The Carabidae (Coleoptera) of New Zealand.

Part I. PTEROSTICHINI

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THE object of this paper is to present a revision of the Pterostichini of New Zealand. The Carabidae of the world are grouped into about fifty tribes, of which only fourteen are at present known to have representatives in New Zealand. I hope to be able to follow the present work with others on the remaining tribes.

I was led to undertake this revision by the fact that the types of the greater part of the described species of the New Zealand Carabidae are in the British Museum collections. The majority of the species were described by Major T. Broun, whose collection came to the British Museum as a bequest, in 1922. White and Sharp described many other species, the types of which are also available to me. The types of the species described by Dejean, Bates and Chaudoir are in the collections of Monsieur René Oberthür, and in order to study these I made a special visit to Rennes. I wish to take this opportunity of expressing my gratitude to Monsieur Oberthür for his hospitality and the great kindness shown to me during my visit.

I have now seen the types of all but six of the species referred to in this paper.

The most recent list (G. V. Hudson, *New Zealand Beetles and their Larvae,* 1934) includes about 160 species of Pterostichini, but the synonymy established in this paper reduces the number to 61 species.

The greater part of the synonymy has arisen, in the first place, because Broun was in many cases unable to identify the species described by those authors working in Europe. Secondly, Broun made no attempt to revise the many species of Carabidae described by himself, with the result that he not infrequently redescribed his own species under new names. In the present revision, the synonymy introduced has, in the great majority of cases, been verified by comparison of the male genitalia, which exhibit the most striking specific characters. Examination of the male genitalia of a series of individuals of the same species reveals a small range of individual variation which is, however, negligible in comparison with the differences between the genitalia of even closely allied species. It follows that the genitalia provide a reliable means of verifying synonymy and identification.

The male genitalia are perhaps most easily removed from dry pinned specimens by breaking the abdomen off by downward pressure

at its apex. The abdomen is then placed in boiling water for a short time, until the tissues are softened. An opening is made between the soft tergites of the upper side with a pair of needles, and the aedeagus removed through this. The aedeagus is then cleaned and mounted on a card attached to the pin, while the abdomen is gummed back in its place.

In species where a male has been available for dissection, an outline drawing of the male genitalia is given. In each figure, the upper drawing represents the aedeagus and paramere viewed from the side, while the lower drawing shows the apex of the aedeagus seen from above, to show its shape and degree of expansion. An outline drawing of the pronotum is also given for most species, for in my opinion an accurate figure is of more value than any description, however lengthy. Of all the external characters, the pronotum shows the most obvious specific differences, so that the figures should be of use in checking determinations. Four drawings of the whole insects are included to show the general appearance of the New Zealand Pterostichini.

For the convenience of those interested in the fauna, but who have no special knowledge of the Carabidae, I give a key to the fourteen tribes which are known to occur.

The biogeographical relations of the fauna are not dealt with here, as such facts can be expected to emerge only from monographs on complete systematic units, covering the whole range of distribution. Of the nine genera which I have recognised, seven are indigenous, while the other two, *Rhytisternus* and *Laemostenus,* each represented by only one species, have been introduced in recent times.

My best thanks are due to Mr. G. V. Hudson, who has helped me with the publication of this paper, and by his very generous gifts of insects to the British Museum. I am also indebted to Mr. C. E. Brookes, Dr. R. Jeannel and Dr. S. L. Straneo for sending me valuable material for examination. Lastly, I must thank Mr. G. E. Bryant, Mr. J. Balfour-Browne, Dr. F. van Emden, and Mr. J. F. Perkins for their opinions on various points in connection with the work.

KEY TO THE TRIBES OF CARABIDAE OCCURRING IN NEW ZEALAND.

1		Middle coxae not completely enclosed by the sterna; mesepimera reaching the coxal cavities between the mesepisternum and the metasternum....(Carabinae)	2
		Middle coxae completely enclosed by the sterna; mesepimera not reaching the coxal cavities..(Harpalinae)	4
2	(1)	Clypeus without a seta at each anterior angle.	Pamborini
		Clypeus with a seta at each anterior angle.	3
3	(2)	Body not pedunculate; a seta in the outer hollow (scrobe) of the mandible.	Migadopini
		Body not pedunculate; without a seta in the scrobe of the mandible.	Scaritini
4	(1)	With a seta in the outer hollow side (the scrobe) of the mandible; or with a tuft of two or more setae arising from the posterior supraorbital puncture.	5
		Without a seta in the scrobe of the mandible, and never with more than one seta arising from the posterior supraorbital puncture.	9

5 (4) Body pedunculate, prothorax connected with the rest of the body by a prolongation of the mesothorax bearing the scutellum; only one (the posterior) supraorbital puncture present on each side, this bearing two or more setae; mandible with or without a seta in the scrobe; large, usually much more than 10 mm. in length. .. .. Broscini

Body not pedunculate; head with two supraorbital punctures, each bearing only one seta; mandible always with a seta in the scrobe; small, always less than 10 mm. in length. 6

6 (5) Terminal segments of the palpi very small and sharp-pointed (subulate). .. .. Bembidiini

Terminal segments of the palpi not differing markedly in size from the penultimate segments. 7

7 (6) Elytra having an inner fold which visibly interrupts the margin in the emargination near the apex; frontal furrows of the head not extending back beyond the posterior margin of the eyes. 8

Elytra with or without an inner fold, but never with it visible at the margin near the apex; frontal furrows of the head extending right around the eyes. .. .. Trechini

8 (7) Maxillary palpi with the penultimate segments hairy; tarsi hairy above; usually with a short carina near the basal angles of the pronotum; front tarsi in the male with two basal segments assymmetrically expanded, with a tooth on the anterior edge of each. Merizodini

Maxillary palpi with the penultimate segments bare; tarsi bare above; pronotum without a carina near the basal angles; front tarsi in the male with three basal segments slightly expanded and symmetrical. .. Nomiini

9 (4) Mandibles short and thick, truncate or emarginate at the apex; clypeus more or less emarginate, often assymmetrical, generally exposing the basal membrane of labrum. .. .. Licinini

Mandibles entire and moderately sharp at the apex, basal membrane of the labrum not exposed. 10

10 (9) Head with one supraorbital setiferous puncture on each side; no setiferous puncture at the posterior angle of the pronotum on each side; the four basal segments of the anterior tarsus expanded in the male. .. .. Harpalini

Head with two setiferous punctures on each side, very rarely without a setiferous puncture at the posterior angles of the pronotum; three basal segments of the anterior tarsus expanded in the male. 11

11 (10) The apices of the elytra rounded off together in a single curve; not truncate; the terminal segment of the abdomen normally covered. 12

The elytra transversely, or more or less obliquely truncate at their apices; the terminal segment of the abdomen always visible. 13

12 (10) Mentum with a bifid tooth; elytra with an inner fold visibly interrupting the margin each side in an emargination near the apex. .. .. Pterostichini

Mentum with a simple tooth; inner fold of the elytra not visible in the emargination near the apex. .. Anchomenini

13 (11) The mentum attached at the base to a projecting submentum; head not sharply constricted behind the eyes; pronotum cordiform; mandible with outer hollow. .. Lebiini

The mentum attached at the base to the submentum which does not project; head very sharply constricted behind to a narrow neck; pronotum more or less pentagonal; mandibles with no outer hollow. .. Pentagonicini

No species of the Australian tribe *Pamborini* has yet been described from New Zealand, but amongst the Carabidae which were kindly sent to me by Mr. C. E. Brookes was a single imperfect specimen of a new genus and species of this tribe, taken in 1933 at Waimatenui, Kaikohe, in North Auckland, on an isolated mountain. The specimen is in the collection of Mr. E. Fairburn.

I anticipate that this species will be described when more material has been obtained, and for this reason I have included the tribe in the key.

The characters which distinguish the Pterostichini are as follows: head with two setae above each eye; mentum with a bifid tooth; the paraglossae extending beyond the glossa, which has two setae at the apex (fig. 78); the penultimate segments of the labial palps bearing two setae on the inner side; terminal segments of the palps ovoid, truncate at their apices; antennae with the first three and part of the fourth segments bare, hairy beyond; the sides of the elytra emarginate towards their apices with an internal fold appearing in the emargination interrupting the margin; the tibiae of the front legs strongly dilated apically; the three basal segments of the tarsi of the front legs in the male symmetrically expanded and clothed beneath with two rows of lamellae.

In his work on the Carabidae of Tasmania, Sloane (*Proc. Linn. Soc. N.S. Wales,* 1920, XIV, p. 152), includes the Nomiini in the Pterostichini. The importance of the mandibular seta has, however, been stressed by van Emden (*Ent. Blätt.,* 1936, p. 41), who has shown a correlated character in the presence of setae on the parameres of the male genitalia. These genera with a scrobal seta should therefore be excluded from the Pterostichini and transferred to the Nomiini.

Genera and Species to be Excluded.

The following genera and species have been described from New Zealand, but for various reasons are excluded from the present work.

Prosopogmus Chaudoir, 1865, *Bull. Soc. Nat. Mosc.,* XXXVIII, iii, p. 92.

Described on the species *P. impressifrons* Chaudoir; locality "Nouvelle Zélande." This species, the type of which I have examined, occurs in Australia, as do other species of the genus. I have seen no examples of the genus from New Zealand, and the species has certainly not been redescribed under any other name. Doubt is therefore thrown on the original record and I have omitted the species from the New Zealand list.

Rhabdotus reflexus Chaudoir, 1865, *Bull. Soc. Nat. Mosc.,* XXXVIII, iii, p. 94.

The original locality of this species was given as New Zealand. The type is identical with examples from Tasmania. As there are no other New Zealand records of the species, the original record may be regarded as an error, as was suggested by Bates (*Ann. Mag. Nat. Hist.,* 1874, LXXV, p. 246).

Molopsida polita White, 1846, in Richardson and Gray, *Voy. Erebus and Terror,* Ins., p. 6; Broun, 1880, *Man. New Zeal. Col.,* I, p. 43.

This species has always been considered to be a Pterostichine, but I find that the type is identical with that of *Tarastethus laevicollis* Broun (Nomiini). *Tarastethus* Sharp, 1883 (*Ent. Mo. Mag.,* XX, p. 23) therefore becomes a synonym of *Molopsida* White, 1846.

Molopsida polita White, 1846=*Tarastethus laevicollis* Broun, 1903, Sharp, 1883 (n.syn.).

Selenochilus piceus (Blanchard, 1853).

The excellent description of this genus and species by Chaudoir (*Bull. Soc. Nat. Mosc.,* 1878, LIII, ii, p. 18) leaves no doubt that it is synonymous with *Sympiestus syntheticus* Sharp, 1886. It must be referred to the tribe Nomiini.

Selenochilus piceus (Blanchard, 1853) Chaudoir, 1878=*Sympiestus syntheticus* Sharp, 1886 (n.syn.).

Drimostoma antarctica Castelnau, 1867, *Notes on Australian Coleoptera,* p. 113; *Trans. R. Soc. Vict.,* VIII, 1868, p. 199; Bates, 1874, *Ann. Mag. Nat. Hist.* (4), XIII, p. 242; Broun, 1880, *Man. New Zeal. Col.,* I, p. 30; Sloane, 1898, *Proc. Linn. Soc. N.S. Wales,* XXIII, p. 472.

According to Bates, Chaudoir suspected this species to be an *Abacetus* or *Drimostoma,* having a deep linear impression on each side of the base of the pronotum. Sloane, however, considered it to be a species of *Tropidopterus.*

Prof. de Beaux assures me that the types of this and the following species are not in the Genoa Museum and suggests that they will probably be found in the Howitt Collection, which is in the National Museum, Melbourne.

Drimostoma striato-punctata Castelnau, 1867, *Notes on Australian Coleoptera,* p. 113; *Trans. R. Soc. Vict.,* VII, p. 199; Sloane, 1898, *Proc. Linn. Soc. N.S. Wales,* XXIII, p. 471.

This species was synonymised with *Mecyclothorax insularis* (Motchulsky, 1864) by Bates (1874, *Ann. Mag. Nat. Hist.* (4), XIII, p. 242), although Sloane considered this a mistake. Judging from the description, I am content to recognise the synonymy.

