, v, 403.
murina Broun. B. 1, v, 403.
assimilis Broun. B. 1, v, 404.
setosa Broun. B. 1, v, 404.
longiceps Broun. B. 1, v, 405.
bicostellus Broun. B. 1, vi, 544.
albopicta Broun. T. xlv, 100.
gracilis Sharp. C. 1179.
binodula Sharp. C. 1179.
robustus Sharp. C. 1180.
rugosa Broun. T. xlv, 99.
longipes Broun. B. 1, vii, 620.
Epitimetes Pascoe, 1877.
lutosus Pascoe. C. 431.
wakefieldi Sharp. C. 1182.
cupreus Broun. B. 1, v, 406.

(a) = *Tigones binodula* Sharp.

(a) = *Phlyctinus callosus* Bohem. Introduced from South Africa.

(a) = *C. obliquesignatus* Bohem.
(b) = *C. scutellaris* Sharp.

(a) = *E. horridus* Sharp.

(a) = *Anagotus helmsi* Sharp.

Caenophanus Broun, 1886.
flavipilus Broun. C. 796.
carbonarius Broun. B. 1, vii, 645.
Colabotelus Broun, 1914.
dealbatus Broun. B. 1, iii, 232.
Hypotagea Pascoe, 1876.
rubida Pascoe. C.456.
testaceipennis Broun. C. 456.
variegata Broun. C. 456.
creperus Broun. C. 706.
simulans Broun. C. 706.
castanea Broun. C. 714.
vestita Broun. C. 715.
dissona Broun. C. 863.
tibialis Broun. C. 1376, and B. 1, vi, 567.
lewisi Broun. T. xlv, 131.
Eugnomus Schönherr, 1847.
elegans Pascoe. C. 458.
picipennis Pascoe. C. 459.
robusta Marshall. A. 9, xviii, 7.
fervidus Pascoe. C. 459.
wakefieldi Pascoe. C. 459.
fucosus Pascoe. C. 459.
interstitialis Broun. C. 460.
discolor Broun. C. 460 (a).
maculosus Broun. C. 715.
nubilans Broun. C. 715.
fasciatus Broun. C. 716.
luctuosus Broun. C. 863.
monachus Broun. C. 966.
argutus Sharp. C. 1225.
nobilis Broun. C. 1225.
aenescens Broun. C. 1226.
cyaneus Broun. C. 1227 (b).
tarsalis Broun. C. 1227 (c).
lituratus Broun. C. 1227.
aspersus Broun. C. 1376.
dennanensis Broun. T. xlv, 125.
squamifer Broun. C. 1377.
maurus Broun. C. 1377.
antennalis Broun. A. 8, iv, 133.
femoralis Broun. A. 8, iv, 134.
albisetosus Broun. B. 1, vii, 645.
bryobius Broun. B. 1, v, 445.
alternans Broun. B. 1, v, 445.
tristis Broun. B. 1, v, 446.
atratus Broun. B. 1, vi, 566.
calvulus Broun. T. xlv, 125.
Oreocharis Broun, 1886.
nigriceps Broun. C. 864.
cinnamonea White. C. 461.
picigularis Broun. C. 865.
Oreacharis—continued.
nigrescens Broun. C. 865.
cyanea Broun. C. 716.
vittata Broun. C. 1228.
dealbata Broun. C. 1228.
ferruginea Broun. A. 7, xiv, 120 (d).
pullata Broun. A. 7, xiv, 121.
carinulata Broun. B. 1, iii, 233.
latipennis Broun. B. 1, iii, 234.
lineirostris Broun. B. 1, iii, 234.
pleuralis Broun. B. 1, iv, 337.
fasciata Broun. B. 1, v, 447.
congruens Broun. B. 1, v, 447.
albosparsa Broun. T. xlv, 126.
veronicae Broun. T. xlv, 127.
picipennis var. Broun. T. xlv, 127.
uniformis Broun. T. xlv, 127.
dives Broun. T. xlv, 128 (e).
castanea Broun. T. xlv, 128.
Hoplocneme White, 1846.
hookeri White. C. 461.
punctatissima Pascoe. C. 461.
squamosa Broun. C. 462.
inaequalis Broun. C. 1229.
cyanea Broun. C. 1230.
propinqua Broun. B. 1, iii, 233.
vicina Broun. T. xlv, 129.
Stephanorrhynchus White, 1846.
curvipes White. C. 462 (f).
purus Pascoe. C. 463.
brevipennis Pascoe. C. 463.
lawsoni Sharp. C. 463.
crassus Broun. C. 464.
tuberosus Broun. C. 717.
fatuus Broun. C. 718.
griseipictus Broun. C. 866.
nigrosparsus Broun. C. 1230.
insolitus Broun. C. 1231.
costifer Broun. C. 1231.
attelaboides Fabricius. Ent. *Syst.*, 156.
pygmaeus Broun. A. 7, xii, 80.
osculator Broun. A. 8, iv, 134.
morosus Broun. A. 8, iv, 135.
halli Broun. B. 1, iii, 235.
Stenopactola Broun, 1914.
prolixa Broun. B. 1, iii, 237.

(a) = *E. fucosus* Pascoe.
(b) = *E. aenescens* Broun.
(c) = *E. aenescens* Broun.
(d) = *O. cinnamonea* White.
(e) = *O. cinnamonea* White var.
(f) = *attelaboides* Fabricius.

Psepholax—continued.
brevicornis Broun. C. 1382.
crassicornis Broun. A. 6, xv, 408.
denticostatus Broun. A. 8, iv, 139.
acanthomerus Broun. T. xlv, 132.
Aphocoelis Broun, 1909.
versicolor Broun. A. 8, iv, 138.
Pseudoreda Broun, 1893.
tibialis Broun. C. 1383 and 482.
Oreda White, 1846.
notata White. C. 487.
brevis Pascoe. C. 487.
Kentraulax Broun, 1909.
murina Broun. C. 487.
flavisetosus Broun. T. xliii, 106.
Mesoreda Broun, 1893.
setigera Broun. C. 1235 and 488.
orthorhina Broun. C. 909.
sulcifrons Broun. A. 8, iv, 155.
longula Broun. T. xlv, 133 (a).
laminata Broun. B. 1, vii, 646.
Homoreda Broun, 1893.
punctata Broun. C. 1383.
Aldonus White, 1846.
hylobioides White. C. 483.
celator Pascoe. C. 483.
rostratus Broun. C. 483.
chathamensis Sharp. T. xli, 149.
misturatus Broun. T. xlii, 309.
lineifer Broun. T. xlii, 310.
insularis Brookes. T. lxiii, 32.
Nothaldonus Broun, 1893.
peacei Broun. C. 484 and 1235.
Indecentia Broun, 1880.
nubila Broun. C. 485.
straminea Broun. C. 486.
Ectopsis Broun, 1881.
ferrugalis Broun. C. 719.
simplex Broun. A. 6, xii, 383.
foveigerus Broun. B. 1, v, 448.
Tychanus Pascoe, 1876.
gibbus Pascoe. C. 498.
ferrugatus Pascoe. C. 498.
densus Broun. C. 499.
verrucosus Pascoe. C. 499.
lachrymosus Broun. C. 729.
scabiosus Broun. C. 801.

(a) = *M. orthorhina* Broun ♀.

Tychanus—continued.
quadratus Broun. C. 867.
ventralis Broun. C. 935.
bufo Sharp. C. 1239.
dux Broun. C. 1240.
squamosus Broun. B. 1, iii, 239.
lunalis Broun. B. 1, v, 448.
obscurus Broun. B. 1, vi, 573.
costatus Broun. T. xlv, 137.
complexus Broun. B. 1, vii, 648.
simulans Broun. B. 1, vii, 648.
terricola Broun. B. 1, vii, 649.
Clypeolus Broun, 1909.
cineraceus Broun. A. 8, iv, 143.
Euacalles Broun, 1919.
cristatus Broun. B. 1, vii, 647.
Sympedius Pascoe, 1876.
testudo Pascoe. C. 500.
vexatus Pascoe. C. 500.
curtus Broun. C. 728.
lepidus Broun. C. 935.
rectirostris Broun. A. 8, iv, 149.
minor Broun. B. 1, vii, 651.
Crisius Pascoe, 1876.
binotatus Pascoe. C. 500.
variegatus Broun. C. 501.
scutellaris Broun. C. 501.
obesulus Sharp. C. 1241.
picicollis Broun. C. 1241.
signatus Broun. C. 1242.
ornatus Broun. C. 1242.
fasciculatus Broun. C. 1492.
dorsalis Broun. A. 7, xiv, 123.
latirostris Broun. B. 1, iii, 240.
posticalis Broun. B. 1, v, 450.
contiguus Broun. B. 1, vi, 574.
eximius Broun. B. 1, vi, 574.
humeralis Broun. T. xlv, 138.
semifuscus Broun. T. xlv, 139.
decorus Broun. T. xlv, 139.
dives Broun. B. 1, vii, 650.
longulus Broun. B. 1, vii, 650.
Agacalles Broun, 1886.
formosus Broun. C. 967.
Getacalles Broun, 1893.
rostralis Broun. C. 1380.
minor Broun. C. 1381.
humeratus Broun. C. 1381.
inaequalis Broun. C. 1493.
sparsus Broun. B. 1, ii, 135.
fasciatus Broun. B. 1, ii, 136.
favosus Broun. A. 8, iv, 157.
posticalis Broun. B. 1, iii, 241.
fulvicornis Broun. B. 1, iii, 242.

