

ART. XXIV.—*Remarks on the Carabidæ of New Zealand.*

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Communicated by Professor Hutton.

[Read before the Philosophical Institute of Canterbury, 7th September, 1892.]

I HAVE not till now had the honour of addressing the members of the Philosophical Institute of Canterbury, but, as about one-half of the predaceous ground-beetles collected during the past year, and submitted to me for examination, belong to your district, I thought that a brief paper on the subject might be acceptable.

I may here state, for the information of those who have not the inclination or leisure to study entomology, that the group *Carabidæ* is one of the most highly developed of the order Coleoptera, and consists almost entirely of useful insects. I apply the term "useful" because the species subsist almost wholly on other insects, which they attack either on or in the ground, and on trees, and thus check the too rapid increase of many kinds of beetles, locusts, &c., which, if it were not for the presence of *Carabidæ*, would soon become better known even to those who care nothing for entomology as a study, but who do concern themselves with their fields of grass, crops, and trees.

It is becoming evident that all engaged in agricultural pursuits ought to make themselves acquainted with certain forms of insects, so that they could discriminate between useful and noxious kinds. I think that all such people should possess in their own houses, or in easily-accessible public buildings, at the least, a simple collection of typical species of both sorts. A small box about a foot square, filled with selected specimens, would in many cases afford more practical information than whole yards of printed matter.

Perhaps I may be permitted to record an incident that happened in my presence. I was staying at a farmer's house one night during a collecting-tour, and whilst talking to the hospitable farmer his wife came into the room in great glee, and informed her husband that she had at last killed "that horrid fly." I asked her to let me see the insect, which on examination proved to be one of the most valuable we possess—one of the *Ichneumonidæ*, which by means of its ovipositor inserts an egg into the body of a caterpillar or other soft-bodied creature. The egg soon hatches, and the larva feeds on the intestines of its host until nothing remains but the skin. This provides a comfortable dwelling-place for the ichneumon

during its metamorphoses, and in due time the imago emerges, prepared to do to some other insect what its mother had already done. I explained these matters to the worthy couple, and I feel sure that the farmer or his wife never molested one of these "horrid flies" again.

Another, but somewhat different, case was brought to my notice a short time ago. A gentleman in Canterbury sent me a specimen of an insect, asking me to name it for him. In his letter he informed me that an orchardist had given it to him, telling him that the beetle had been eating the scale-insects which infested his apple-trees. I at once informed the gentleman referred to that if the orchardist would carefully examine his fruit-trees later on he would find that the beetle was boring *into* some of his trees instead of ridding them of scale-insects. The beetle is a *Gonipterus*, a destructive weevil imported from Australia, most likely amongst the seeds or young plants of *Eucalypti*.

I have mentioned these facts in order that you may have some idea as to the kind of knowledge possessed, I fear, by very many individuals who hope to gain their livelihood by the cultivation of the soil, but who, it must be apparent, are likely to suffer heavy pecuniary losses through misdirected observation, neglect, and—may I add?—ignorance.

After this digression I shall endeavour to confine my remarks to the *Carabidæ*.

The new species discovered during the last collecting-season bear the following names:—

<i>Trichosternus crassalis</i>	..	No. 2434, Man. N.Z. Coleop.
<i>Pterostichus arduus</i>	..	No. 2435, "
" <i>scitipennis</i>	..	No. 2436, "
" <i>delator</i>	..	No. 2437, "
<i>Sympiestus oculator</i>	..	No. 2439, "
<i>Tachys oreobius</i>	..	No. 2441, "
" <i>cavelli</i>	..	No. 2442, "
<i>Oöpterus puncticeps</i>	..	No. 2440, "

The first-named species, *Trichosternus crassalis*, is the finest in New Zealand so far as we know at present. *Trichosternus antarcticus* was formerly considered the largest and typical species, but the new one is about one-third larger. It was found at Albury by Mr. W. W. Smith, of Ashburton. This gentleman has been kind enough to place at my disposal a good series of several species of *Carabidæ*, collected near Ashburton within the last two years. Amongst these are what I consider two or three varieties of *Trichosternus antarcticus*, which I believe to be common in the neighbourhood of Christchurch. If one of these varieties, the least like the typical form, be examined by itself by some one who has not most of the described species, it would, I have no doubt, be named as

a distinct species: this would certainly have been the result had it been sent to Europe. The other varieties in my cabinet, however, show that the extreme form is connected with the typical one. When more material can be accumulated I hope to be able to define these, and perhaps other varieties, in such a way that future workers will not mistake them for distinct species. The genus *Trichosternus* occurs in Australia as well as in New Zealand: it may be distinguished from the closely-allied *Pterostichus* by the presence of coarse hairs on the hind part of the prosternum; but, as these hairs are liable to be removed by accident, the chief, in fact the only, differentiating character assigned to this genus by Baron Chaudoir is not a very good one. I feel tolerably certain that I have in my collection several species of *Pterostichus* that are really *Trichosterni*, and they must stay as they are until quite perfect specimens can be obtained. As these insects live on the ground, it often happens that some damp soil adheres to them; this, on being cleaned off, carries away with it the distinguishing generic character.

The next on the list, *Pterostichus arduus*, was brought from Mount Arthur amongst other Coleoptera by Messrs. Cheeseman and Urquhart several years ago, but, as I had only one example, and that a female, I set it aside in the hope of getting a specimen of the other sex. As I have been unable to get one I have now described it.