Cerabilia Castelnau, 1867, *Notes on Australian Coleoptera,* p. 116; *Trans. R. Soc. Vict.,* VIII, 1868, p. 202; Broun, *Man. New Zeal. Col.,* I, 1880, p. 44.

Through the kindness of Dr. S. L. Straneo, of Parma, I have been able to examine a specimen from the Genoa Museum, which I believe to be the type of *Cerabilia maori* Castelnau. It bears the label " N.Z. Dunedin," in the handwriting of Castelnau, the exact locality given in the description. It agrees perfectly with the description, except that there is a tooth on the mentum. The types of the Australian species described in the same work are in the Genoa Museum and have been studied by Dr. Straneo. It is therefore to be expected that the type of *Cerabilia maori* would be found in the same place, but search has failed to reveal a specimen bearing a determination label. The specimen which I have examined must certainly occupy a distinct

genus, and the description applies to no other New Zealand carabid known to me. In view of these facts I accept the example as the type of *Cerabilia maori*. The species was described in the Pterostichini, but I find that it must be transferred to the Anchomenini, as the inner fold of the elytra does not appear in the apical emargination and interrupt the margin, while the tooth of the mentum is simple.

Broun described two species in this genus, but examination of the types shows that *C. punctigera* Broun is synonymous with *Holcaspis sternalis* Broun, while *C. ruficornis* Broun is, in reality, a species of *Selenochilus* (Tribe Nomiini).

Alogus monachicus Motchulsky, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, iv, p. 245; Broun, *Man. New Zeal. Col.*, I., 1880, p. 43.

From the description this species must belong to the Pterostichini, and probably to *Holcaspis*, but it is impossible to determine it with certainty.

Holcaspis edax Chaudoir, 1878, *Bull. Soc. Nat. Mosc.*, LIII, ii, p. 69.

The species cannot be identified from the description. I therefore omit it until such time as it can be accurately identified.

Holcaspis pantomelas (Blanchard, 1853) *Voyage au Pôle Sud*, Zool., IV, p. 27, pl. 2, f. 6 *(Argutor)*; Tschitscherin, 1901, *Rev. Russe d'Ent.*, p. 47.

Omaseus sylvaticus Blanchard, 1853, *Voyage au Pôle Sud, Zool.*, IV, p. 29, pl. 2, f. 5; Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, iii, p. 102; Broun, 1880, *Man. New Zeal. Col.*, I, p. 38.

Localities: Auckland Islands and Akaroa.

The types are lost and it is impossible to identify the species from the descriptions or figures. The length is given as 8–9 mm. It is highly probable that the species has been redescribed under another name by one of the later authors. I have, nevertheless, seen no examples of any species of *Holcaspis* less than 10 mm. in length, so that it seems probable that it is not a species of that genus.

Distribution.

With regard to the distribution of the species in New Zealand little can be said on the small amount of available material, but it appears that the majority have a comparatively restricted range. It may be observed that while 40 species are found in the South Island, only 14 occur in the North Island, and 3 species are found on both sides of the Cook Strait. It is certain that a more detailed knowledge of the distribution of the species of Carabidae in New Zealand would be of exceptional interest and would throw light on the evolution of endemic species. This is, however, a work which entomologists resident in the country can best undertake. In this paper I include only the localities of those examples which I have seen and identified. The number of examples examined is given for each species.

All figures of pronotum and aedeagus, respectively, are made to the same scale.

KEY TO THE GENERA OF PTEROSTICHINI OCCURRING IN NEW ZEALAND.

1 With a series of setiferous punctures on the 7th elytral interval. .. .. *Megadromus*
With no setiferous punctures on the 7th elytral interval. 2

2 (1) Basal segment of the antennae flattened or hollowed dorsally; inner side of the posterior tibiae in ♂ prolonged at apex. .. .. .. *Zeopoecilus*
Basal segment of the antennae rounded; posterior tibiae in ♂ without apical prolongation. .. 3

3 (2) Dorsal surface of all tarsal segments longitudinally grooved. .. .. *Aulacopodus* gen.n.
Dorsal surface of all tarsal segments smooth. .. 4

4 (3) Hind wings absent; elytra soldered together along the suture. 5
Hind wings present; elytra free, not soldered at suture. 7

5 (4) Mentum with a deep pit on each side towards the base (see fig. 78); 3rd elytral interval often with one or more setiferous punctures. .. . *Holcaspis*
Mentum without such a pit on each side; 3rd elytral interval always without setiferous punctures. 6

6 (5) With a group of long setae on the prosternum; the setiferous punctures of the marginal series of the elytra numerous and regularly spaced, not grouped towards apex and base. .. .. *Plocamostethus* gen.n.
Without setae on the prosternum; the setiferous punctures of the marginal series of the elytra less than 20 in number, more closely grouped at apex and base than in the middle. .. .. *Neoferonia* gen.n.

7 (4) Pro-episterna finely striated; scutellar striole absent; striae unpunctured; striae 6 and 7 indistinct towards the base. .. .. .. *Rhytisternus*
Pro-episterna smooth; scutellar striole present at the base of the first interval; all striae equally distinct. 8

8 (7) Posterior face of the extremity of the prosternum not longitudinally compressed to form a sharp keel; upper surface of all tarsi bare. .. .. *Psegmatopterus*
Posterior face of the extremity of the prosternum longitudinally compressed, forming a sharp vertical edge; upper surface of all tarsi pubescent. .. .. *Laemostenus*

Genus MEGADROMUS Motchulsky.

Bull. Soc. Nat. Mosc., 1865, XXXVIII, IV, p. 249.

Genotype: *Megadromus antarcticus* (Chaudoir) = (*viridilimbatus* Motchulsky) *loc. cit.* (monotypic genus).

Trichosternus Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, iii, p. 70 (in part).

Nesopterostichus Tschitscherin, 1902, *Horae Ent. Soc. Ross.*, XXXV, p. 521.

Pterostichus Broun, 1893, *Man. New Zeal. Col.*, V, p. 986 (*non* Steph.).

Megadromus was erected by Motchulsky in 1865 on one species, *M. viridilimbatus*, from New Zealand. This species had been described earlier in the same year by Chaudoir, who placed it in the Australian genus *Trichosternus* under the name *T. antarctica*. In 1902, Tschitscherin created the subgenus *Nesopterostichus* to include all New

Zealand species of the genus *Trichosternus*. This must include *Megadromus antarcticus* (Chaudoir), so that *Nesopterostichus* Tschitsch. becomes a synonym of *Megadromus* Motch.

Examination of the species of *Megadromus,* however, shows that this cannot continue to be regarded as a subgenus of *Trichosternus,* for although the majority of the species have a group of setae on the extremity of the prosternum, like the Australian *Trichosternus,* they differ markedly in possessing a series of bristle-bearing punctures on the seventh elytral intervals. They differ also in that the setiferous punctures of the marginal series of elytra are well developed, whereas in the Australian *Trichosternus* they are greatly reduced. If the prosternal setae are to be considered of generic importance, correlated generic distinctions should be observed between the types of male genitalia of the two groups of species of *Megadromus.* Among the species of *Megadromus,* that is, those New Zealand species with a series of punctures on the seventh interval, there are forms with and others without prosternal setae. It follows that if the presence of prosternal setae is to be considered of generic importance, then correlated difference should be observed between these two groups of species. No such differences actually exist. There is no discontinuity between the types of the male genitalia of the two groups. The character given by the prosternal setae may therefore be discounted in favour of that of the series of punctures on the seventh interval. The species showing this character have a characteristic facies and distinct type of male genitalia. These species form the genus *Megadromus.*

Generic Description: Length 17–35 mm.; colour metallic green, aeneous, brown or black. The pronotum is transverse and usually more or less cordiform, normally with two setae in the marginal groove on each side, sometimes with four or five. The elytra are bordered at the base and the shoulders are dentate; striae obvious, faintly punctured; scutellar striole faint; intervals usually moderately convex, the third usually with at least three setiferous punctures. The majority of species have no punctures on the fifth interval. The seventh interval has always a series of setiferous punctures. The number of punctures on any one interval is variable. One or two punctures sometimes appear in the fifth interval, in individuals of species which are normally without (e.g. *M. sandageri, M. optabilis*). A group of setae is present on the extremity of the prosternum in about one half of the species.

The aedeagus is only slightly assymmetrical and the apex not expanded. The right (ventral *in situ*) paramere is usually hooked and is almost as long as the aedeagus. The left (dorsal) paramere is of the discoidal form usual in Pterostichini.

Hindwings are absent and the elytra are soldered together along the suture.

KEY TO THE SPECIES OF *Megadromus.*

1 With 4 or 5 setiferous punctures in the marginal groove on each side of the pronotum. 2
With 2 setiferous punctures in the marginal groove on each side of the pronotum. 4

2	(1)	With no setiferous punctures on the 3rd elytral interval.	*vigil* (White)
		With 2 or more setiferous punctures on the 3rd elytral interval. 3	
3	(2)	Very large, over 28 mm. long; the 3 setiferous punctures of the 5th interval situated in the apical half only; eyes small but projecting.	*lobipes* (Bates)
		Smaller, less than 23 mm. long; the 4 setiferous punctures of the 5th interval not restricted to the apical half; eyes small and not projecting beyond the curve of the surface of the head.	*turgidiceps* (Broun)
4	(1)	Very large and robust; more than 28 mm. long; intervals 3, 5 and 7 twice as wide and much more convex than the others, broken into elongate bullae by the wide depressions in which are the setiferous punctures; the 5th interval with 4 or more punctures. ..	*bullatus* (Broun)
		Smaller, usually less than 25 mm. in length; intervals 3, 5 and 7 not differing from the others in width and convexity; the 5th interval usually without setiferous punctures, but never with more than 3. 5	
5	(4)	Prosternum bearing a number of setae at its extremity; colour usually metallic green. 6	
		Prosternum without setae; colour shining black or metallic. 7	
6	(5)	Colour bronze; elytra shining near the suture, dull towards the margins and apex; intervals strongly convex, the 5th usually with one or more setiferous punctures.	*australasiae* (Guérin)
		Colour usually metallic green, especially at margins of pronotum and elytra; the 5th interval always without setiferous punctures. .. ..,	*antarcticus* (Chaudoir) group of species
7	(5)	Elytral intervals quite flat, striae faint; the 5th elytral interval with 1 or 2 setiferous punctures; length 19 mm.; colour black.	*vagans* (Broun)
		Elytral intervals more or less convex, never flat; striae well marked; the 5th elytral interval rarely with any setiferous punctures. 8	
8	(7)	Colour shining black; large, 25–28 mm. in length. ..	*sandageri* (Broun)
		Colour metallic green, aeneous or coppery; smaller, 17–23 mm. in length. 9	
9	(8)	Elytral intervals strongly convex; sides of the pronotum strongly and uniformly curved from the apex almost to the base, where there is a sharp sinuation (fig. 73).	*memes* (Broun)
		Elytral intervals slightly to moderately convex; sides of the pronotum with an elongate sinuation in front of the posterior angles, or straight, with no sinuation. 10	
10	(9)	Small, length 17–18 mm.; colour aeneous green; posterior angles of the pronotum rather obtuse; sometimes with a setiferous puncture in the middle of the 5th elytral interval.	*optabilis* (Broun)
		Larger, length 18–23 mm.; colour dark metallic green, pronotum with coppery reflections; posterior angles of the pronotum square; the 5th elytral interval never with a setiferous puncture in the middle. 11	
11	(10)	Hook of the ventral paramere slender, long and slightly curved (fig. 23)	*fultoni* (Broun)
		Hook of ventral paramere very short, conical (fig. 24).	*meritus* (Broun)

Megadromus vigil (White, 1846), in Richardson and Gray, *Voyage of the Erebus and Terror,* Ins., p. 3 *(Feronia);* Broun, 1880, *Man. New Zeal. Col.,* I, p. 41.

Pterostichus difformipes Bates, 1878, *Ent. Mo. Mag.,* 14, p. 191; Broun, 1880, *Man. New Zeal. Col.,* I, p. 33; G. V. Hudson, 1934, *New Zealand Beetles,* p. 35, pl. 1, figs. 3, 3a (larva) (n.syn.).

Figs. 5, 57.

Length: 20–23 mm. Colour: black or very dark metallic blue, sometimes with coppery reflections on the pronotum. Elytra with intervals moderately convex, the 7th with six setiferous punctures; striae not, or only very faintly punctured.