(a) = *A. simulans* Sharp.

(a) = Sexes of same.

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Aglycyderes Westwood.
wollastoni Sharp. C. 426.
badius Broun. C. 427.

Group LAMELLICORNIA.

Family LUCANIDAE.

Lissotes Westwood, 1855.
reticulatus Westwood. C. 255.
rufipes Sharp. C. 1109.
elegans Broun. C. 1110.
squamidorsis White. C. 251.
novae-zealandiae (*punctulatus*) White. C. 251.
planus Broun. C. 252.
stewarti Broun. C. 673.
capito Deyrolle. E. 1873, 339, and T. xlii, 308.
abditus Broun. C. 673.
demaresti Deyrolle. *Ann. Soc. Ent. France*, 1881, 239.
helmsi Sharp. C. 770.
ithaginis Broun. C. 1108.
aemulus Broun. C. 1109.
acmenus Lewis. T. xxxiv, 203.
menalcas Westwood. *N.Z. Jour. Sci.*, ii, 221.
philpotti Broun. B. 1, ii, 103.
dispar Broun. T. xlii, 307.
mangonuiensis Brookes. T. lvii, 564.

Ceratognathus Westwood, 1838.
helotoides Thomson. C. 254.
alboguttatus Bates. C. 253.
dispar Sharp. C. 1111.

Mitophyllus Parry, 1845.
irroratus Parry. C. 253 and 1111.
parryanus Hope. C. 253.
marmoratus Watson. Ent. Mo. *Mag.* xi, 8.
foveolatus Broun. C. 253.
macrocerus Broun. C. 837.
gibbosus Broun. C. 928.
tuberculatus Broun. C. 1111.
cylindricus Broun. A. 6, xv, 199.
angusticeps Broun. A. 6, xv, 199.
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Dendroblax White, 1836.
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punctatus White. C. 272.
stupidus Sharp. C. 272.
nitidulus Broun. C. 273.
frontalis Broun. A. 7, xiv, 55.

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Chlorochiton Arrow, 1903.
suturalis Fabricius. C. 261.
prasinus Broun. C. 1115.
longicornis Arrow. A. 9, xiii, 550.
laevis Arrow. A. 9, xiii, 551.

Costleya Broun, 1886.
discoidea Broun. C. 1116.
simmondsi Broun. T. xliv, 427.
lineata Arrow. A. 9, xiii, 553.

Poecilodiscus Broun, 1895.
pulcher Broun. A. 6, xv, 202.

Scythrodes Broun, 1886.
squalidus Broun. C. 955, and A. 7, xix, 59.

Xylostygnus Broun, 1886.
piceus Broun. C. 956.
brookesi Broun. B. 1, vi, 534.

Psilodontria Broun, 1895.
viridescens Broun. A. 6, xv, 201.

Mycernus Broun, 1904.
elegans Broun. A. 7, xiv, 52.

Pyronota Hope, 1837.
festiva Fabricius. C. 262.
lacta Fabricius. C. 262.
edwardsi Sharp. C. 263.
sobrina Sharp. C. 263.
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electa Broun. C. 1116.

(a) Fauna austriaca, p. 436.
(b) = *S. exsculptus* White.

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All the figures are magnified. The natural length of each insect is shown by a line beside the figure.

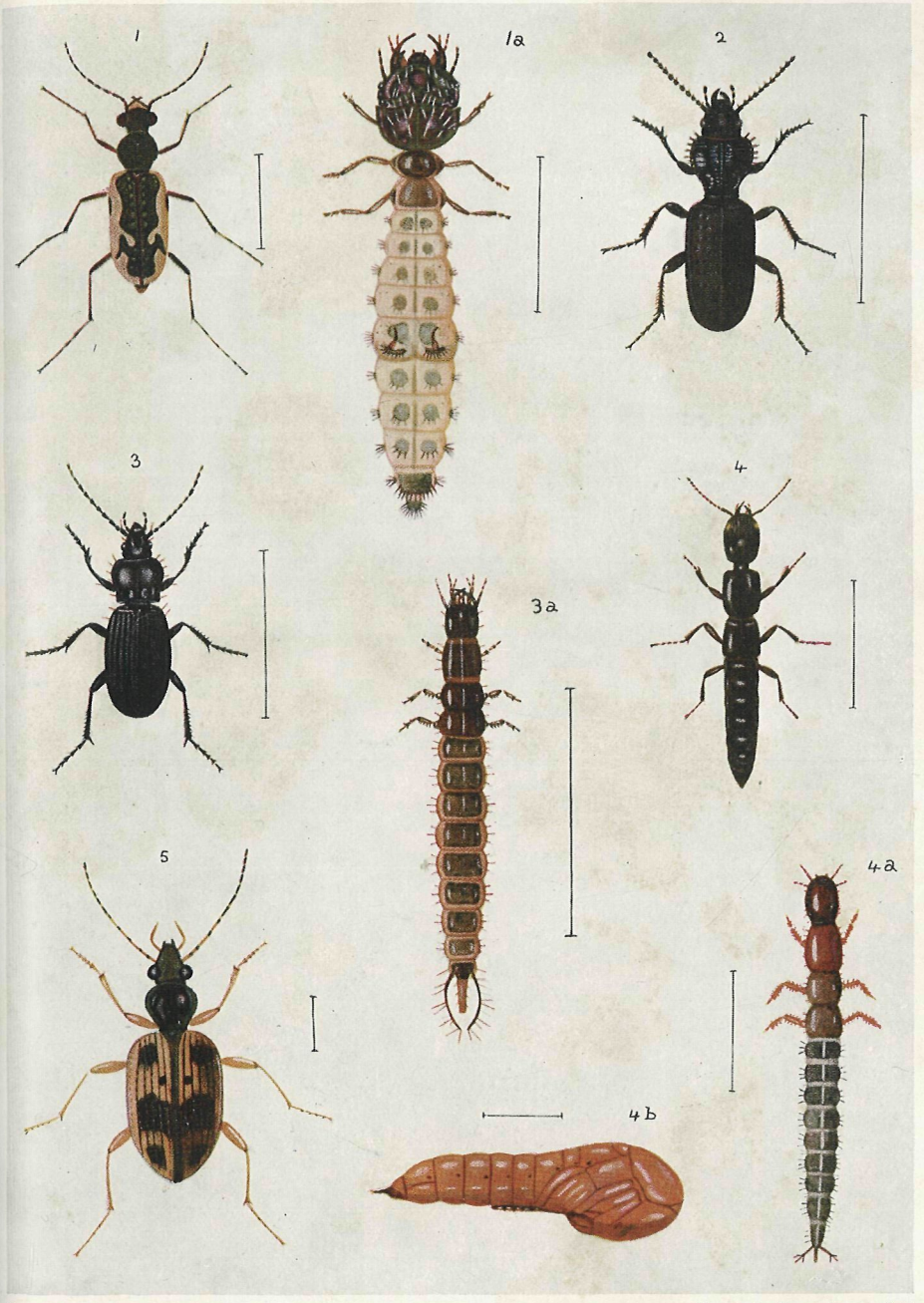

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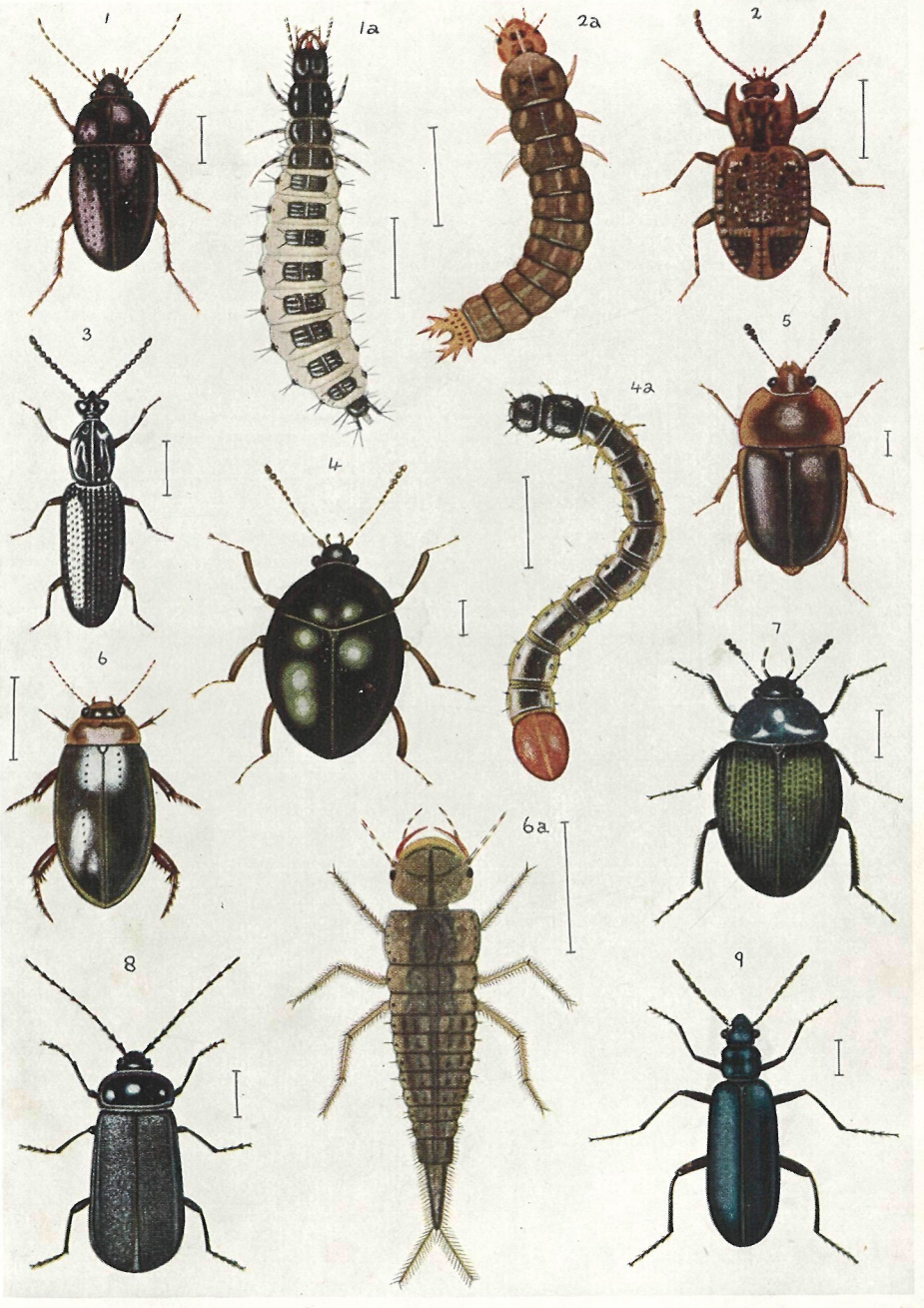
PLATE II.