*Pterostichus scitipennis* was found on Mount Pirongia, in the Waikato district, by Mr. A. T. Urquhart, the well-known writer on spiders. It is about half an inch long and nearly one-sixth in breadth, of a pure-black, rather glossy, and has beautifully-sculptured elytra, a circumstance that suggested its specific name. The specimen, a male, is unique as yet.

The third *Pterostichus*, *P. delator*, is another of Mr. W. W. Smith's novelties from Ashburton. It most nearly resembles *P. sinuellus*, which was discovered by Mr. H. Suter, a resident in your city and an able conchologist, at Dyer's Pass.

The genus *Pterostichus* is nearly cosmopolitan. The New Zealand species, now pretty numerous, have been divided into five sections as a key to identification, the number of setæ, or hairs, on each side of the thorax being adopted as the basis of classification. This key, or table, lies at Wellington awaiting publication, along with the descriptions of about six hundred new species of our Coleoptera. When published, the key will be very useful to any one who wishes to study our *Carabidæ*, but it has one defect—the lateral setæ may be rubbed off, and in such a case it would be difficult to determine the particular group or section in which the species under examination should be placed. Unfortunately it cannot be helped, as these hairs are the only means of grouping the species.

The next name on the list is *Sympiestus oculator*. One of this species was found on the Hunua Range, near Drury, by Mr. Koebele, the American entomologist. This is an endemic genus, and at present comprises three species, two of which were found in Canterbury and Westland. They are moderately small, oblong insects, with rather prominent eyes, and long, acuminate, terminal joints to their palpi. They seem to be rare.

*Tachys* (?) *oreobius* is one of those small *Carabidæ* that are so difficult to manipulate and locate in a satisfactory manner. Allied forms are numerous in most parts of the world. This species was brought from Mount Pirongia amongst leaf-mould by Mr. A. T. Urquhart, and I picked it out. It is less than the twelfth part of an inch in length, so you can imagine the difficulty of making a thorough examination of the organs attached to the mouth, and of ascertaining exactly the structure of the tarsi. When several specimens are available dissection can be resorted to, but when it is an important matter to mount and preserve the only specimen extant, or in cases where only one of each sex has been found, it is not advisable to break up either of them.

*Tachys cavelli* is a somewhat similar though larger species. One individual was found at Caplestone, in Westland, by Mr. A. T. Cavell, in whose honour I have named it. The country near Caplestone, formerly known as Boatman's, is one of the best collecting-grounds known to me, so far as I can judge by the material placed at my disposal.

The last species I have to refer to in this paper is *Oöpterus puncticeps*. I owe my specimen to the kindness of Mr. H. Suter, who found it at Port Hills. The genus is a "purely antarctic form," according to the late H. W. Bates, who was perhaps the greatest authority in Europe on the Geodephaga. The species are closely allied, and not at all easy to define accurately by description. They occur in the Auckland, Solledad, and Falkland Islands, which, as you are aware, are separated by wide oceanic expanses. This distribution is remarkable, as all the species are terrestrial in their habits, and, moreover, are without wings. I have at different times described several species, but the present one may be identified by the well-marked interocular punctures.

It is a comparatively easy matter to collect the members of this group. On turning over a log, especially one that has been lying on the ground for some time, some shining greenish-black, or pure-black, oblong insects will be seen. These are *Carabidæ*. They are mostly nocturnal in habit, and conceal themselves during daylight under decaying logs, under stones, and beneath loose bark. Those found under bark, as may be readily supposed, are usually small and rather flat; they are

also more prettily marked or variegated. As they soon show their activity when disturbed, the collector should be ready to secure them at once, otherwise they elude capture by hiding amongst the adjacent herbage, or by burrowing into the ground, where they form their nests. They should be put into a wide-mouthed bottle, about half-filled with the bruised leaves and twigs of the common laurel. This killing-material costs nothing, and can be prepared in a few minutes. Two or three leaves may be held on any flat iron—an old axe or tomahawk answers the purpose—with one hand, whilst a hammer held in the other soon reduces the leaves to a sort of pulp, which should be pressed into the bottle. When out collecting, two bottles should be carried, the “killing-bottle” and a reserve one. Every now and then the beetles should be turned out of the first—as soon as there are three or four dead specimens—as the living very often mutilate the dead, and spoil them as cabinet specimens, but by transferring them to the “reserve bottle” the risk of injury is greatly reduced. When sent to be named they should be packed amongst bruised laurel in common tin match-boxes, which generally form a sufficient protection during transit by post. The worst killing-material is, in my opinion, alcohol: it makes the insects brittle, so that any attempt to open the mandibles or “set out” the limbs results in damage. As the *Carabidæ* do not travel far, almost every separate locality produces some species peculiar to itself, and for scientific purposes it is important that they should be described before the progress of settlement dooms them to extermination. I hope some of the members of your Institute will take enough interest in the matter to respond to my appeal. I have seen very few beetles from Canterbury, and I shall be glad to name those that may be sent to me. The mountainous region will yield, I feel sure, a considerable number of interesting forms.\*

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\* For the systematic description of the foregoing species the reader is referred to page 1400, Part VII., of the “Manual of the New Zealand Coleoptera,” by Captain Thomas Broun; published by the New Zealand Institute, Wellington, 1893. This is a continuation of the same author’s Manual, published by the Museum Department, Part I., June, 1880; Part II., May, 1881; Parts III. and IV., April, 1886: 973 pages in all, and describing 1,756 species. Additional species, bringing up the number to 2,591, are described in Parts V.–VII., which will be issued concurrently with this volume of the Transactions.—J. H., Ed.