Localities: Port Nicholson, Wellington (C. M. Wakefield); Hastwell (H. Suter); Mount Dennan; Mount Holdsworth (G. V. Hudson). Twenty-seven examples.

Megadromus lobipes (Bates, 1878), *Ent. Mo. Mag.,* XIV, pp. 191, 196; Broun, 1880, *Man. New Zeal. Col.,* I, p. 34 *(Pterostichus).*

Fig. 6.

Length: 30 mm. Head large, eyes comparatively small but strongly convex. Pronotum cordiform, sides sinuate in front of the posterior angles which are square; each side bearing 4 or 5 setiferous punctures in the marginal groove; a single broad impression at the base on each side. Elytra rather flat, with well marked striae which are faintly punctured; scutellar striole present; intervals quite flat, surface with very strong isodiametric microsculpture, giving a dull appearance; 3rd interval with 4 setiferous punctures; 5th interval with 3 setiferous punctures in the apical half; 7th interval with 5 setiferous punctures; marginal series of about 25 setiferous punctures; shoulders with a blunt tooth; basal margin well marked; lateral margins wide and upturned. The extremity of the prosternum between the coxae is without setae.

Localities: Otira River, Westland (C. M. Wakefield), 1 ♂; Greymouth (Helms), 1 ♂.

Megadromus turgidiceps (Broun, 1908), *Ann. Mag. Nat. Hist.* (8), II, p. 409 *(Pterostichus).*

Figs. 7, 58.

Length: 17·5–20 mm. Colour: black.

Head large, mandibles elongate, almost as long as the head; eyes small, hardly projecting from the surface of the head. Pronotum relatively elongate (in the 20 mm. example, 4·95 mm. wide x 4·45 mm. long); sides with a rather long sinuation in front of the posterior angles which are square and blunt; a broad shallow impression at the base on either side; 4 setiferous punctures on each side in the marginal groove.

Elytra flat, with well marked striae which are faintly punctured; intervals moderately convex; surface with very strong isodiametric microsculpture; 3rd and 5th intervals each with 3 setiferous punctures; 7th elytral interval with 7 setiferous punctures; marginal series with about 19 setiferous punctures; basal margin well marked;

apex of elytra abruptly rounded off behind the apical sinuation; margins rather strong, reflexed. The extremity of the prosternum is without setae.

Locality: Manawatu Gorge, North Island (W. W. Smith), 1 ♂ 1 ♀.

Megadromus bullatus (Broun, 1915), *Bull. New Zeal. Inst.*, I, IV, p. 275; G. V. Hudson, 1934, *New Zealand Beetles*, p. 37 *(Pterostichus)*.

Fig. 8.

Length: 28–30 mm. Colour: black, sometimes metallic green at sides.

Head large, eyes small but strongly convex. Pronotum strongly transverse (9 mm. wide x 5·5 mm. long); sides strongly curved outwardly from apex to base; posterior angles obtuse; 2 setiferous punctures in the marginal groove on each side. Elytra convex and very broad (16 mm. long x 11 mm. wide), striae faint and irregular; intervals slightly convex; surface with strong isodiametric microsculpture; intervals 3, 5 and 7 wider and more convex than the others; 3rd interval with 6–8 setiferous punctures; the 5th interval with 5 or 6 setiferous punctures; the 7th interval with 8 setiferous punctures; the depressions in which the setiferous punctures are set divide the 3rd, 5th and 7th intervals into irregular chains of elongate bullae. Prosternum without setae.

Locality: Greenstone Flat, near Queenstown, Otago (M. O. Pasco); Clinton River, near Lake Te Anau. 3 ♂ ♂, 2 ♀ ♀.

Megadromus australasiae (Guérin, 1841), *Rev. Zool.*, p. 121; *(Platysma)*; White, 1846, in Richardson and Gray, *Voy. Erebus and Terror*, Ins., p. 3; Blanchard, 1853, *Voy. Pôle Sud*, IV, p. 31, t. 2, f. 13 *(Abax)*.

Trichosternus guerini Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, 38, III, p. 75; Broun, 1880, *Man. New Zeal. Col.*, I, p. 32.

Trichosternus akaroensis Broun, 1903, *Ann. Mag. Nat. Hist.* (7), II, p. 603 (n.syn.).

Figs. 9, 59.

Length: 20–24 mm. Colour: aeneous-black.

Pronotum transverse (11 mm. wide x 7·5 mm. long in middle); sides each bearing two setiferous punctures. In the type of *T. akaroensis* Broun, the anterior puncture on the right side is duplicated. The sides in front of the posterior angles are scarcely sinuate. Elytra unusually depressed, with intervals convex throughout their whole length; isodiametric microsculpture strongly developed towards the margins and apex, so that the basal and middle parts of the elytra are shining, and the marginal and apical parts dull. The striae are well marked and quite strongly punctured. The 3rd interval with 3–5 setiferous punctures; the 5th interval with 1 or 2 setiferous punctures; the 7th interval with 4–6 setiferous punctures; the punctures on the 5th interval are variable, for in 3 of 20 examples examined they are entirely absent, while in others they are assymmetrical, e.g. the left elytron with 2 and the right with 1 puncture.

Localities: Akaroa; Timaru; Otago. 20 examples.

THE *antarcticus* GROUP OF SPECIES.

It is not possible to make a satisfactory key to these eleven closely allied species. The most certain method of identification is by comparison of the male genitalia with the figures. The pronotum shows rather subtle specific differences in shape.

Megadromus antarcticus (Chaudoir, 1865), *Bull. Soc. Nat. Mosc.*, 38, III, p. 73 (*Trichosternus*); Bates, 1874, *Ann. Mag. Nat. Hist.* (4), 13, p. 242; Broun, 1880, *Man. New Zeal. Col.*, I, p. 31; G. V. Hudson, 1934, *New Zealand Beetles*, p. 36.

Megadromus viridilimbatus Motschulsky, 1865, *Bull. Soc. Nat. Mosc.*, 38, iv, p. 251.

Trichosternus crassalis Broun, 1893, *Man. New Zeal. Col.*, VII, p. 1395; *Trans. New Zeal. Inst.*, 1893, XXV, p. 195 (n.syn.).

Trichosternus coelocephalus Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 405 (n.syn.).

Trichosternus dissentaneus Broun, 1910, *Bull. New Zeal. Inst.*, I, i, p. 6 (n.syn.).

Trichosternus blandellus Broun, 1915, *Bull. New Zeal. Inst.*, I, iv, p. 274 (n.syn.).

Figs. 1, 10, 60.

Length: 22–34 mm. Colour: aeneous black-greenish, margins of pronotum and elytra bright metallic green.

Pronotum with sides not sinuate above the posterior angles which are obtuse; elytral intervals convex, the 3rd, 5th and 7th rather wider and more convex than the others; striae well marked but hardly punctured; the 3rd interval with 3 or 4 setiferous punctures; the 7th interval with 6 setiferous punctures.

Localities: Bealey; Christchurch; Canterbury. 52 examples.

Megadromus virens (Broun, 1886), *Man. New Zeal. Col.*, IV, p. 937 *(Trichosternus).*

Trichosternus hampdenensis Broun, 1893, *op. cit.* VI, p. 1323 (n.syn.).

Figs. 11, 61.

Length: 19–22 mm. Colour: aeneous-black-greenish, margins of pronotum and elytral bright metallic green.

Sides of the pronotum with an elongate sinuation in front of the posterior angles which are very slightly acute. Elytral intervals moderately convex, the 3rd, 5th and 7th somewhat wider and more convex than the others; striae obvious but punctuation obsolete; the 3rd interval with 3 or 4 and the 7th interval with 4 setiferous punctures.

Localities: Oamaru (T. Chalmer), 1 ♂, 1 ♀; Hampden, Otago, 1 ♂.

Megadromus enysi (Broun, 1882), *New Zeal. Journ. Sci.*, p. 221 *(Trichosternus); Man. New Zeal. Col.*, 1886, III, p. 752.

Trichosternus walkeri Broun, 1903, *Ann. Mag. Nat. Hist.* (7), XI, p. 602 (n.syn.).

Trichosternus halli Broun, 1914, *Bull. New Zeal. Inst.*, I, iii, p. 149 (n.syn.).

Figs. 12, 62.

Length: 20–23 mm. Colour: dark metallic blue or aeneous.

Sides of the pronotum with a long sinuation in front of the posterior angles which are rectangular; elytral intervals very slightly convex, more so near the margins; striae well marked, punctuation obsolete; the 3rd interval with 3 and the 7th with 5 setiferous punctures.

Localities: Wellington, Mount Hutt; Westland, Otira Gorge. 7 examples.

Megadromus capito (White, 1846), in Richardson and Gray, *Voyage Erebus and Terror,* Ins., p. 4 *(Feronia);* Chaudoir, 1865, *Bull. Soc. Nat. Mosc.,* 38, III, p. 74; Broun, 1880, *Man. New Zeal. Col.,* I, p. 32.

Trichosternus aucklandicus Bates, 1878, *Ent. Mo. Mag.,* XV, p. 25 (n.syn.).

Trichosternus aucklandicus Broun, 1880, *Man. New Zeal. Col.,* I, p. 32.

Trichosternus humeralis Broun, 1882, *New Zeal. Journ. Sci.,* I, p. 220; *Man. New Zeal. Col.* III, 1886, p. 750 (n.syn.).

Trichosternus cephalotes Broun, 1886, *Man. New Zeal. Col.,* IV, p. 825; G. V. Hudson, 1934, *New Zealand Beetles,* p. 36 (n.syn.).

Trichosternus bucolicus Broun, 1903, *Ann. Mag. Nat. Hist.* (7), XI, p. 604 (n.syn.).

Trichosternus hudsoni Broun, 1904, *Ann. Mag. Nat. Hist.* (7), XIV, p. 44 (n.syn.); G. V. Hudson, 1934, *New Zealand Beetles,* p. 36.

Trichosternus ordinarius Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 407 (n.syn.).

Figs: 13, 63.

Length: 18–23 mm. Colour: metallic green or blue; elytra aeneous on the disc; pronotum comparatively straight sided, only slightly sinuate in front of the posterior angles which are slightly obtuse; elytral intervals strongly convex, the 3rd with 4 or 5, and the 7th with 5 setiferous punctures.

Localities: Auckland, Rangiriri, Ohakune, Hicks' Bay, Manawatu Gorge, Lake Horowhenua, Wellington, Stephens Island. 45 examples.

Megadromus temukensis (Bates, 1878), *Ent. Mo. Mag.* XV, p. 26 *(Trichosternus);* Broun, 1880, *Man. New Zeal. Col.,* I, p. 34.

Trichosternus sylvius Bates, 1878, *Ent. Mo. Mag.* XV, p. 26; Broun, 1880, *Man. New Zeal. Col.* I, p. 35 (n.syn.).

Trichosternus smithii Broun, 1893, *Man. New Zeal. Col.,* VI, p. 1322 (n.syn.).

Figs. 14, 64.

Length: 18–20 mm. Colour: metallic blue, green or aeneous. Pronotum with sides slightly sinuate in front of the posterior angles; elytra with the intervals convex, 3rd with 3 or 4 and the 7th with 4 setiferous punctures.

Localities: Ashburton (W. W. Smith), Peel Forest (C. M. Wakefield), Timaru (J. J. Walker), Canterbury.

Megadromus rectalis (Broun, 1881), *Man. New Zeal. Col.*, II, p. 656 *(Trichosternus).*

Figs. 15, 65.

Length: 20 mm. Colour: black.

Pronotum with the hind angles flat and prominent, sharp and slightly acute. Elytra with shoulders strongly dentate; intervals only slightly convex; 3rd interval with 4 and 7th with 5 setiferous punctures.

Locality: Nelson (T. F. Cheeseman). Known from a unique male.

Megadromus alternus (Broun, 1886), *Man. New Zeal. Col.*, IV, p. 877 *(Trichosternus).*

Trichosternus urquharti Broun, 1886; *loc. cit.*, p. 877 (n.syn.).

Figs: 16, 66.

Length: 18–19 mm. Colour: brownish-black.

Elytral intervals strongly convex; striae obvious; punctuation obsolete; microsculpture of surface, not obvious; 3rd interval with 3 or 4 and 7th with 6 setiferous punctures.