Family **CARABIDAE.**
(Ground Beetles.)

All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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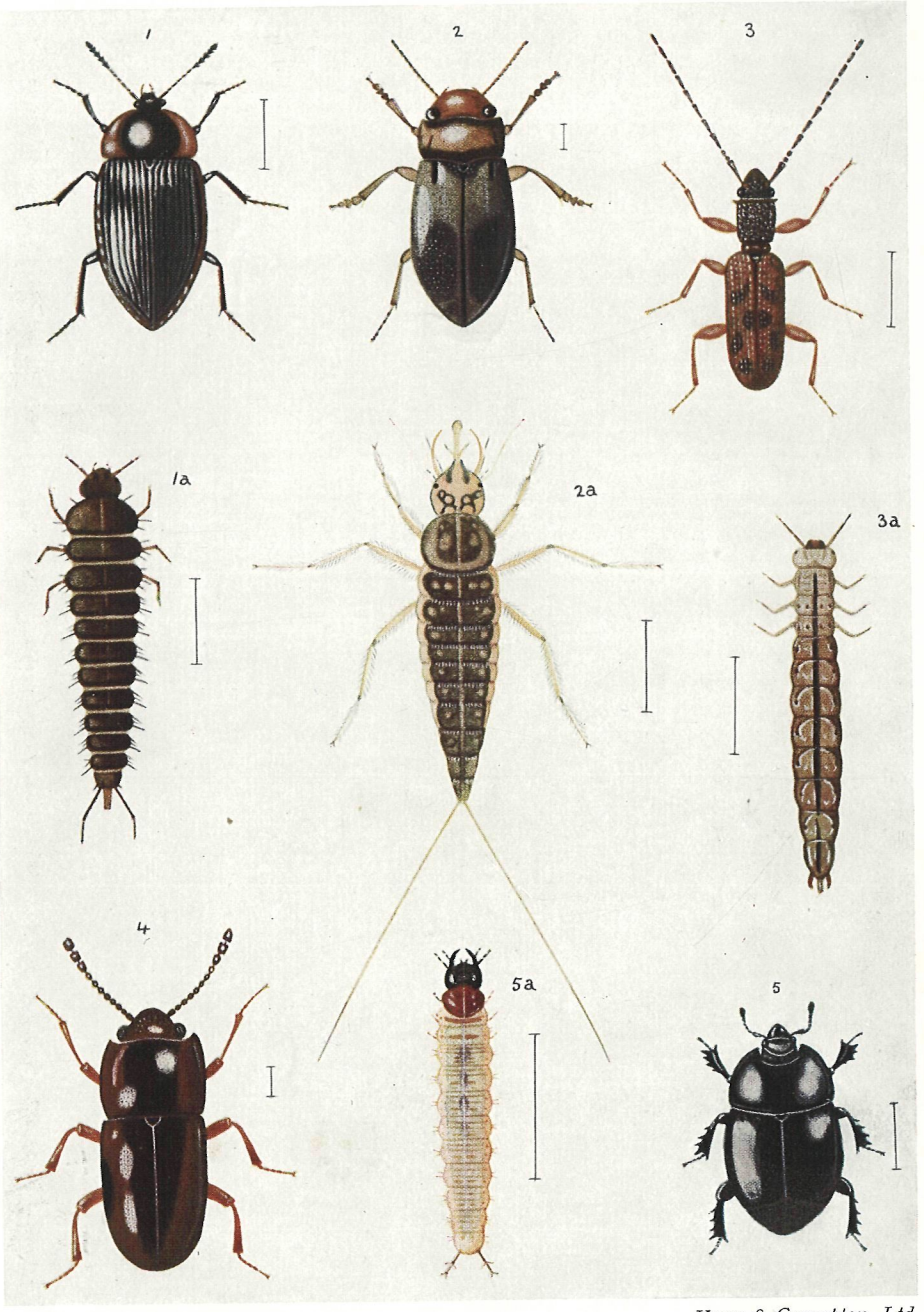
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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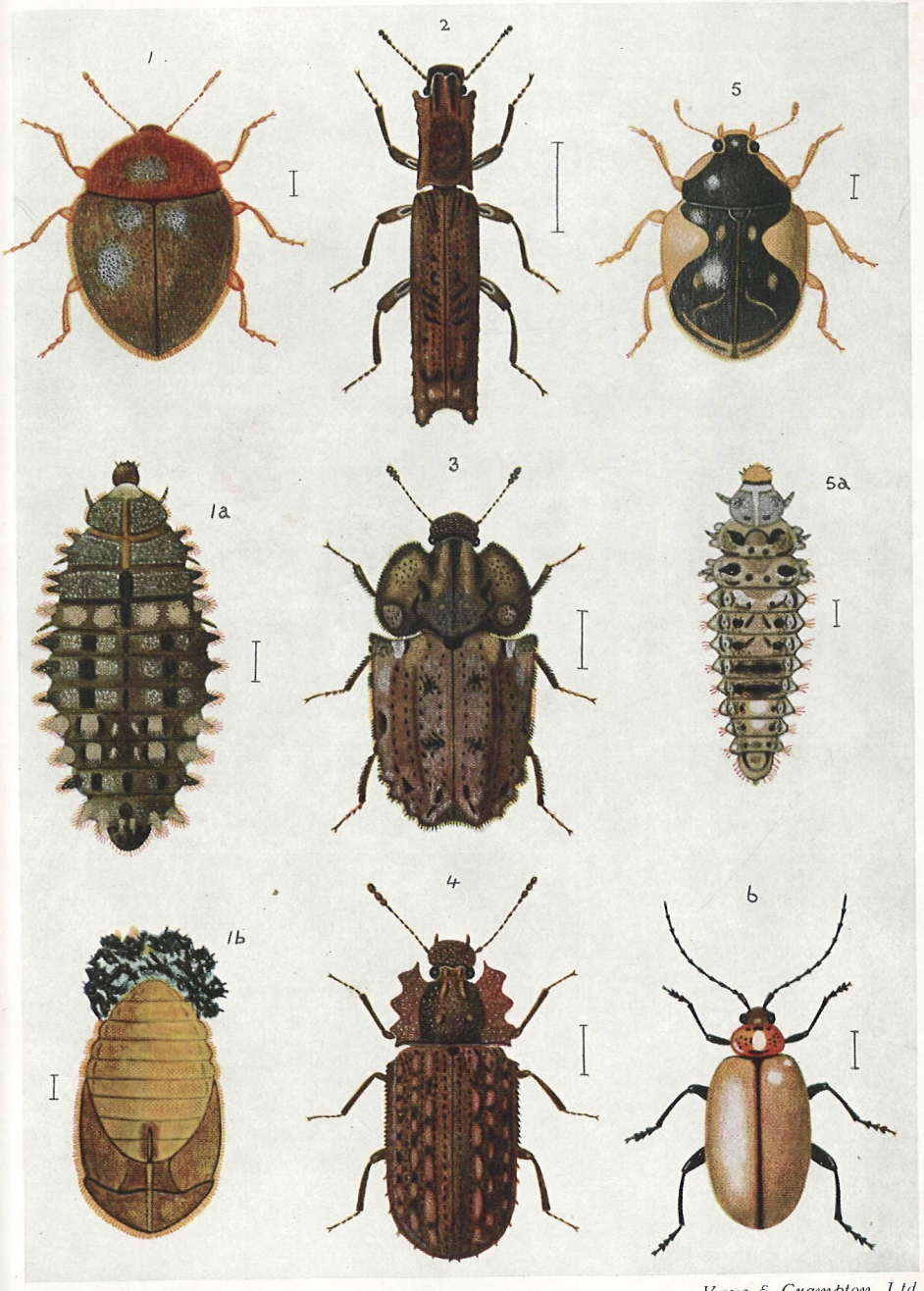