Locality: mountains near Lake Tekapo, South Island (T. F. Cheeseman and A. T. Urquhart), 3 ♂ ♂.

Megadromus compressus (Sharp, 1886), *Trans. R. Dublin Soc.* (2) III, p. 366, plate 12, f. 6 *(Trichosternus).*

Figs. 17, 67.

Length: 18–22 mm. Colour: aeneous, metallic green at borders of pronotum and elytra. Sides of pronotum not or only very slightly sinuate in front of the posterior angles, which are square. Elytral intervals moderately convex, the 3rd with 3 and 7th with 4–6 setiferous punctures.

Locality: Picton (Helms), 5 ♂ ♂, 2 ♀ ♀.

Megadromus hanmerensis (Broun, 1908), *Ann. Mag. Nat. Hist.* (8) II, p. 406 *(Trichosternus).*

Figs. 18, 68.

Length: 20–24 mm. Colour: aeneous-black.

Sides of pronotum rather straight, with an elongate sinuation in front of the posterior angles which are square. Elytral intervals slightly convex, the 3rd with 3 punctures, the 7th with 5 punctures; striae well marked, punctuation obsolete.

Localities: Hanmer, Mount Algidus, Canterbury. 1 ♂, 2 ♀ ♀.

Megadromus rectangulus (Chaudoir, 1865), *Bull. Soc. Nat. Mosc.*, 38, III, p. 74 *(Trichosternus);* Broun, 1880, *Man. New Zeal. Col.*, I, p. 35.

Trichosternus wallacei Broun, 1912, *Trans. New Zeal. Inst.*, 44, p. 390 (n.syn.).

Figs. 19, 69.

Length: 22–24 mm. Colour: black.

Sides of pronotum comparatively straight, not sinuate in front of the posterior angles which are square. Elytral intervals slightly

convex, becoming more so towards the margins, the 3rd with 3, the 7th with 6 setiferous punctures.

Localities: Christchurch (J. J. Walker); Kaikoura; Clarence Bridge (G. V. Hudson); Puhipuhi (G. V. Hudson); Wairiri (W. L. Wallace). 8 ♂ ♂, 2 ♀ ♀.

Megadromus haplopus (Broun, 1893), *Man. New Zeal. Col.*, VI, p. 1323 *(Trichosternus)*.

Figs. 20, 70.

Length: 23 mm. Colour: brownish black.

Sides of the pronotum obviously sinuate in front of the posterior angles which are square but rather blunt. Elytral intervals moderately convex, the 3rd with 3 or 4 punctures and the 7th with 5; striae unpunctured.

Locality: Hampden, Otago (P. Sandager), 1 ♂, 1 ♀.

Megadromus vagans (Broun, 1886), *Man New Zeal. Col.*, III, p. 825 *(Trichosternus)*.

Fig. 71.

Length: 19 mm. Colour: shining black.

Pronotum transverse (5·9 mm. wide x 3·8 mm. long in middle); each side bearing two setiferous punctures, strongly sinuate in front of the posterior angles which are approximately square. Elytra with intervals quite flat on the disc, becoming slightly convex towards apex, base and margins; striae faint, minutely and indistinctly punctured; scutellar striole present; 3rd interval with 3 or 4 setiferous punctures; 5th interval with 3 and 7th with 5 setiferous punctures.

Locality: Mount Maungatua, Otago (S. W. Fulton). Known only from a single ♀.

Megadromus sandageri (Broun, 1893), *Man. New Zeal. Col.*, V, p. 988 (*Pterostichus*); G. V. Hudson, 1934, *New Zealand Beetles*, p. 36.

Pterostichus oneroaensis Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 413; G. V. Hudson, 1934, *New Zealand Beetles*, p. 36 (n.syn.).

Pterostichus hamiltoni Broun, 1912, *Trans. New Zeal. Inst.*, 44, p. 390 (n.syn.).

Pterostichus pascoi Broun, 1915, *Bull New Zeal. Inst.*, I, iv, p. 275 (n.syn.).

Pterostichus aciphyllae Broun, 1917, *Bull. New Zeal. Inst.*, I, p. 361 (n.syn.).

Figs. 21, 72.

Length: 25–28 mm. Colour: black.

Elytra with intervals moderately convex; the 3rd with 3 or 4 and the 7th with 5 setiferous punctures. Of the 25 examples which I have examined, 14 have no setiferous punctures on the 5th intervals. The remaining 11, including the type, have a variable number (1–3) of setiferous punctures on the 5th intervals, and the number of punctures is rarely the same on the left and right. The type of *M. sandageri* has 3 punctures on the 5th interval of the left elytron

and 2 punctures on the right. I regard the examples without any punctures on the 5th intervals as belonging to this species because the male genitalia are indistinguishable from those of the type.

Localities: Puysegur Point (P. Sandager); Te Oneroa (P. Seymour); Invercargill (F. Hudson); Bold Peak (6,000 ft.), Wakatipu (H. Hamilton); Ben Lomond, Wakatipu (M. O. Pasco); Clipping's Bush, 2,500 ft., near Kingston (T. Hall).

Megadromus memes (Broun, 1903), *Ann. Mag. Nat. Hist.* (7), XI, p. 605 *(Pterostichus)*.

Figs. 22, 73.

Length: 18–20 mm. Colour: metallic green or aeneous.

Elytral intervals very strongly convex, the 3rd with 3 or 4 and the 7th with 4 setiferous punctures; striae well marked, faintly punctured. The close relation of this and *M. fultoni* is shown by the similarity of the male genitalia.

Locality: Maniototo Plains (J. H. Lewis), 17 examples.

Megadromus optabilis (Broun, 1893), *Man. New Zeal. Col.*, V, p. 986 (*Pterostichus*). New name for:

Trichosternus erythropus Broun, 1884, *New Zeal. Journ. Sci.*, II, p. 226; *Man. New Zeal. Col.*, IV, 1886, p. 913 (nec. Marsh, Dejean, Villa, Fald).

Trichosternus curtulus Broun, 1884, *New Zeal. Journ. Sci.*, II, p. 227; *Man. New Zeal. Col.* IV, 1886, p. 916 (n.syn.).

Trichosternus suspicax Broun, 1884, *New Zeal. Journ. Sci.*, II, p. 227; *Man. New Zeal. Col.*, IV, 1886, p. 917 (n.syn.).

Fig. 74.

Length: 17–18 mm. Colour: aeneous-black, the pronotum with coppery and bluish reflections.

Pronotum with the sides not or scarcely sinuate in front of the posterior angles which are rather obtuse. Elytral intervals moderately convex, the 3rd with 2 or 3, and the 7th with 4–6 setiferous punctures. The type of *M. optabilis* has one setiferous puncture near the middle of the 5th interval.

Locality: Rock and Pillar Mountains, Otago (S. W. Fulton), 3 ♀ ♀.

Megadromus fultoni (Broun, 1882), *New Zeal. Journ. Sci.*, I, p. 221 *(Trichosternus); Man. New Zeal. Col.*, III, 1886, p. 751.

Pterostichus erraticus Broun, 1884, *New Zeal. Journ. Sci.*, II, p. 227; *Man. New Zeal. Col.*, IV, 1886, p. 915 (n.syn.).

Pterostichus amplicollis Broun, 1884, *New Zeal. Journ. Sci.*, II, p. 227; *Man. New Zeal. Col.*, IV, 1886, p. 918 (n.syn.).

Trichosternus curvipes Broun, 1886, *Man. New Zeal. Col.*, IV, p. 878 (n.syn.).

Trichosternus polychaetus Broun, 1893, *Man. New Zeal. Col.*, V, p. 987 (n.syn.).

Pterostichus flectipes Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 413 (n.syn.).

Figs. 23, 75.

Length: 18–22 mm. Colour: aeneous black; often metallic green or coppery in the basal foveae and around the margins of pronotum

and elytra. Elytral intervals slightly convex, the 3rd with 3 or 4 and the 7th with 4 or 6 setiferous punctures. Of the 13 examples in the British Museum, one, the type of Broun, has 3 short setae on the posterior face of the prosternum.

Locality: Taieri (S. W. Fulton), 7 ♂ ♂, 4 ♀ ♀.

Megadromus meritus (Broun, 1884), *New Zeal. Journ. Sci.*, II, p. 227 *(Trichosternus); Man. New Zeal. Col.*, IV, 1886, p. 914.

Trichosternus angulatus Broun, 1884, *New Zeal. Journ. Sci.* II, p. 227; *Man. New Zeal. Col*, IV, 1886, p. 914 (n.syn.).

Trichosternus agriotes Broun, 1884, *New Zeal. Journ. Sci.*, II, p. 227; *Man. New Zeal. Col.*, IV, 1886, p. 915 (n.syn.).

Trichosternus waihourensis Broun, 1886, *Man, New Zeal. Col.*, IV, p. 821 (n.syn.).

Trichosternus monticola Broun, 1886, *Man. New Zeal. Col.*, IV, p. 821 (n.syn.).

Trichosternus aeruginosus Broun, 1886, *Man. New Zeal. Col.*, IV, p. 822 (n.syn.).

Trichosternus chloris Broun, 1886, *Man. New Zeal. Col.*, IV, p. 823 (n.syn.).

Trichosternus grassator Broun, 1886, *Man. New Zeal. Col.*, IV, p. 823 (n.syn.).

Trichosternus fusulus Broun, 1886, *Man. New Zeal. Col.*, IV, p. 824 (n.syn.).

Pterostichus deceptus Broun, 1886, *Man. New Zeal. Col.*, IV, p. 916 (new name for *P. riparius* Broun (not of Dejean), *New Zeal. Journ. Sci.*, II, 1884, p. 227) (n.syn.).

Pterostichus meliusculus Broun, 1893, *Man. New Zeal. Col.*, V, p. 986 (new name for *P. convexus* Broun (not of Gebler), 1884, *New Zeal. Journ. Sci.*, II, p. 227) (n.syn.).

Pterostichus amicus Broun, 1893, *Man. New Zeal. Col.*, V, p. 986 (n.syn.).

Pterostichus kirkianus Broun, 1903, *Ann. Mag. Nat. Hist.* (7), XI, p. 604 (n.syn.).

Pterostichus maiaei Broun, 1917, *Bull. New Zeal. Inst.*, I, p. 363 (n.syn.).

Figs. 24, 76.

Length: 20–23 mm. Colour: metallic aeneous-green or blue, the margins of pronotum and elytra usually metallic green.

Elytral intervals slightly convex, 3rd interval with 3 or 4, and 7th with 4 to 6 setiferous punctures.

Localities: Taieri, bed of Lee Stream (S. W. Fulton); Mount Maungatua, Taieri; Waihoura, Bruce County, Otago (S. W. Fulton); Invercargill (T. Chalmer). 29 examples.

Genus ZEOPOECILUS Sharp.

Zeopoecilus Sharp, 1886,, *Trans. R. Dublin Soc.*, II, 3, p. 365.

Genotype: *Zeopoecilus calcaratus* Sharp, 1886, *loc. cit.* (present selection).

Length, 20 to 24 mm. Apterous, elytra joined along suture. Colour bronze or aeneous, the pronotum showing coppery and green reflections; legs and antennae piceous, the latter paler towards their apices.

Sides of the prothorax strongly curved outwards in the middle and sinuate towards the base; posterior angles approximately rectangular; each side of the pronotum with two setiferous punctures, one just before the middle, the other at the posterior angle; basal foveae large and deep, reaching the base near the angle.

Elytra with shoulders strongly dentate; striae well impressed and faintly punctured; intervals convex, shining in ♂ ♂, dull in ♀ ♀; no punctures on the 3rd, 5th and 7th intervals; the 8th interval narrowed apically to form a ridge which almost reaches the sutural angle.

Prosternum, between coxae, without setae; mesepisternum faintly punctured; one setiferous puncture on each side of the apical sternite of the abdomen in the male, two on each side in the female. The genus is distinguished on the following characters. The basal segment of the antenna is flattened on the dorsal side in both sexes. In the male the basal segment of the posterior tarsi is compressed, and the inner side of apex of the posterior tibiae is prolonged. The aedeagus is expanded at the apex and the dorsal paramere is reduced to less than one half the length of the aedeagus. It forms a plate, rounded at the apex, narrowed at the base, with no trace of an apical hook.

Two species are known:—

Apical prolongation of the posterior tibiae in ♂ tapered to a point; the basal segment of the posterior tarsi only slightly compressed; aedeagus broad at the apex (see fig. 25). .. *calcaratus* Sharp

Apical prolongation of the posterior tibiae in ♂ obliquely truncate; the basal segment of the posterior tarsi strongly and obliquely compressed; aedeagus narrow at apex (see fig. 26). .. .. *putus* (Broun)

Zeopoecilus calcaratus Sharp, 1886, *Trans. R. Dublin Soc.*, II, 3, p. 366, t. 12, f. 7; Broun, 1893, *Man. New Zeal. Col.*, V, 1893, p. 989.

Fig. 25.

Localities: Picton (Helms); Flora R., Graham R., Mount Arthur, Nelson (G. V. Hudson). 18 examples.

Zeopoecilus putus (Broun, 1882), *New Zeal. Journ. Sci.*, I, p. 219 *(Trichosternus); Man. New Zeal. Col.*, III, 1886, p. 750; *op. cit.*, V, 1893, p. 990.

Zeopoecilus opulentus (Broun, 1886), *Man. New Zeal. Col.*, IV, p. 820 *(Trichosternus)* (n.syn.).

Zeopoecilus achilles Sharp, 1886, *Trans. R. Dublin Soc.* (2), III, p. 367; Broun, 1893, *Man. New Zeal. Col.*, V, p. 990 (n.syn.).

Zeopoecilus optandus Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 408; G. V. Hudson, 1934, *New Zealand Beetles*, p. 36 (n.syn.).

Trichosternus combesi Broun, 1882, *New Zeal. Journ. Sci.*, I, p. 220; *Man. New Zeal. Col.*, III, 1886, p. 750 (n.syn.).

I have not seen the type of this species, which must be in New Zealand, but the description is identical with that of *Zeopoecilus putus* Broun. The two " species " were obtained together on Mount Arthur; Broun obviously described the males as *putus* and the females as *combesi*.

Figs. 26, 77.

Localities: Picton (Helms); Mount Arthur (T. F. Cheeseman and F. Combes); Wangapeka Valley, Nelson (T. F. Cheeseman); Nelson (G. V. Hudson). 14 examples.

Genus AULACOPODUS nov.

Genotype: *Aulacopodus sharpianus* (Broun).

Without setiferous punctures on the 5th and 7th intervals; basal segments of the antennae normal; mentum with a deep pit on each side near the base; all tarsi grooved dorsally; striae evenly impressed and unpunctured; scutellum quite plane; scutellar striole well marked.

KEY TO THE SPECIES.

1		With a setiferous puncture at the posterior angle on each side of the pronotum	2
		Without a setiferous puncture at the posterior angle of the pronotum.	*calathoides*
2	(1)	With one or more setiferous punctures on the 3rd elytral interval; basal angles of the pronotum about rectangular.	(Broun) 3
		With no setiferous punctures on the 3rd elytral interval; basal angles of the pronotum obtuse.	*sharpianus*
3	(2)	With one or two setiferous punctures on the 3rd elytral interval; situated just anterior to the mid point of the interval; basal depressions of the pronotum unpunctured.	(Broun) *maorinus*
		With 3 setiferous punctures on the 3rd elytral interval; basal impressions of the pronotum punctured.	(Bates) *brouni* (Csiki)

Aulacopodus calathoides (Broun, 1886), *Man. New Zeal. Col.*, IV, p. 879 *(Haptoderus)*.

Fig. 3.

Length: 10–12 mm. Colour: head, pronotum and elytra piceous, the pronotum reddish at the edges; legs, palpi and antennae reddish, paler distally.

Elytra fused along the suture; hindwings vestigeal. The sides of the pronotum are uniformly curved outwards from apex to base; widest in the middle with no trace of sinuation basally.

Localities: Whangarata, near Tuakau; Ngaruawahia, Waikato; Kerikeri; Huia; Hunua; Ligar's Bush, Papakura; Titirangi. 11 examples.

Aulacopodus sharpianus (Broun, 1893), *Ann. Mag. Nat. Hist.* (6), XII, p. 163 *(Pterostichus)*.

Fig. 27.

Length: 9 mm. Colour: piceous-black; palpi, legs and antennae reddish.

The sides of the pronotum are scarcely sinuate before the hind angles which are blunt and obtuse. Hindwings present but much reduced, elytra free.

Localities: Ohaupo, Waikato; Hunua Range. 6 examples.

Aulacopodus maorinus (Bates, 1874), *Ann. Mag. Nat. Hist.* (4), XIII, p. 244 *(Haptoderus).*

Length: 7 mm. Colour: piceous; palpi, legs and antennae reddish.

The more posterior of the two setiferous punctures on the third interval may be absent on one side. Hindwings vestigeal; elytra fused along suture.

Localities: Riccarton, Christchurch, Canterbury. 3 examples.

Aulacopodus brouni (Csiki, 1930), *Coleopt. Cat.*, p. 545.

adoxus Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 414 *(Pterostichus)*

Fig. 28.

Length: 8–9 mm. Colour: piceous-black; palpi, legs and antennae reddish.

The basal depressions of the pronotum are broad and punctured; posterior angles rectangular. Hindwings present, reduced to one half length of elytra; elytra free.

Locality: Manawatu Gorge. 5 examples.

Genus HOLCASPIS Chaudoir.

Holcaspis Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, 38, III, p. 101; Broun, 1880, *Man. New Zeal. Col.*, I, p. 31; Tschitscherin, 1890, *Horae Soc. Ent. Ross.*, XXV, p. 162.

Pterostichus Broun, 1893, *Man. New Zeal. Col.*, V, p. 990 (non Steph.).

Genotype: *Holcaspis angustula* Chaudoir, 1865, *loc. cit.* (present selection).

This genus includes about one half of the indigenous species of Pterostichini. They are uniformly small and black, usually less than 15 mm. in length, distinguishable from the other native genera by the absence of setiferous punctures on the seventh elytral interval. the lack of depression of the first joint of the antenna, the absence of grooves on the tarsi and by the possession of two deep pits on the mentum (Fig. 74). These pits have bristles on their sides, and a membranous, unchitinised area at the bottom.

Holcaspis was originally distinguished by Chaudoir on the plurisulcate scutellum and the absence of grooves on the tarsi, but these characters are useless as they apply equally well to species of *Megadromus.* Broun abandoned the use of the name for this reason and placed all the species in *Pterostichus.* Sharp (1886, *Trans. R. Dublin Soc.* (2), III, p. 365) divided these species into groups on the number of setae on each side of the pronotum and in this he was followed by Broun. Examination shows that the number of setae bearing punctures on the pronotum is not always constant in those species with more than two on each side, and in some cases they are not even symmetrical. It seems obvious that the multiplication of setae on the sides of the pronotum is secondary and cannot be given any high taxonomic importance.

Hindwings are absent and the elytra united along the suture.

KEY TO THE SPECIES.

1		With 2 setiferous punctures on each side of the pronotum.	2
		With 3–6 setiferous punctures on each side of the pronotum.	9
2	(1)	With one or more setiferous punctures on the 3rd elytral interval; pronotum with only one basal impression on each side.	3
		With no setiferous punctures on the 3rd elytral interval; pronotum with a double basal impression on each side.	6
3	(2)	Posterior angles of the pronotum completely rounded off.	4
		Posterior angles of the pronotum sharp, approximately rectangular.	5
4	(3)	Elytral intervals only slightly convex; striae punctured.	*ovatella* Chaudoir
		Elytral intervals very convex; striae unpunctured. ..	var. *perbona* Broun
5	(3)	Elytral intervals flat; 3 setiferous punctures on the 3rd interval.	*sternalis* Broun
		Elytral intervals very convex; only one setiferous puncture on the 3rd interval, in the apical half. ..	*mordax* Broun
6	(3)	Striae faint and irregular, forming wavy lines which occasionally unite laterally, dorsal paramere in ♂ spatulate, not hooked (see fig. 32); hind femur in ♂ without a tooth in the middle of the posterior side.	*impiger* Broun
		Striae more deeply impressed, regular, forming straight parallel lines; dorsal paramere hooked; hind femur in ♂ with or without a tooth in the middle of the posterior side.	7
7	(6)	Hind femur in ♂ with a tooth in the middle of the posterior side.	8
		Hind femur in ♂ without a tooth in the middle of the posterior side (locality, Mount Algidus).	*algida* n.sp.
8	(7)	Pronotum obviously transverse (fig. 84); elytra uniformly curved, widest in the middle; elytral striae usually faintly punctured, blade of aedeagus with an angle at one side.	*angustula* Chaudoir
		Pronotum more elongate (fig. 85); elytra widest one-fifth of their length from base; elytral striae unpunctured; blade of aedeagus rounded, without sharp angles.	*longiformis* (Sharp)
9	(1)	Pronotum with the posterior angles completely rounded off.	10
		Pronotum with the posterior angles approximately rectangular, sharp.	12
10	(9)	With no setiferous punctures on the 3rd elytral interval.	11
		With 2 or 3 setiferous punctures on the 3rd elytral interval.	*catenulata* Broun
11	(10)	Large, over 17 mm. in length; basal margin of the elytra completely effaced; posterior femur of ♂ with a tooth in the middle of the posterior side. ..	*brouniana* (Sharp)
		Smaller, less than 15 mm. in length; basal margin of elytra reaching the 3rd stria; posterior femur of ♂ without a tooth.	*elongella* (White)
12	(9)	Two or more setiferous punctures on the 3rd elytral interval.	13
		No setiferous punctures on the 3rd interval.	15

13 (12) Intervals quite flat, striae faint, punctured; 2 setiferous punctures in the apical half of the 3rd interval; body very convex; pronotum without distinct marginal groove; a single basal impression on each side of pronotum. .. .. *egregialis* (Broun)

Intervals moderately convex, striae obvious, indistinctly punctured; 3–6 setiferous punctures on the 3rd interval; body moderately convex; pronotum with a marginal groove; a double basal impression on each side of the pronotum. 14

14 (13) With 3 or 4 setiferous punctures on the 3rd interval close to the 3rd stria; pronotum contracted basally, posterior angles obtuse. .. .. *hudsoni* n.sp.

With 5 or 6 setiferous punctures on the 3rd interval close to the 3rd stria; pronotum hardly contracted basally; posterior angles square and prominent. .. *suteri* Broun

15 (12) Intervals 3, 5 and 7 each twice as wide as intervals 4 and 6 and much more convex; apical sinuation of the elytral very abrupt forming a deep rectangular notch; striae unpunctured. .. .. *dentifera* (Broun)

All intervals approximately equal in width and convexity; apical sinuation of elytral not unusually deep. 16

16 (15) With the basal margin of the elytra completely obsolete. 17

With the basal margin of the elytra in the form of a raised transverse ridge. 18

17 (16) With 5 setiferous punctures on each side of the pronotum; posterior angles of the pronotum very obtuse; femora greatly expanded and swollen; with a tooth in the middle of the inner margin of the posterior tibia; terminal blade of the aedeagus symmetrical with an emargination at the apex. .. .. *odontella* (Broun)

With 4 setiferous punctures on each side of the pronotum; posterior angles obtuse or rectangular; femora and tibiae normal; aedeagus asymmetrical, not emarginate at apex. .. .. *hispida* (Broun)

18 (16) Sides of pronotum not sinuate in front of the posterior angles which are obtuse; elytral striae much interrupted along their whole length. .. *oedicnema* Bates

Sides of pronotum sinuate in front of the posterior angles which are square or even acute; elytral striae usually continuous. 19

19 (18) Pronotum elongate, considerably constricted basally (see fig. 96); shoulders of the elytra completely rounded off; apex of inner edge of posterior tibia in ♂ produced into a long point. .. .. .. *mucronata* Broun

Pronotum more transverse; shoulders of elytra more or less prominent; apex of posterior tibia in ♂ not produced into a point. 20

20 (19) Posterior tibiae quite straight (South Island). .. *delator* (Broun)

Posterior tibiae distinctly curved (North Island) .. 21

21 (20) Shape of thorax as in fig. 98; elytra with at least 23 setiferous punctures in the marginal series, on each side; basal margin of elytra extending from shoulders only as far as base of the 4th stria, broken or very irregular beyond this point. .. *subaenea* (Guérin)

Shape of thorax as in figs. 99 and 100; elytra with 17 setiferous punctures at most, in the marginal series on each side; basal margin of elytra extending in a straight unbroken line from shoulder to the base of the scutellar striole. 22

22 (21) Sides of the pronotum with a very short sinuation just in front of the posterior angles (see fig. 99); elytral intervals only slightly convex; striae unevenly impressed and indistinctly punctured. .. *vagepunctata* (White)

Sides of the pronotum with a long sinuation in front of the post. angles (see fig. 100); elytral intervals strongly convex; striae evenly impressed and regularly punctured. .. .. *sinuiventris* (Broun)

Holcaspis ovatella Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, 3, p. 105; Sharp, 1886, *Trans. R. Dublin Soc.* (2), III, p. 370 *(Pterostichus);* Broun, 1880, *Man. New Zeal. Col.*, I, p. 39; *loc. cit.*, V, 1893, p. 995 *(Pterostichus).*

Figs. 29, 79.