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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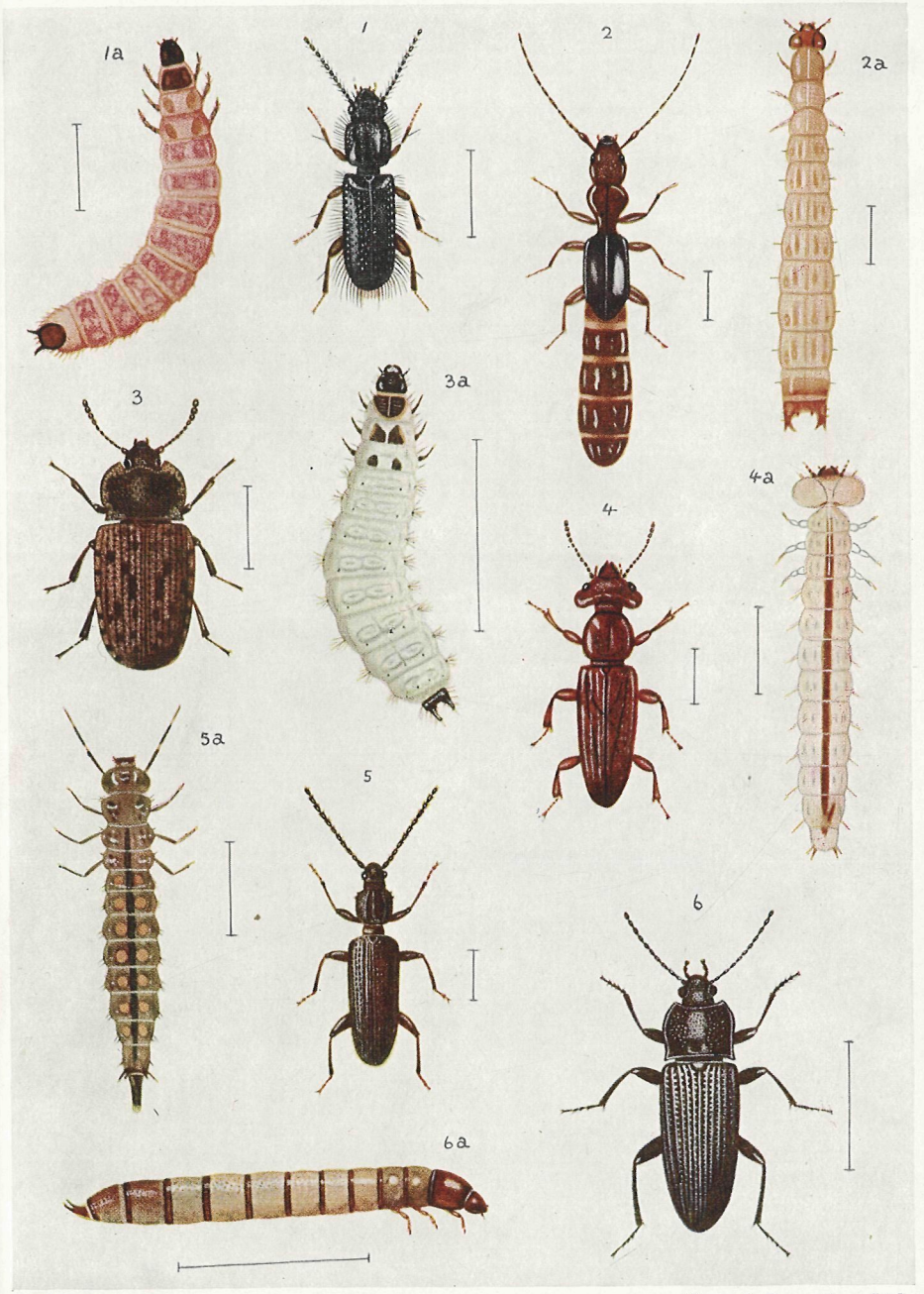
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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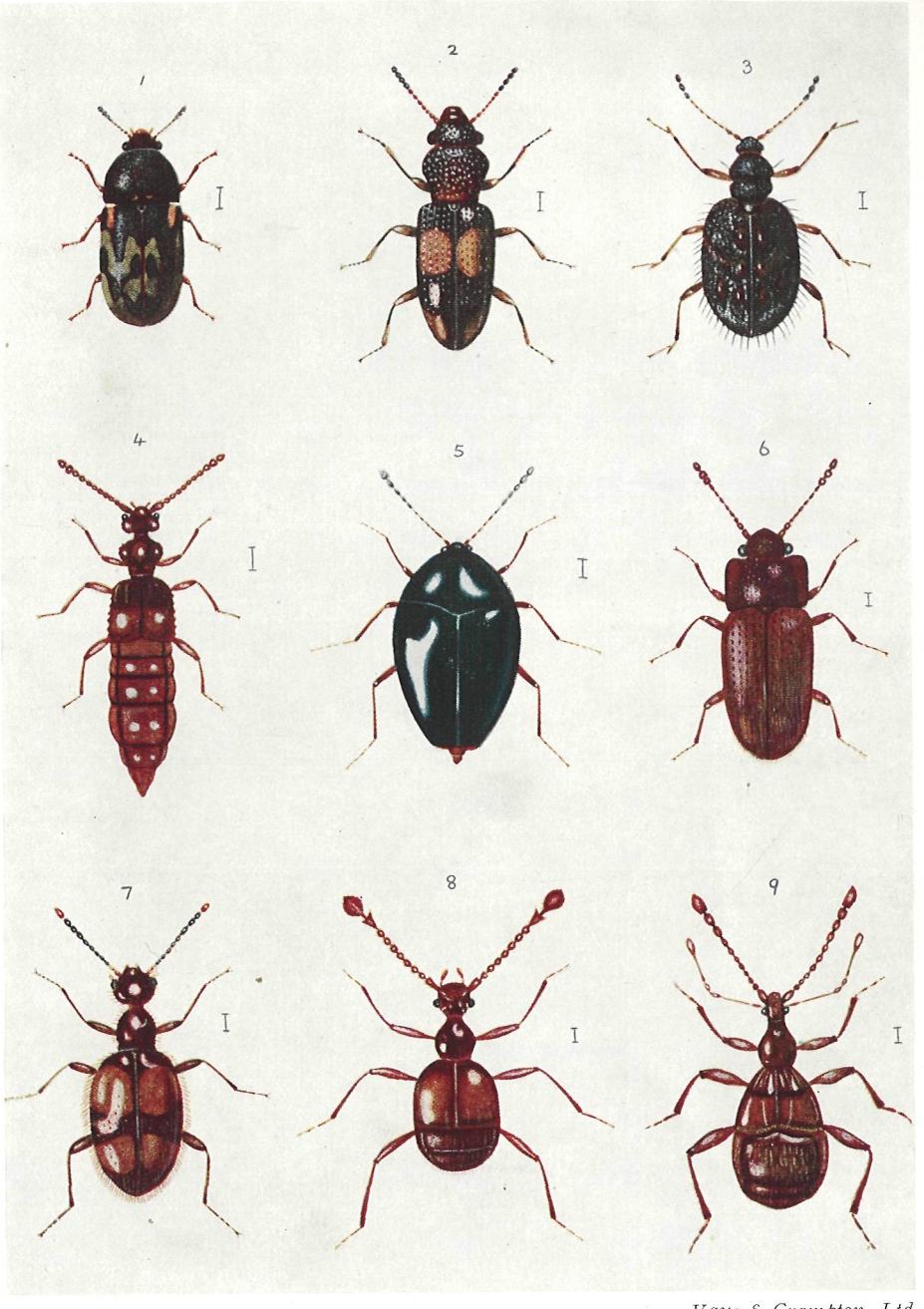
Family **SCAPHIDIIDAE.**