Length: 15–18 mm.

The posterior angles of the pronotum are completely rounded off and so are almost exactly similar to the anterior angles. The shoulders of the elytra are also rounded off and show no sign of a tooth. The striae are strongly impressed and closely punctured. There are three setiferous punctures on the third interval.

Localities: Canterbury; Mount Griffel, south of Lake Wanaka (C. E. Clarke); Invercargill (Lewis). 3 ♂ ♂, 2 ♀ ♀.

Holcaspis ovatella Chaud. subsp. **perbonus** (Broun, 1908) *Ann. Mag. Nat. Hist.* (8), II, p. 418 *(Pterostichus).*

Length: 15–16 mm.

Differing from *H. ovatella* Chaud. only in having the intervals strongly convex and the striae unpunctured. The ♂ genitalia are so similar in the two forms that it is hardly possible to regard them as being specifically distinct.

Locality: Otago (Lewis). 13 examples.

Holcaspis sternalis Broun, 1881, *Man. New Zeal. Col.*, II, p. 658.

Cerabilia punctigerus Broun, 1882, *New Zeal. Journ. Sci.*, I, p. 223; *Man. New Zeal. Col.*, III, 1886, p. 753 (n.syn.).

Pterostichus oscillator Sharp, 1886, *Trans. R. Dublin Soc.* (2), III, p. 369 *(Pterostichus)* Broun, 1893, *Man. New Zeal. Col.*, V, p. 995 (n.syn.).

Pterostichus perfidiosa Broun, 1893, *Man. New Zeal. Col.*, V, p. 995 (n.syn.).

Pterostichus lepidulus Broun, 1908, *Ann. Mag. Nat. Hist.* (8) II, p. 419 (n.syn.).

Pterostichus melanostolus Brookes, 1926, *Trans. and Proc. New Zeal. Inst.*, LVI, p. 443 (n.syn.).

Figs. 30, 80.

Length: 12–13 mm.

Basal foveae of the pronotum deep and elongate, extending from the middle of the disc on each side. Elytral intervals flat; striae unpunctured; three setiferous punctures on the third interval.

Localities: Akaroa; Mt. Dick, Otago; Dunedin; Port Chalmers; Invercargill. The type locality of *H. sternalis* is given as Whangarei Harbour, but the specimen in the Broun collection is labelled "Maungatua." In view of the fact that all the examples that I have seen have localities in the South Island, I consider the published type locality to be an error. 20 examples.

Holcaspis mordax Broun, 1886, *Man. New Zeal. Col.*, IV, p. 938.
Pterostichus hunuensis Broun, 1893, *Man. New Zeal. Col.*, V, p. 996 (n.syn.).
Pterostichus scitipennis Broun, 1893, *loc. cit.*, p. 1396 (n.syn.).
Figs. 31, 81.

Length: 11–13 mm.

Very similar to *Holcaspis sternalis*, differing in having the elytral intervals convex instead of flat, and only one setiferous puncture on the third interval, situated at about one third of the length of the elytra from the apex; striae faintly punctured towards the base.

Localities: Munua, near Papakura; Mount Pirongia, Waikato; Titirangi; foot of Mount Egmont. 8 examples.

Holcaspis impiger Broun, 1886, *Man. New Zeal. Col.*, IV, p. 879.
Pterostichus edax Broun, 1893, *Man. New Zeal. Col.*, VI, p. 1326 (n.syn.).
Pterostichus sculpturalis Broun, 1917, *Bull. New Zeal. Inst.*, I, p. 362 (n.syn.).
Pterostichus fenwicki Broun, 1921, *Bull. New Zeal. Inst.*, I, p. 599 (n.syn.).
Figs. 32, 82.

Length: 12–15 mm.

The pronotum has a small impression outside the normal basal impression on each side; the elytral striae are not deeply impressed and are irregular, except the 3rd, which is straight until it approaches the apex. The striae are faintly but regularly punctured and the intervals are without setiferous punctures.

Localities: Flagstaff Mountain, near Dunedin; Mt. Maungatua; Dusky Bay, Otago; Mt. Dick, Lake Wakatipu; Te Oneroa; Hump Ridge, near Invercargill. 10 examples.

Holcaspis algida n.sp.

Figs. 33, 83.

Length: 10 mm. Colour: black, with the palpi, fore tarsi and antennae reddish.

Head similar to that of *H. angustula* Chaudoir, but with the eyes more prominent. Pronotum: ratio breadth to length 1·2. Median line evenly impressed, not reaching apex or base; with two basal impressions on each side, the outer one reaching the base; sides contracted basally but hardly sinuate; basal angles rectangular, sharp; two seta on each side, one before the middle and one at the hind angle. Elytra: basal margin and shoulder prominent, the latter toothed; parallel sided, only slightly sinuate near the apex; striae faint, punctured; intervals almost flat; no setiferous punctures on the intervals. Microsculpture well developed, isodiametric. ♂ without a tooth in the middle of the posterior edge of the hind femur. The blade of the aedeagus has a sharper angle than that in *H. angustula* Chaudoir and the dorsal paramere is hooked instead of being pointed.

Locality: Mount Algidus, Canterbury, 5 ♂ ♂, 2 ♀ ♀. Type in the British Museum.

Holcaspis angustula Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, 3, p. 101; Broun, 1880, *Man. New Zeal. Col.*, I, p. 32.

Omaseus elongata Blanchard, 1853, *Voyage Pôle, Sud,* IV, p. 28, t. 2, f. 4 (non Duftschmidt).

Holcaspis thoracicus Broun, 1881, *Man. New Zeal. Col.*, II, p. 657 (n.syn).

Holcaspis placidus Broun, 1881, *loc. cit.*, p. 658 (n.syn.).

Pterostichus chalmeri Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 420 (n.syn.).

Figs. 34, 84.

Length: 12–15 mm. The pronotum has a small impression outside the normal basal fovea on each side; elytral striae regular, faintly punctured towards the base; intervals without setiferous punctures.

Localities: Akaroa; Moeraki; Port Chalmers; Dunedin; Taieri; Wedderburn. The type locality of *H. thoracicus* Broun like that of *H. sternalis* is given as Whangarei Harbour, but the unique example in the Broun Collection is labelled " Taieri," and as I have seen no example from the North Island, I conclude that the published locality is incorrect. 35 examples.

Holcaspis longiformis (Sharp, 1886), *Trans. R. Dublin Soc.* (2), III, p. 369 *(Pterostichus);* Broun, 1893, *Man. New Zeal. Col.*, V, p. 991.

Pterostichus disparalis Broun, 1893, *Man. New Zeal. Col.*, VI, p. 1324 (n.syn.).

Figs. 35, 85.

Length: 12 mm.

Very close to *H. angustula* and *H. algida,* but narrower and more parallel sided. The pronotum is slightly longer in proportion to its breadth; with only the slightest trace of punctures on the striae, towards the base. The male genitalia differ considerably, the blade of the aedeagus being rounded, without angles.

Localities: Christchurch; Moeraki. 9 examples.

Holcaspis catenulata Broun, 1882, *New Zeal. Journ. Sci.*, I, p. 222; *Man. New Zeal. Col.*, III, 1886, p. 753.

Pterostichus insidiosus Broun, 1893, *Man. New Zeal. Col.*, V, p. 999 (n.syn.).

Pterostichus inconstans Broun, 1893, *loc. cit.*, p. 999 (n.syn).

Pterostichus philpotti Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 418 (n.syn.).

Figs. 36, 86.

Length: 15–17 mm.

The pronotum is contracted towards the base; posterior angles very obtuse and rounded; the basal fovea on each side is a single almost circular impression; shoulders of the elytra not prominent; striae moderately straight, but in some examples very irregular, often united laterally; striae faintly punctured; intervals flat, or in larger examples slightly convex; 2 or 3 setiferous punctures on the 3rd interval; recurved margin of the elytra extremely narrow.

Localities: Taieri; Invercargill; Te Oneroa. 9 examples.

Holcaspis brouniana (Sharp, 1886), *Trans. R. Soc. Dublin* (2), III, p. 367 (*Pterostichus*); *Broun*, 1893, *Man. New Zeal. Col.*, V, p. 992.

Figs. 37, 87.

Length: 17–18 mm.

Similar to *Holcaspis catenulata*, but larger and with the pronotum more transverse; elytral striae faintly punctured; intervals slightly convex with a strong isodiametric microsculpture, and without setiferous punctures. The posterior femur in the ♂ has a strong tooth in the middle of the hind edge. The shoulders of the elytra are rounded and the basal margin is completely absent.

Localities: Picton; Clarence Bridge. 10 examples.

Holcaspis elongella (White, 1846), in Richardson and Gray, *Voyage of Erebus and Terror*, Ins., p. 4 (*Cophosus*); Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, iii, p. 104; Broun, 1880, *Man. New Zeal. Col.*, I, p. 39; Sharp, 1884, *New Zeal. Journ. Sci.*, p. 298.

Pterostichus constrictellus Sharp, 1886, *Trans. R. Dublin Soc.* (2), III, p. 368; Broun, 1893, *Man. New Zeal. Col.*, V, p. 994 (n.syn.).

Pterostichus detractus Broun, 1893, *Man. New Zeal. Col.*, p. 996 (n.syn.).

Figs. 38, 88.

Length: 12–14 mm.

Differs from *H. brouniana* Sharp mainly in being much smaller and in the fact that the basal margin of the elytra is present. Sharp (*l.c.*, p. 368) states that *H. elongella* has three lateral thoracic setae, but examination of the type discloses the presence of four setae on each side of the thorax, so that it does not differ from *P. constrictellus* Sharp and *P. detractus* Broun.

Localities: Picton; Canterbury; Lyttelton, Mount Grey, Christchurch, Dyer's Pass. 24 examples.

Holcaspis egregialis (Broun, 1917), *Bull. N.Z. Inst.*, I, p. 362 (*Pterostichus*).

Figs. 39, 89.

Length: 13 mm.

Pronotum with sides uniformly curved outwards from apex to base; basal foveae single, each side of pronotum with 4 setiferous punctures; raised margin and marginal groove of both pronotum and elytra extremely narrow, giving the body a very convex appearance. Elytra with shoulders dentate; basal margin well marked; striae marked only as rows of very faint punctures; intervals quite flat; two setiferous punctures in the apical half of the 3rd interval.

Locality: Staircase, 3,500 ft., at the south end of the Remarkables, east of Lake Wakatipu. A single ♂.

Holcaspis hudsoni n.sp.

Figs. 40, 90.

Length: 15–17 mm. Colour: aeneous-black.

Pronotum with sides moderately curved outwards, slightly sinuate in front of the posterior angles which are square; each side bearing 4 or 5 setiferous punctures; a small impression external to the normal basal fovea on each side; median line impressed not reaching apex or base. Elytra with basal margins well developed; shoulders not prominent, slightly dentate; striae faintly punctured, not deeply impressed and occasionally interrupted; intervals slightly convex, the 3rd with 3 or 4 setiferous punctures near the 3rd stria. Elytra rather sharply truncate behind the apical sinuation.

Localities: Hanmer (Lewis), 2 ♂ ♂; Canterbury, 1 ♂ from the Broun Collection, labelled "*subaenea.*" Type in the British Museum (Canterbury ex.).

Holcaspis suteri Broun, 1893, *Man. New Zeal. Col.*, VI, p. 1324.

Figs. 41, 91.

Length: 15–17 mm.

The sides of the pronotum have a long but slight sinuation in front of the posterior angles which are rectangular; each side bears 4 setiferous punctures; a double impression at the base on each side; elytral striae more strongly punctured towards the base; intervals slightly convex; the 3rd interval with 5 or 6 setiferous punctures.

Localities: Dyer's Pass, Port Hills, at 900 ft.; Mount Grey; Mount Robert, Canterbury, 3 ♂ ♂, 1 ♀.

Holcaspis dentifera (Broun, 1880), *Man. New Zeal. Col.*, I, p. 36 (*Trichosternus*).

Pterostichus eruensis Hudson (Broun MS.), 1934, *New Zealand Beetles*, p. 37.

Figs. 42, 78, 92.

Length: 17–20 mm.

Pronotum with sides curved uniformly outwards from apex to base; basal foveae single, opening on to the base; each side of the pronotum with 5 setiferous punctures.

Elytra with intervals 3, 5 and 7 considerably wider and more convex than the others, uniting apically and enclosing intervals 4 and 6; striae unpunctured, or very faintly punctured; intervals without setiferous punctures; apical sinuation of the elytra very sharp. Isodiametric microsculpture strong, giving the elytra a matt surface. The middle of the hind edge of the posterior femur in the ♂ is bluntly pointed, but hardly dentate.

Localities: Parua, Whangarei Harbour; Maori Bush, Erua; Horopito; Ohakune; Egmont. 15 examples.

Holcaspis odontella (Broun, 1908), *Ann. Mag. Nat. Hist.* (8), II, p. 410 (*Pterostichus*).

Figs. 43, 93.

Length: 17 mm.

Sides of pronotum very convexly rounded, each bearing 4 setiferous punctures; not sinuate in front of the posterior angles, which

are pointed but very obtuse (ca. 120°); basal impression linear, double. Elytra with shoulders rounded and basal margin obsolete; striae with obsolete punctures; intervals convex, but without setiferous punctures. Apical sinuation of elytra abrupt. All femora are greatly expanded, the anterior and posterior being bulbous beneath, but this appears to be merely an aberration, in view of the wrinkled and broken surface. The posterior tibiae have a tooth in the middle of the inner margin.

Locality: Near Mount Egmont, Taranaki. A single ♂.

Holcaspis hispida (Broun, 1876), *Trans. New Zeal. Inst.*, IX, p. 371 (*Trichosternus*).

Holcaspis hispidulus Broun, 1880, *Man. New Zeal. Col.*, I, p. 40.

Holcaspis pellax Broun, 1881, *op. cit.*, II, 1881, p. 656 (n.syn.).

Holcaspis hybridus Broun, 1886, *op. cit.*, IV, p. 826 (n.syn.).

Pterostichus ithaginis Broun, 1893, *Ann. Mag. Nat. Hist.*, (6), XII, p. 162 (n.syn.).

Pterostichus obsoletus Broun, 1893, *tom. cit.*, p. 163 (n.syn.).

Pterostichus vexatus Broun, 1908, *op. cit.*, (8), II, p. 417 (n.syn.).

Figs. 44, 94.

Length: 14–17 mm.

Pronotum with sides uniformly curved outwards from apex almost to the base where there is a slight sinuation; each side bearing 4 setiferous punctures; basal impressions single. Elytra with basal margins obsolete, as is the basal end of the first stria; striae irregularly punctured; intervals slightly convex, without setiferous punctures.

Localities: Kikiwai, Whangarei Heads; Auckland; Ligar's Bush, Papakura; Hunua Range; Tuakau, Waikato; Te Aroha; Wellington. 17 examples.

Holcaspis oedicnema Bates, 1894, *Ann. Mag. Nat. Hist.* (4), XIII, p. 243.

Holcaspis cribrale Broun, 1882, *New Zeal. Journ. Sci.*, I, p. 222, *Man. New Zeal. Col.*, III, 1886, p. 752; G. V. Hudson, 1934, *New Zealand Beetles*, p. 37 (n.syn.).

Pterostichus myrmidon Sharp, 1886, *Trans. R. Dublin Soc.* (2), III, p. 368, pl. 12, f. 8; Broun, 1893, *Man. New Zeal. Col.*, V, p. 993 (n.syn.).

Pterostichus rugifrons Sharp, 1886, *Trans. R. Dublin Soc.* (2), III, p. 451; Broun, 1893, *Man. New Zeal. Col.*, VII, p. 1397 (n.syn.).

Pterostichus pastoricius Broun, 1893, *op. cit.*, V, p. 994 (n.syn.).

Pterostichus egmontensis Broun, 1893, *op. cit.*, V, p. 997 (n.syn.).

Pterostichus irregularis Broun, 1893, *op. cit.*, V, p. 998 (n.syn.).

Pterostichus sculptipes Broun, 1893, *op. cit.*, VI, p. 1325 (n.syn.).

Pterostichus lewisi Broun, 1894, *Ann. Mag. Nat. Hist.*, (6), XIV, p. 310; G. V. Hudson, 1934, *New Zeal. Beetles*, p. 37 (n.syn.).

Pterostichus setiventris Broun, 1903, *Ann. Mag. Nat. Hist.* (7), XI, p. 606 (n.syn.).

Pterostichus antennalis Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 412 (n.syn.).

Figs. 45, 95.

Length: 15–22 mm.

I have seen more than 50 examples of this species, and it appears

to vary rather more than others of the genus, but I do not hesitate to establish the above synonymy on account of the identity of the male genitalia of all the types, and because there are no external characters which are sufficiently constant to allow of separation. The characters given by Broun for distinguishing the species can only be regarded as individual variations.

The sides of the pronotum are curved outwards from apex to base; the basal angles are rather greater than rectangles, and the points project slightly. The basal impression on each side is double. There are four setiferous punctures on each side of the pronotum.

The elytral intervals are slightly convex and without setiferous punctures. The striae are very variable, with the puncturation obsolete, so that the striae appear to be broken at irregular intervals.

Localities: Waikato; Napier; Mount Egmont; Mount Holdsworth, Tararua Range; Makara; Wellington; Takuratahi; Pelorus Sound; Picton; Mount Arthur; Wangapeka Valley; Glenhope; Boatman's, near Reefton; Westport; Greymouth; Ratapihipihi.

Holcaspis mucronata Broun, 1886, *Man. New Zeal. Col.*, p. 826.

Pterostichus oxymelus Broun, 1908, *Ann. Mag. Nat. Hist.* (8), II, p. 415 (n.syn.).

Pterostichus burrowsi Broun, 1914, *Bull. New Zeal. Inst.*, I, iii, p. 150 (n.syn.).

Pterostichus fieldi Broun, 1915, *Bull. New Zeal. Inst.*, I, iv, p. 276 (n.syn.).

Figs. 46, 96.

Length: 14–18 mm.

Pronotum strongly contracted basally; the sides sinuate above the posterior angles, which are rectangular; each side bearing 4 or 5 setiferous punctures; basal impressions broad, single, opening on to the base. Elytra with shoulders rounded; basal margin complete; striae faintly punctured; intervals slightly convex, without setiferous punctures. In the ♂ the inner side of the apex of the posterior tibia is produced into a long point.

Localities: Waitakerei Range, Auckland; Opotiki; Manawatu Gorge; Mount Hutt, Canterbury. 6 examples.

Holcaspis delator (Broun, 1893), *Man. New Zeal. Col.*, VII, p. 1397 (*Pterostichus*).

Figs. 47, 97.

Length: 16 mm.

Pronotum with sides very convexly rounded, contracted basally and sinuate in front of the posterior angles, which are rectangular; each side bearing 4 setiferous punctures; basal impressions small and shallow. Elytra with the basal margin extending in as far as the scutellar striole; striae with punctures almost obsolete, interrupted towards the apex; intervals slightly convex, without setiferous punctures.

Locality; Ashburton. A single ♂.

Holcaspis subaenea (Guérin, 1841), *Rev. Zool.*, p. 122; Bates, 1874, *Ann. Mag. Nat. Hist.* (4), XIII, p. 243; Broun, 1880, *Man. New Zeal. Col.*, I, p. 38.

Pterostichus sinuellus Broun, 1893, *Man. New Zeal. Col.*, VI, p. 1325 (n.syn.).

Figs. 2, 48, 98.

Length: 17–19 mm.

Pronotum strongly contracted towards the base; sides sinuate above the posterior angles, which are square; each side of the pronotum bearing 4 setiferous punctures. Elytra with rather faint striae, which are irregularly interrupted, but unpunctured; intervals slightly convex, without setiferous punctures.

Localities: Akaroa, Lyttelton, Canterbury. 5 examples.

The type of this species is lost, but Dr R. Jeannel has kindly sent me a specimen of a series of four taken at Akaroa by Arnoux and Latour, and received by the Paris Museum in 1847. Dr Jeannel writes that these specimens were probably seen by Guérin-Méneville and that the identification was confirmed by Tschitscherin.

Holcaspis vagepunctata (White, 1846) in Richardson and Gray, *Voy. Erebus and Terror,* Ins., p. 4; Guérin, 1847, *Rev. Zool.*, p. 89; Bates, 1874, *Ann. Mag. Nat. Hist.* (4), XIII, p. 243.

Holcaspis intermittens Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, iii, p. 103 (n.syn.).

Holcaspis praecox Broun, 1886, *Man. New Zeal. Col.*, IV, p. 827; G.V. Hudson, 1934, *New Zealand Beetles,* p. 37 (n.syn.).

Figs. 49, 99.

Length: 15–16 mm.

This species was synonymised with *H. subaenea* Guér. by Bates, but examination of the type reveals no justification for this.

Pronotum transverse; strongly contracted towards the base, the sides shortly sinuate in front of the post angles, which are square; 3 or 4 setiferous punctures in the marginal groove on each side. Elytral striae obscurely punctured; intervals moderately convex, without setiferous punctures.

Localities: Port Nicholson; Wellington. 20 examples.

Holcaspis sinuiventris (Broun, 1908), *Ann. Mag. Nat. Hist.* (8) II, p. 416 (*Pterostichus*).

Figs. 50, 100.

Length: 14 mm.

Pronotum with sides strongly recurved above posterior angles so that the latter are acute and projecting; each side bearing 4 setiferous punctures; basal impression on each side broad, opening on to base. Elytra with the striae well impressed; more strongly punctured towards the base; intervals moderately convex and without setiferous punctures; apical sinuation of the elytra strong.

Locality: Manawatu Flats, 9 miles below the gorge. A single ♂.

Genus PLOCAMOSTETHUS nov.

Genotype: *Plocamostethus planiusculus* (White, 1846).

Without setiferous punctures on the 3rd and 7th elytral interval; basal segment of the antenna normal, not flattened above; dorsal surface of all tarsal segments smooth; mentum without pits; a group of long setae on the extremity of the prosternum; the setiferous punctures of the marginal series of the elytra numerous, closely and regularly spaced; hindwings absent and elytra joined along the sutural margins.

Plocamostethus planiusculus (White, 1846), in Richardson and Gray, *Voy. Erebus and Terror,* Ins., p. 3, pl. 1, f. 7 (*Feronia*); Guérin, 1847, *Rev. Zool.*, p. 87; Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, 3, p. 75; Broun, 1880, *Man. New Zeal. Col.* I, p. 36 (*Trichosternus*).

Figs. 51, 101.

Length: 25–29 mm. Colour: black.

Mandibles unusually prominent, as long as the head, curved near the tips and sharply pointed; eyes small but convex. Pronotum quadrate, slightly contracted towards the base; sides slightly sinuate in front of the posterior angles, which are rectangular or slightly obtuse. Elytra ovoid, shoulders dentate; striae well marked, finely and closely punctured; intervals quite flat on the disc, convex near the apex, without setiferous punctures; marginal series of setiferous punctures very numerous and not broken into groups.

Localities: New Plymouth; Wellington; Picton; Mount Arthur; Boatman's, Reefton; Clarence Bridge. 58 examples.

Plocamostethus planiusculus ssp. **latus** nov.

Length: 25–29 mm.

This subspecies differs from the typical form in having the pronotum less contracted at the base, more parallel-sided.