Family **CRYPTOPHAGIDAE.**

Family **ANTHICIDAE.**

All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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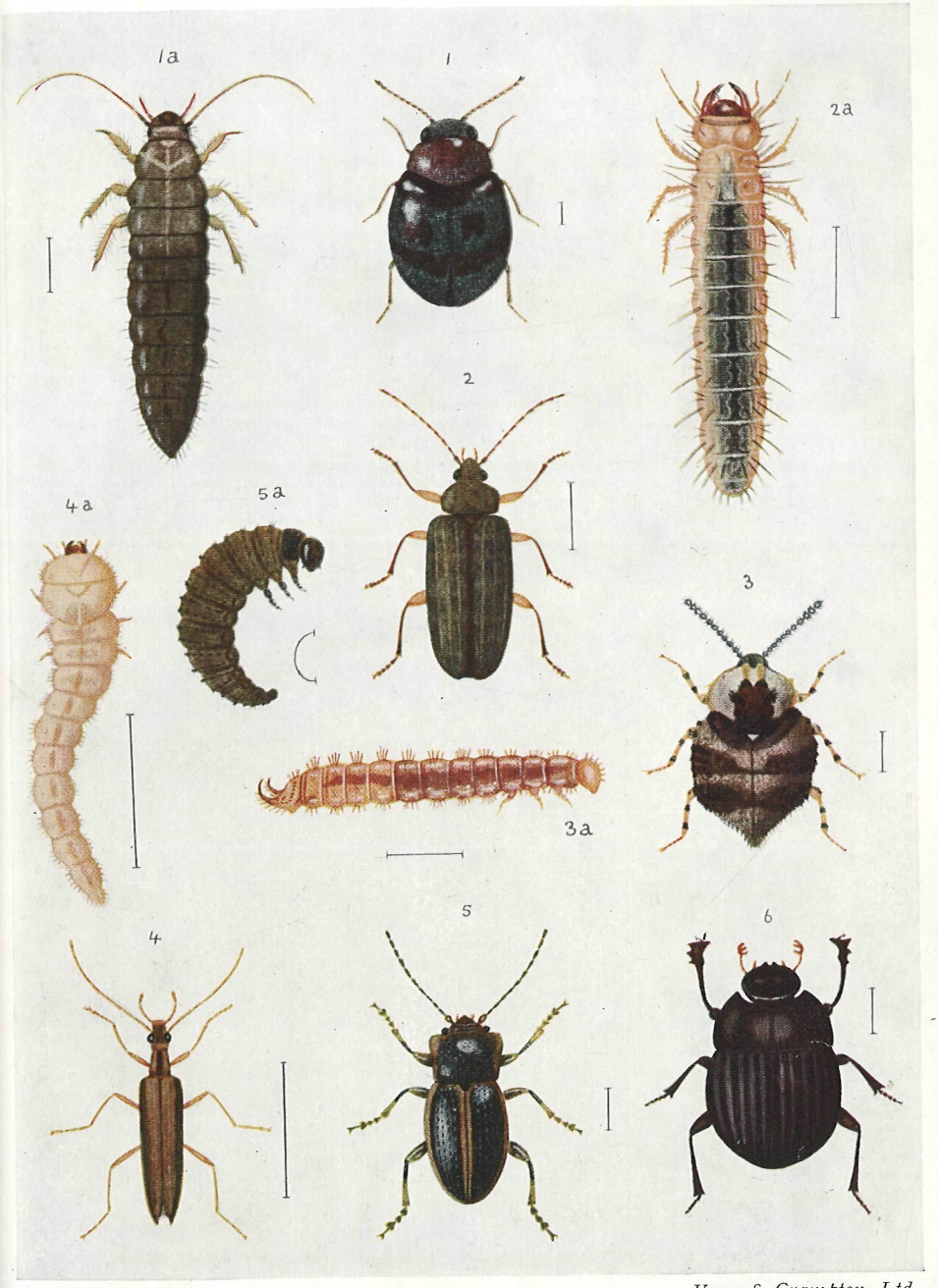
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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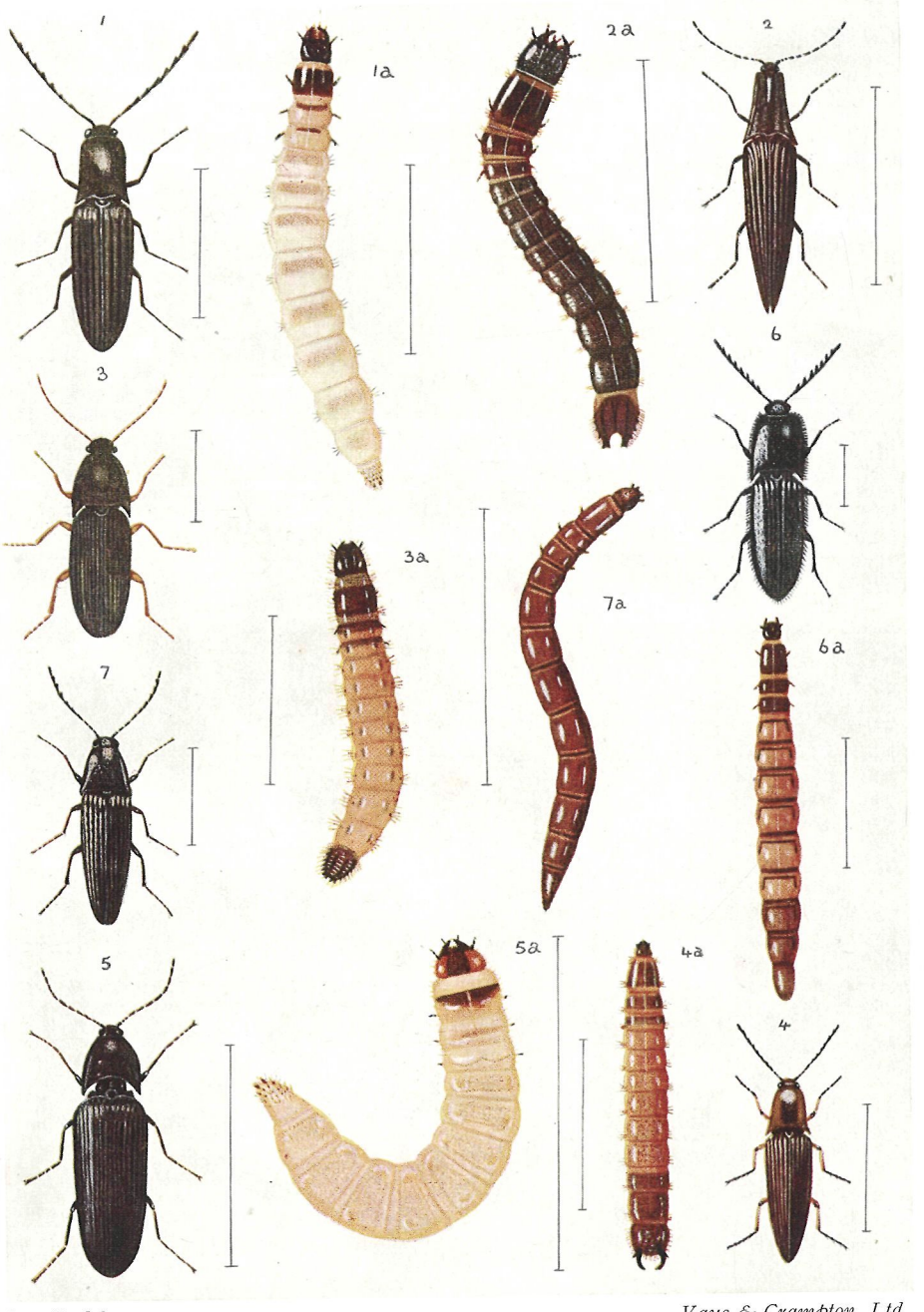
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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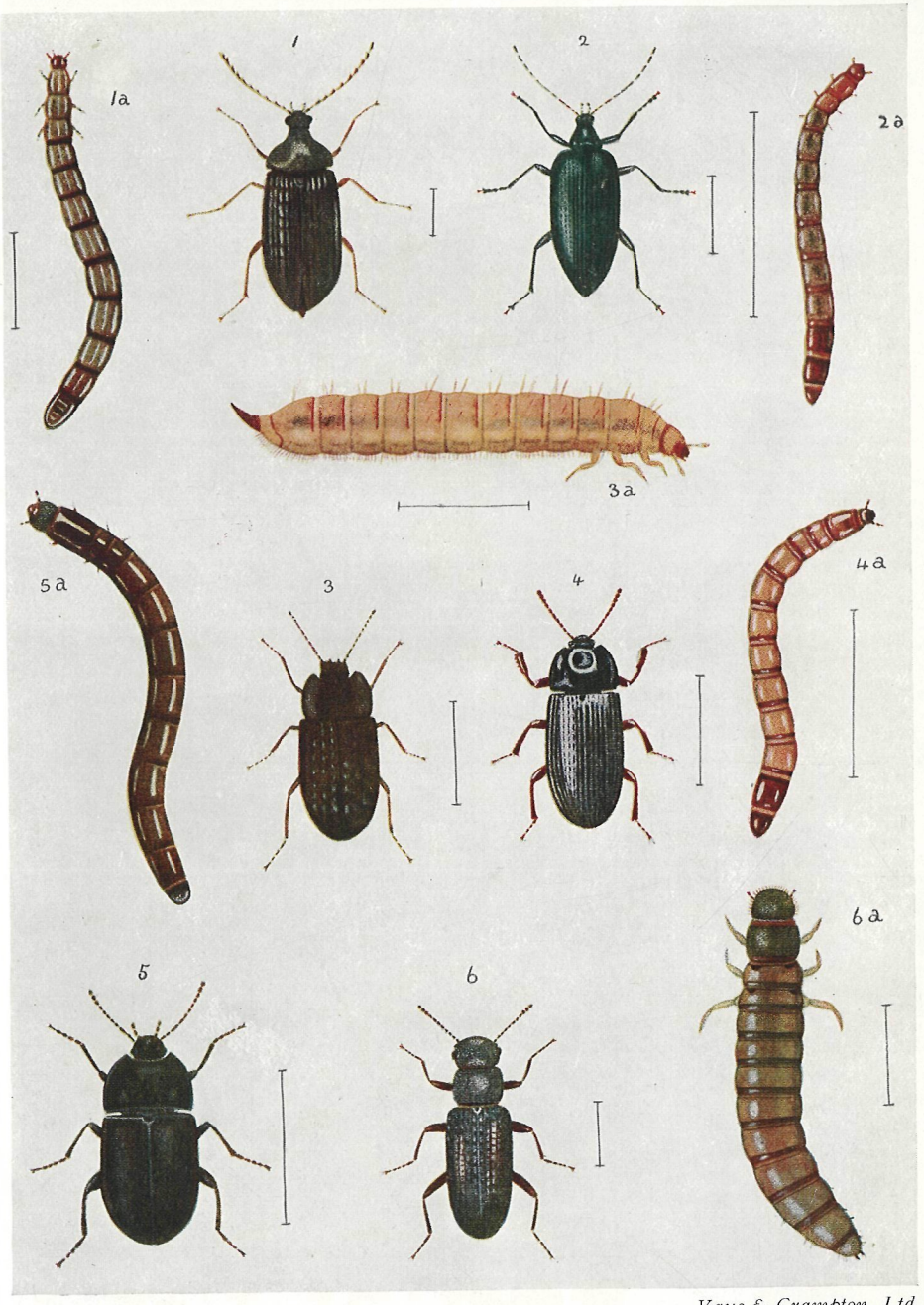
Family **CISTELIDAE.**

Family **TENEBRIONIDAE.**

All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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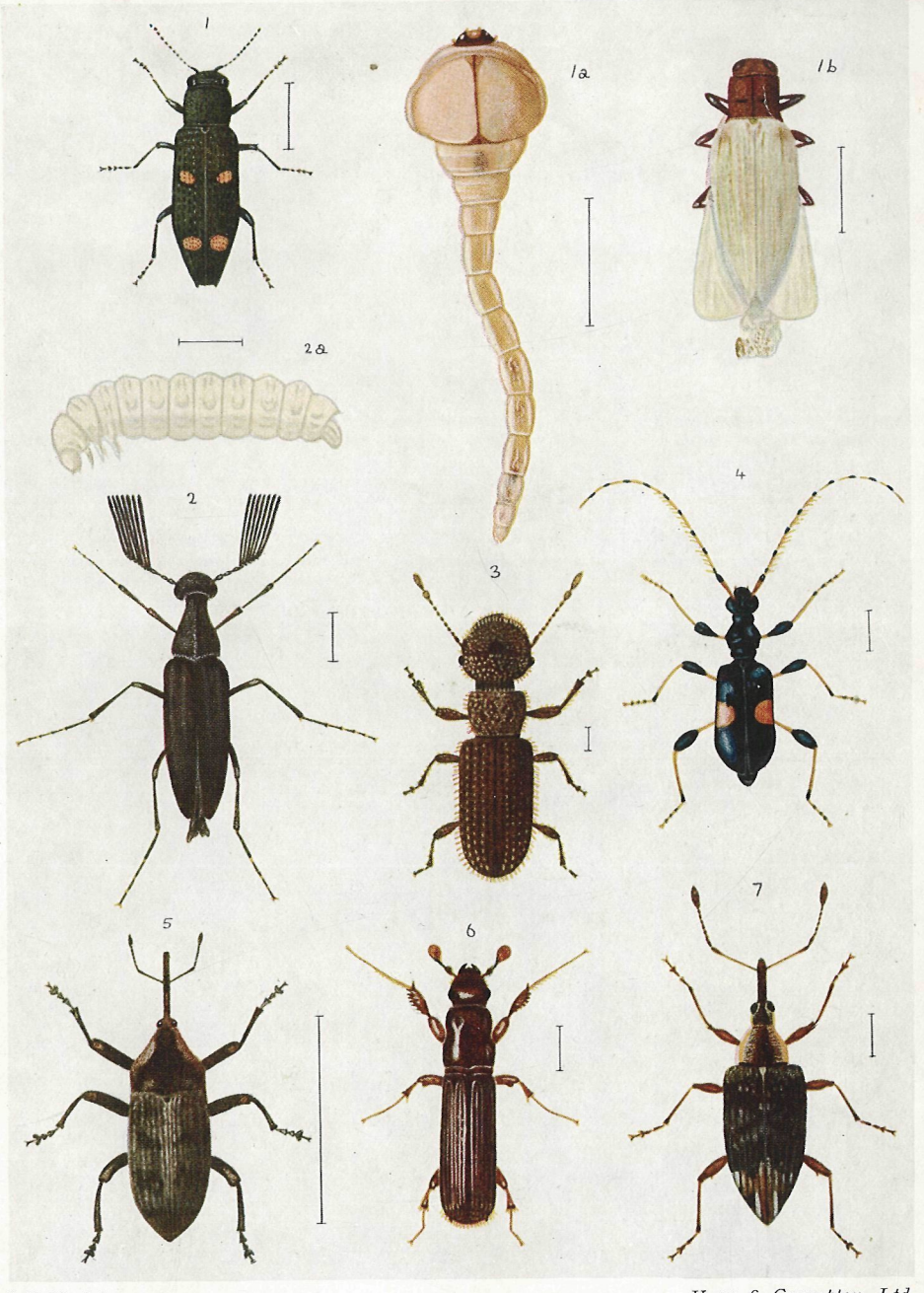
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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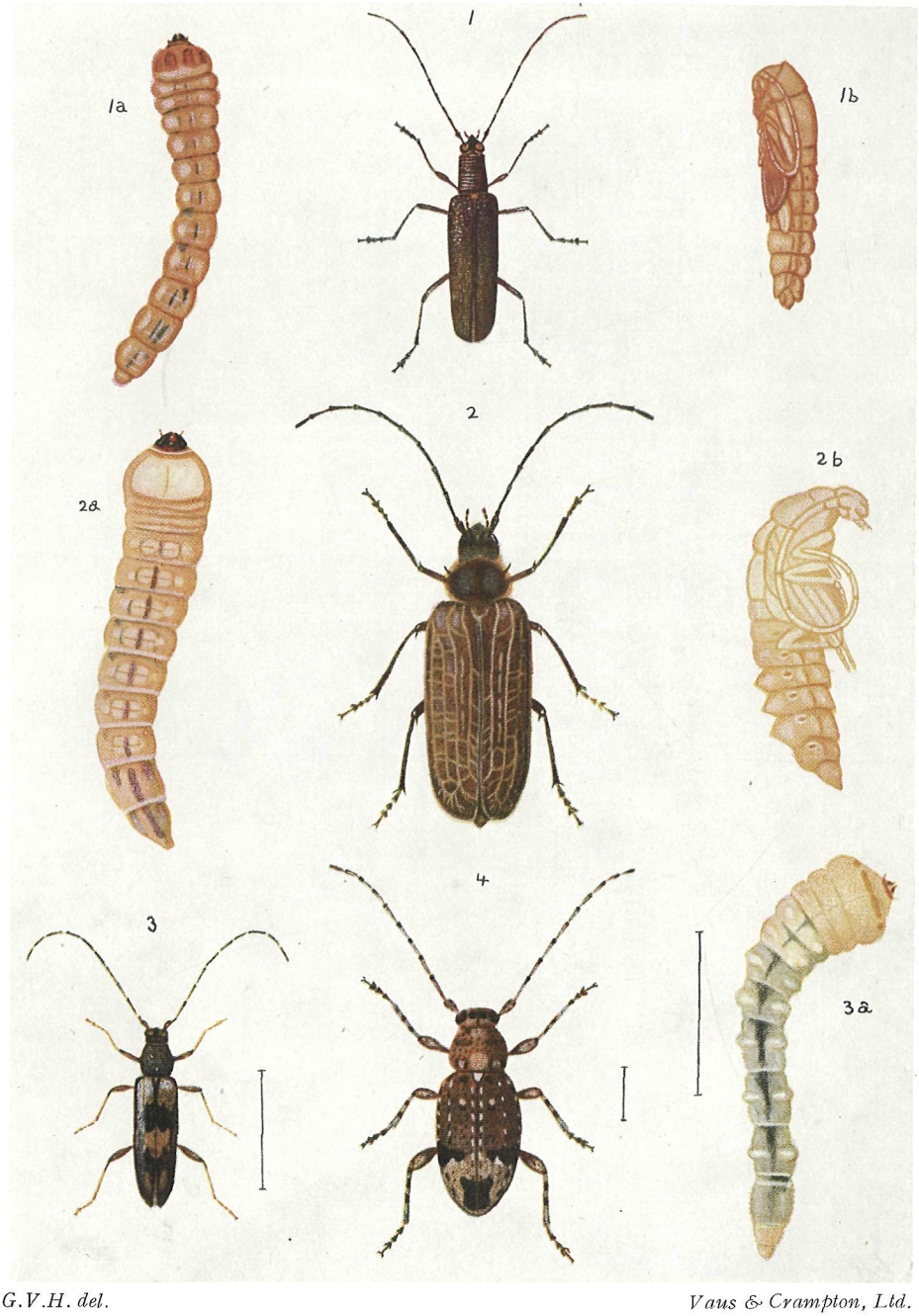
Family CERAMBYCIDAE.

(Longicorn Beetles.)

Figures 3, 3a and 4 are magnified. The natural length of each insect is shown by a line beside the figure.