Ratio greatest width of pronotum/length of pronotum for *P. planiusculus planiusculus* (average of 5 ex.) = 1·31. For ssp. *latus* (average of 4 ex.) = 1·35. Ratio width of base of pronotum/length of pronotum for *P. planiusculus planiusculus* (average of 5 ex.) = 1·09. For ssp. *latus* (average of 4 ex.) = 1·23.

The elytral intervals are flat on the disc, convex towards sides and apex, but distinctly less so than in the typical form. The aedeagus is scarcely distinguishable from that of *P. planiusculus planiusculus.*

Locality: Pokororo, near Mount Arthur, Nelson Province (E. S. Gourlay, 13.xii.1927), 2 ♂ ♂, 2 ♀ ♀. Holotype ♂ and paratype ♀ in the Cawthron Institute, Nelson, New Zealand. Allotype ♀ and paratype ♂ in the British Museum.

Plocamostethus planiusculus ssp. **durvillei** nov.

Length: 18–21 mm.

The examples taken by Mr. E. S. Gourlay on D'Urville Island are remarkable for their uniformly small size, but they appear to be identical in all other respects with the typical form. Ratio greatest

width/length of pronotum (average for 5 examples selected at random) = 1·31. Ratio width of base/length of pronotum (average for the same five examples) = 1·03.

These ratios show the pronotum to be of the same shape as in the typical form. The aedeagus is identical in shape in the two forms. The separation of a subspecies, nevertheless, is justified by the discontinuity in size and a certain degree of geographical isolation.

Locality: D'Urville Island, Nelson Province (E. S. Gourlay, 13–17.i.1931). 4 ♂♂, 9 ♀♀. Holotype ♂ and paratypes in the Cawthron Institute, Nelson, New Zealand. Allotype and paratypes in the British Museum.

Genus NEOFERONIA nov.

Genotype: *Neoferonia procerula* (Broun, 1886).

Elytral intervals without setiferous punctures, basal segments of the antennae normal, rounded; the pronotum with two setae on each side, the tarsi normal, not grooved; the mentum plane, without a pit on each side; hindwings absent and the elytra soldered together along the suture.

KEY TO THE SPECIES.

1.	Posterior angles of the pronotum obtuse (>90°). ..	2
	Posterior angles of the pronotum square or even acute.	3
2. (1)	Intervals quite flat, even at the apex; posterior angles of the pronotum blunt; sides hardly sinuate.	*straneoi* n.sp.
	Intervals moderately convex, more so at the apex; posterior angles of the pronotum sharp; sides sinuate.	*integrata* (Bates) / *prolixa* (Broun)
3. (1)	Intervals quite flat, even at the apex; sides of the pronotum not sinuate in front of the posterior angles.	*procerula* (Broun)
	Intervals convex, sides of pronotum distinctly sinuate.	4
4. (3)	Pronotum with the width at the base equal to the width at the apex; posterior angles curved out, acute (fig. 103).	*ardua* (Broun)
	Pronotum at the base considerably wider than at the apex (fig. 106).	*fossalis* (Broun)

Neoferonia straneoi n.sp.

Fig. 102.

Length: 18 mm. Colour: black.

Head broad with hemispherical eyes. Pronotum transverse, ratio width/length = 4/3; median line impressed, not reaching apex or base; strongly contracted towards base so that width of apex = width of base; sides not sinuate above the posterior angles, which are obtuse and rather blunt; basal impressions rather broad. Elytra with shoulders rounded, slightly dentate; striae faint, not impressed, finely and closely punctured; intervals flat; marginal series of setiferous punctures numbering 18.

Exact locality in New Zealand unknown.

Holotype ♂ in the collection of Dr S. L. Straneo, Parma; allotype in the British Museum.

Neoferonia ardua (Broun, 1893), *Man. New Zeal. Col.*, VI, p. 1395 (*Holcaspis*); G. V. Hudson, 1934, *New Zealand Beetles*, p. 36 (*Pterostichus*).

Pterostichus truncatulus (Broun, 1923), *Bull. New Zeal. Inst.*, I, viii, p. 674 (n.syn.).

Figs. 52, 103.

Length: 21 mm. Colour: black.

Pronotum with the sides contracted towards the base and sinuate just in front of the posterior angles which project; median line impressed, reaching both apex and base. Elytra with a blunt tooth at each shoulder; striae well impressed, very faintly punctured; intervals slightly convex; distinctly convex at the apex; marginal series of setiferous punctures numbering 16; sides rather sharply truncate behind the apical sinuation.

Localities: Flora River, Mount Arthur, 2800 ft. (G. V. Hudson); Mount Owen, Nelson. 1 ♂, 3 ♀♀.

Neoferonia integrata (Bates, 1878), *Ent. Mo. Mag.* XV, p. 27 (*Holcaspis*); Broun, 1880, *Man. New Zeal. Col.*, I, p. 40.

Steropus helmsi Sharp, 1883, *Ent. Mo. Mag.*, XX, p. 25; Broun, 1893, *Man. New Zeal. Col.*, V, p. 989 (n.syn.).

Feronia convexidorsis Tschitscherin, 1890, *Horae Soc. Ent. Ross.*, XXV, p. 166 (n.syn.).

I have not seen the type of *F. convexidorsis*, but from the description there can be no doubt of its identity.

Pterostichus cavelli Broun, 1893, *Man. New Zeal. Col.*, V, p. 991 (n.syn.).

Pterostichus prasignis Broun, 1903, *Ann. Mag. Nat. Hist.* (7), XI, p. 606 (n.syn.).

Figs. 53, 104.

Length: 18–21 mm. Colour: aeneous or black.

Pronotum with sides strongly convex outwardly; sinuate just before the posterior angles, which are sharp, rectangular or slightly obtuse; two deep impressions, on each side near the base, communicate with each other and open on to the base near the posterior angle. Elytra ovoid and tapering apically, rather pointed; striae regular and well impressed, very faintly punctured; intervals moderately convex, becoming more strongly so towards the apex.

Localities: Hokitika and Lake Paroa; Greymouth; Boatman's, near Reefton; Westport; Capleston, Westland; Kumara. 33 examples.

Neoferonia prolixa (Broun, 1880), *Man. New Zeal. Col.*, I, p. 35 (*Pterostichus*).

Figs. 54, 105.

Length: 18·5 mm. Colour: aeneous-black.

Very similar to *N. integrata* Bates, but more slender. In a specimen of *N. integrata* Bates, 18·5 mm. long, the width of thorax

and elytra respectively are 4·75 mm. and 6·0 mm., whereas in an example of *N. prolixa* Broun of the same length, they measure 4·0 mm. and 5·0 mm. The difference between the male genitalia of the two species is marked (see figs. 53 and 54) and allows of no confusion.

Locality: Martin's Bay, west coast of Otago. Known only from a single ♂.

Neoferonia fossalis (Broun, 1914), *Bull. New Zeal. Inst.*, I, iii, p. 149 (*Pterostichus*).

Fig. 106.

Length: 20·5 mm. Colour: metallic aeneous and bluish-black.

Pronotum with a long but slight sinuation on each side above the posterior angle, which is square; two shallow separate depressions near the base on each side, the outer one reaching the base; width of pronotum at the widest part 6 mm.; width of the elytra 7 mm. Elytral striae strongly impressed; faintly but regularly punctured. Intervals convex.

Locality: Hump Ridge, Invercargill. Known from a single ♀.

Neoferonia procerula (Broun, 1886), *Man. New Zeal. Col.*, IV, p. 827 (*Pterostichus*).

Figs. 55, 107.

Length: 19–21 mm. Colour: aeneous-black.

Pronotum with sides only moderately curved and hardly sinuate above the posterior angles, which are square; basal impressions double, shallow. Elytral striae regular, well impressed and faintly but regularly punctured. Intervals flat or slightly convex.

Localities: Mount Maungatua; Mount Dick; Port Chalmers. 5 ♂♂, 2 ♀♀.

Genus RHYTISTERNUS Chaudoir, 1865.

Bull. Soc. Nat. Mosc., 38, III, p. 106.

Genotype: *Rhytisternus liopleurus* Chaudoir (here designated).

Rhytisternus miser Chaudoir, 1865, *Bull. Soc. Nat. Mosc.*, XXXVIII, 3, p. 108; 1874, *Ann. Mus. Civ. Genova*, VI, p. 598; Sloane, 1920, *Proc. Linn. Soc. N.S. Wales*, XLV, p. 164.

Rhytisternus rugifrons (Broun, 1880), *Man. New Zeal. Col.*, I, p. 41 (*Holcaspis*) (n.syn.).

The chitin of the head and prothorax of the type of *R. rugifrons* was evidently crumpled when soft.

Rhytisternus erythrognathus Broun, 1893, *Man. New Zeal. Col.*, V, p. 986 (n.syn.).

I have not seen the type of this species. It is not to be found in the Broun collection. As no species of this genus, other than *R. miser*, appears in any of the material I have seen, and this species is obviously a recent introduction, it seems highly probable that it

is the only New Zealand species. The description given by Broun fits *R. miser* very well, except that he says " there is apparently only one seta on each side of the thorax." The posterior setiferous puncture is, in any case, difficult to see. I therefore have no hesitation in establishing the synonomy.

Length: 10–11 mm. Colour: black; mouthparts, antennae and tarsi reddish-brown.

The elytral striae are well impressed except for the basal halves of the sixth and seventh striae, which are very faint; striae without any trace of punctuation; intervals slightly convex, without setiferous punctures.

Localities: Auckland; Howick; Huia; Waitakerei; Mt. Albert; Tairua. 10 examples.

Known also from Queensland and Tasmania.

Genus PSEGMATOPTERUS Chaudoir, 1878.

Genotype: *Psegmatopterus politissum* (White).

Psegmatopterus politissimum (White, 1846), in Richardson and Gray, *Voy. of Erebus and Terror,* Ins., p. 4 (*Platysma*); Broun, 1880, *Man. New Zeal. Col.,* I, 1880, p. 41 (*Holcaspis*).

Psegmatopterus anchomenoides Chaudoir, 1878, *Bull. Soc. Nat. Mosc.,* LIII, ii, p. 57 (n.syn.).

Anchomenus hallianus Broun, 1921, *Bull. New Zeal. Inst.,* I, vii, p. 598 (n.syn.).

Figs. 4, 56.

Length: 13–15 mm. Colour: black.

Protonum with sides strongly sinuate above the posterior angles, which are rectangular; the raised margin of the sides of the pronotum is continued along the basal edge; elytral intervals strongly convex; striae very faintly punctured; elytra free; hindwings reduced, not folded, length slightly more than half that of the elytra.

Localities: Manawatu; Port Nicholson; Wellington; Rotoiti, Nelson. 8 examples.

Psegmatopterus appears to be closely related to *Chlaenioidius,* which includes four species, restricted to Australia, Tasmania, and New Caledonia. *Psegmatopterus* differs from *Chlaenioidius* in having the elytral intervals convex instead of flat, and in the pronotum, the sides of which are sinuate and constricted basally instead of being trapezoidal in form. The male genitalia in the two genera are similar in form, the aedeagus being in the form of a tube open only at the apex, while the two parameres are long and pointed.

Genus LAEMOSTENUS Schaufuss (Bonelli *in litt.*).

Laemostenus Schaufuss, 1864, Sitzungsber. *Ges. Isis,* Dresden, p. 121; Andrewes, *Trans. Ent. Soc. Lond.,* 1919, p. 91.

Genotype: *L. venustus* Clairville, 1806, *Ent. Helv.,* II, p. 87; Jeannel, *Rev. Francaise d'Ent.,* IV, 2. 1937, p. 84.

Laemostenus complanatus (Dejean, 1828), *Spec. gén. Col.,* III, p. 58.

Pristonychus terricola Herbst. (of Hudson), 1934, *New Zealand Beetles,* p. 174.

Length: 13–15 mm. Colour: head, pronotum, legs and antennae dark brown; elytra bluish-black; basal and lateral margins and scutellum brown.

Pronotum quadrate, the sides with a slight, elongate sinuation in front of the posterior angles, which are obtuse; basal depressions shallow, obscurely punctured. Elytra with intervals slightly convex anteriorly, flat towards apex; striae well marked, faintly but regularly punctured. Microsculpture of the surface very strong, so that elytra have a matt appearance.

Localities: Tairua; Albert Park; Rangiriri; Wellington; Christchurch. 26 examples.

This species, of European or N. African origin, is cosmopolitan, having been carried about by shipping.