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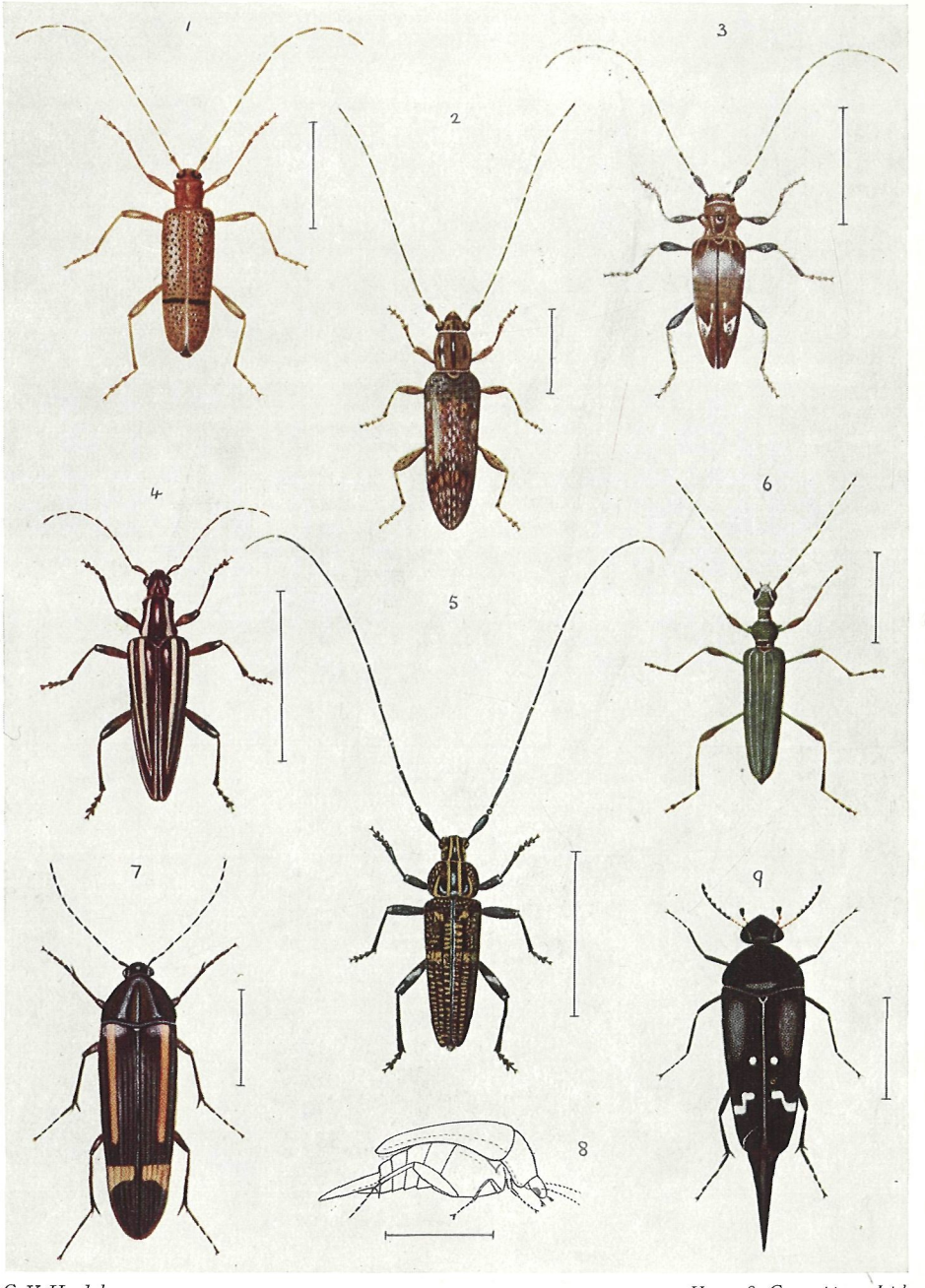
Family **CERAMBYCIDAE.**

(Longicorn Beetles.)

Family **MELANDRYIDAE.**

Family **MORDELLIDAE.**

All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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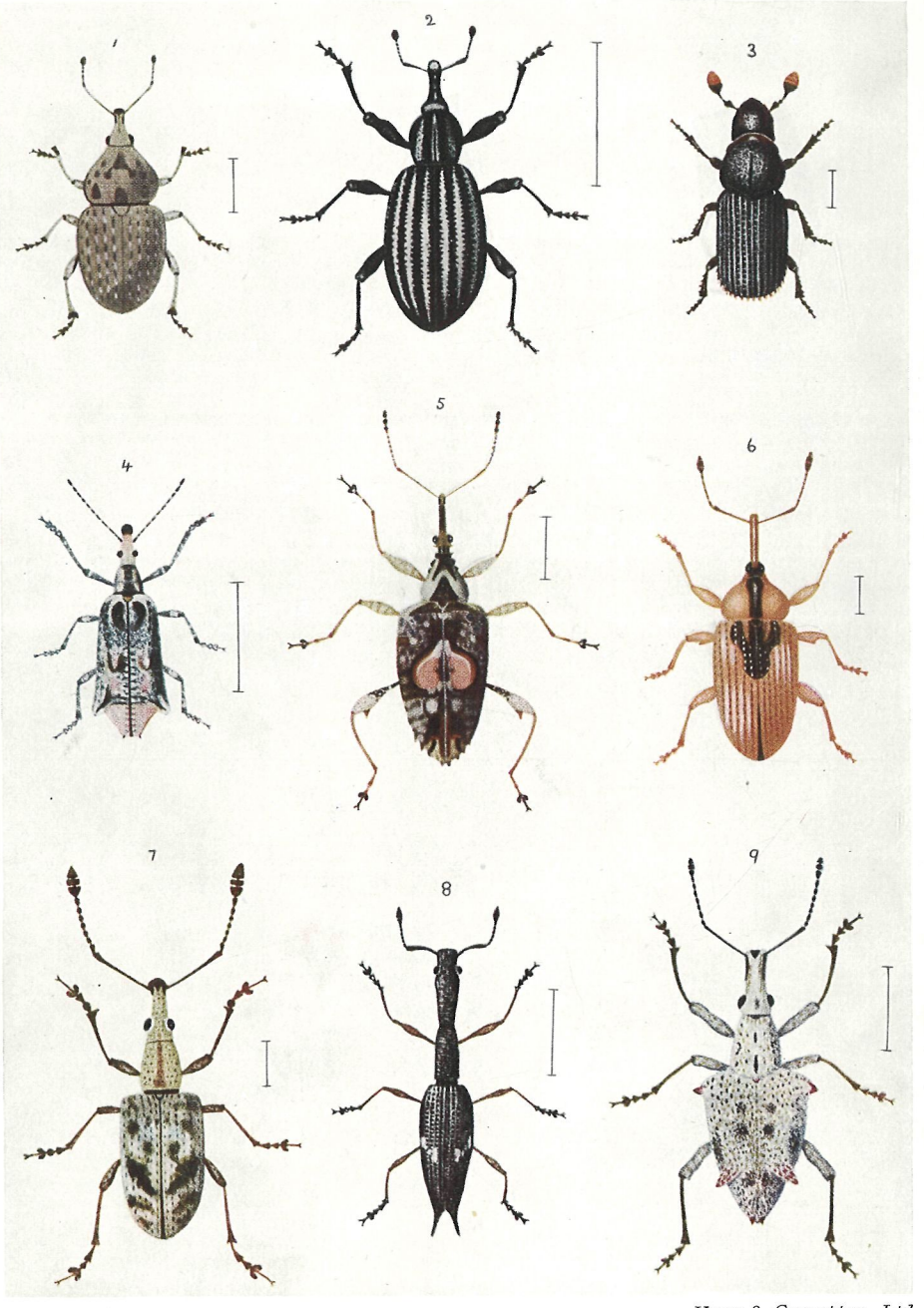
All the figures are magnified. The natural length of each insect is shown by a line beside the figure.



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All the figures are magnified. The natural length of each insect is shown by a line beside the figure.

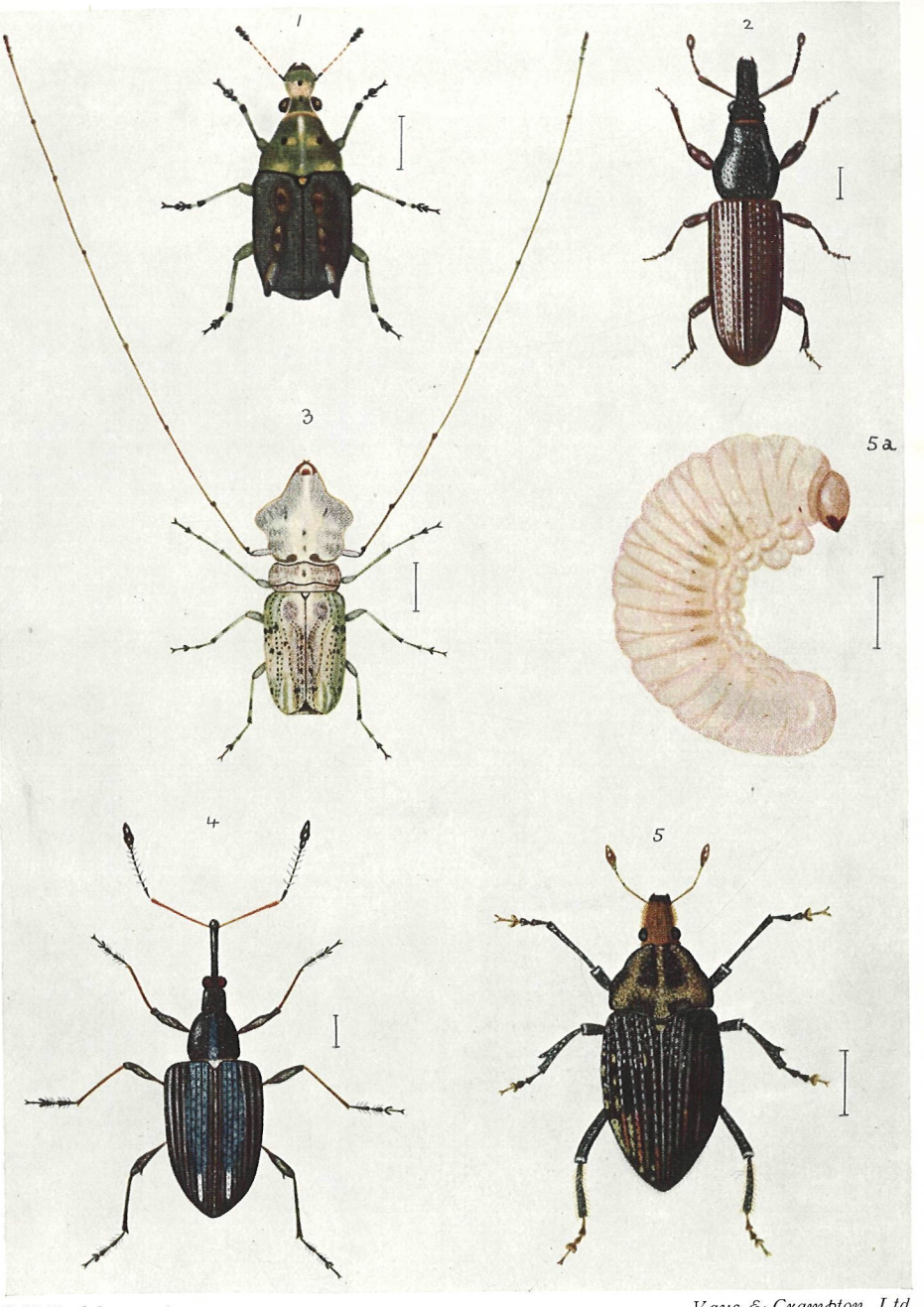

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PLATE XV.

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2.	Crisius binotatus	152
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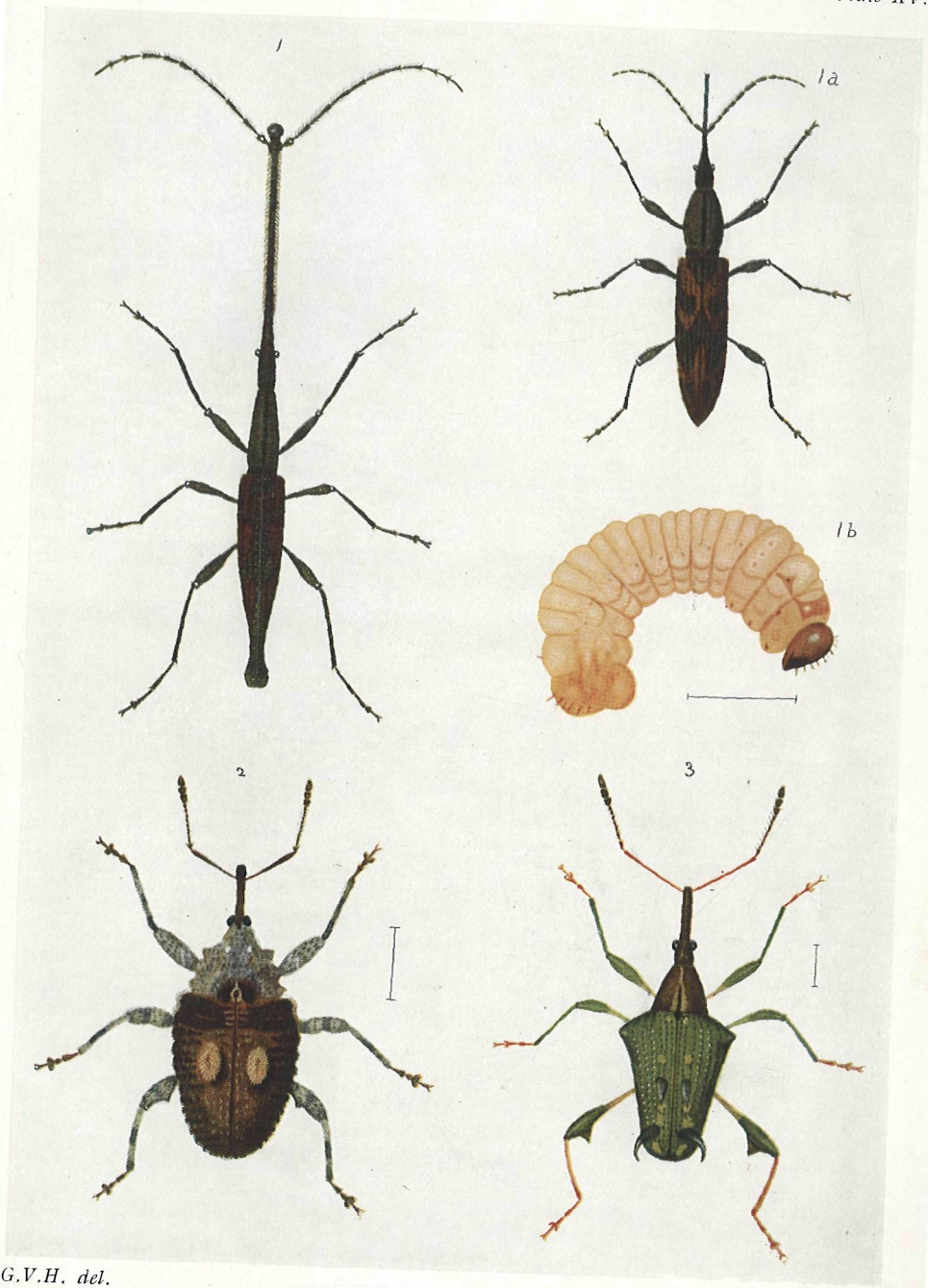
Figures 1b, 2 and 3 are magnified. The natural length of each insect is shown by a line beside the figure.



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(Stag Beetles.)

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Family **CURCULIONIDAE.**

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All the figures are magnified. The natural length of each insect is shown by a line beside the figure.

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(Stag Beetles.)

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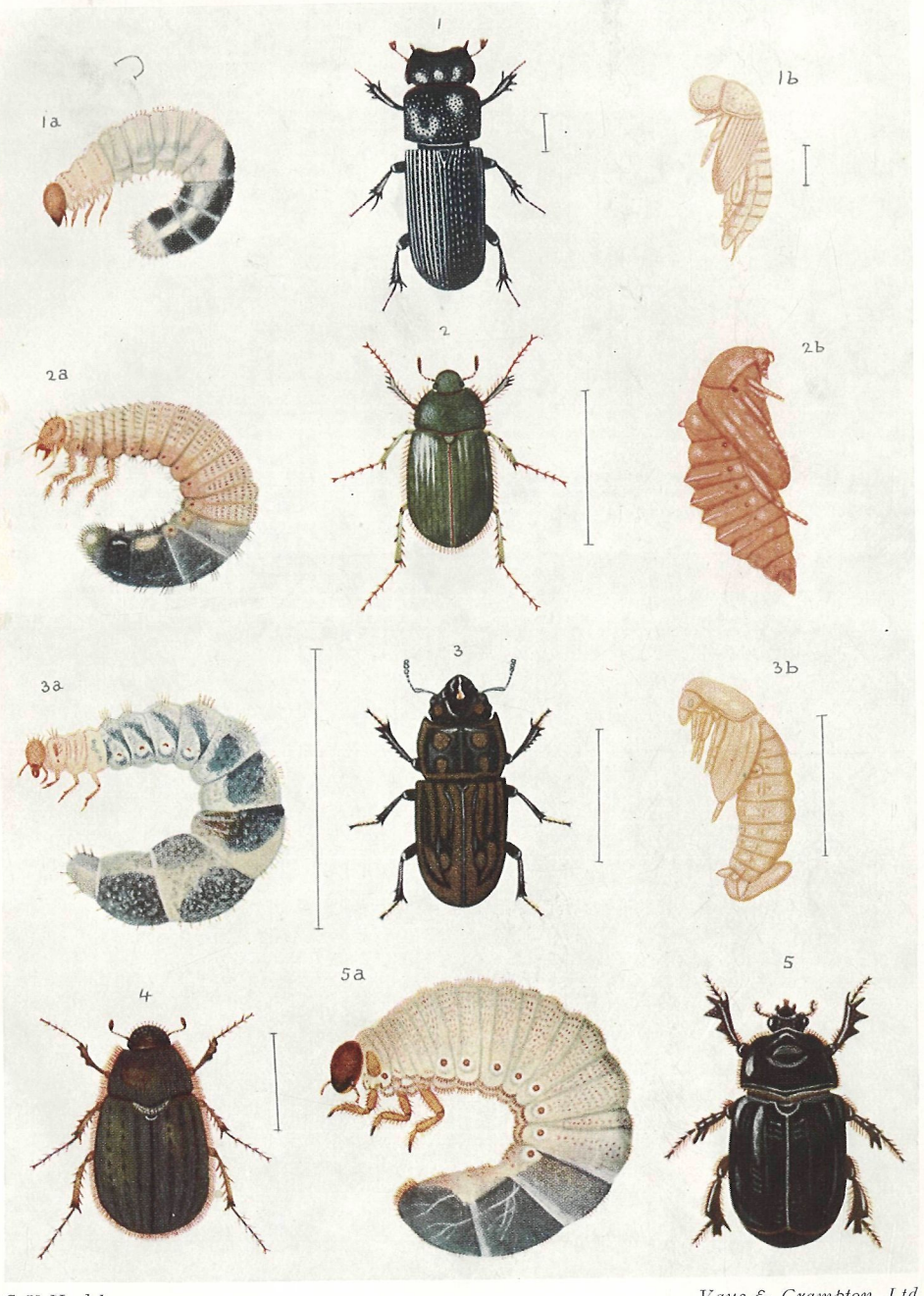
(Chafers, etc.)

Figures 5 and 5a are very slightly enlarged. All the other figures are magnified. The natural length of each insect is shown by a line beside the figure.



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