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XXIX.—On *Deronectes depressus*, Fab., and *elegans*, Panzer

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XXIX. — *On Deronectes depressus, Fab., and elegans, Panzer.* By FRANK BALFOUR-BROWNE, M.A. (Oxon. et Cantab.), F.R.S.E., Lecturer in Entomology in the Department of Zoology, University of Cambridge; Staff Lecturer in Entomology in France; Capt. R.A.M.C.T. Reserve.

[Plates VII. & VIII.]

IN our standard work upon British beetles and in our catalogues there are five species of *Deronectes*, of which one is given as *Deronectes depressus*, F., sometimes with *elegans*, Panz., as a synonym.

Under this name we have two species mixed in our collections, and these two species, although easily confused, are really distinct, and with a little experience easily separated.

One of these is common throughout England and Scotland, while the other seems to be limited in its distribution, being confined, so far as I know at present, to Scotland and the north of England and to Ireland, where it is apparently the only one found. My uncertainty as to Ireland rests upon the fact that before I knew of the existence of these two species I had "*depressus*" in my records for most parts of that country—for twenty-four out of the thirty-eight county and vice-county divisions,—but I had actually kept very few specimens. These, however, all prove to be what I will call the northern species, and all other Irish specimens I have

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since seen—a few in the Dublin Museum collection, a few in the Natural History Museum collection, some in the collection of Dr. G. W. Nicholson—belong to this species.

The discovery of the existence of this northern species in the British fauna I attribute to Dr. Sharp, although he tells me he remembers nothing about it and cannot now find in his collection the specimens which I thought I had seen there; but it was Capt. Ste. Claire Deville, of Epinal, France, who, in 1911, suggested to me the possibility of its existence in these islands. I had sent him a number of British water-beetles, and among them one or two English specimens of what I had named "*D. depressus*," and in acknowledging the receipt of them he said: "I agree with you for the names of all Dytiscidæ but *Deronectes depressus*, which seems to me to be our *D. elegans*, Sturm. The true *depressus*, an Arctic species, which I have from Russia, Norway, and also from Eastern Pyrenees, is perhaps also British" *.

Later in the year I was in Brockenhurst, and I mentioned this matter to Dr. Sharp, who, as I think, agreed that our common form was "*elegans*," and showed me two rather large and dark specimens of *Deronectes* from some eastern Scottish locality—I think it was L. Brandy in Forfarshire—which he considered to be the "*depressus*" of Fabricius.

After casually looking through my specimens, and failing to recognize any differences among them, I let the matter drop until in July 1915 I came across a statement by Thomas Bold, who, speaking of *Hydroporus elegans*, Illiger, said:—"I take a strongly marked var. of this common insect in Talkin Tarn, Cumberland. At first sight they much resemble *H. 12-pustulatus*, being much larger and darker coloured than the specimens of *elegans* from running water. Some have the elytra wholly black, except a narrow yellow margin, others are more or less lineated with yellow, and scarcely any of them have the spotted appearance characteristic of the species" †. This re-aroused my interest in the subject, and, as I was just starting to motor to Scotland, I determined to make a slight detour so as to visit Talkin Tarn on my way. This small tarn lies about 9 miles east of Carlisle, at

* Postcard, May 23, 1911.

† "Capture of some of the rarer *Hydropori* in the North of England," Zoologist, xii. pp. 4193-4195 (1854). Vide also *ibid.* xi. 1853, pp. 3924, 3925. Report of Proceedings of Tyneside Nat. Field Club Meeting, Mar. 30, 1853, where a large dark var. of *H. elegans*? from Talkin Tarn is mentioned.

about 400 feet above sea-level, and within 2 miles of the main road between Carlisle and Newcastle, so that it was not difficult to get at. The day of my visit was not propitious; it began to rain heavily just as I got to the tarn, and I spent a miserable fifteen minutes paddling about at the edge, during which time I collected five species of Hydradeephaga, and among the few specimens were two of Bold's "large and dark *elegans*."

On an examination of these a few days later, and on comparison with some freshly caught specimens from the Nith at Dumfries, I began to suspect that the Talkin Tarn individuals were the "*depressus*" referred to by Ste. Clair Deville, and I returned to the tarn and collected a number of specimens for further examination.

During August I examined a number of lochs and streams in the south of Scotland (Selkirk, Dumfries, Kirkeudbright, and Ayr), and definitely came to the conclusion that there were two species; but I was also greatly struck by the extraordinary distribution of the rarer one, which occurred in only a few lochs scattered about the district. Shortly after that, military duties, illness, and a long convalescence intervened, and it is only recently that I have again taken up the matter, and during August of last year I explored a number of the Galloway lochs with a view to further investigating the distribution there of the form which I take to be the *depressus* of Fabricius.

The characters upon which the two species can be separated are three in number: (1) the shape of the thorax in ♂ and ♀, (2) the form of the anterior tarsal claws of the ♂, and (3) the form of the aedeagus.

In general appearance the two species are usually very much alike, the colour-plan being similar, but, as a rule, the northern species is rather larger than the other. The range of colour-tone in the common species is greater than in the northern one, which is always dark, the yellow being reduced to a minimum, the black always occupying a large extent of the surface of the elytra. In the common species, especially in specimens from the south, the yellow is usually lighter in tone and the black more limited, but the relationship between the black and yellow seems to be related to habitat and to climatic conditions, as is the case with *Platambus maculatus*, *Deronectes griseo-striatus*, and some other Hydradeephaga. In the Scottish lochs I can find no difference whatever in colour-tone between the two species.

1. *The Thorax*.—To some extent the form of the thorax is of use as a discriminating character, although by itself it is of little value.

Comparing the males :—In the northern species the sides of the thorax tend to diverge, so that it is wider behind than in front, the greatest width being almost at the posterior angles. In the common species the sides of the thorax, although curved, run more or less parallel, the greatest width being some distance in front of the posterior angles.

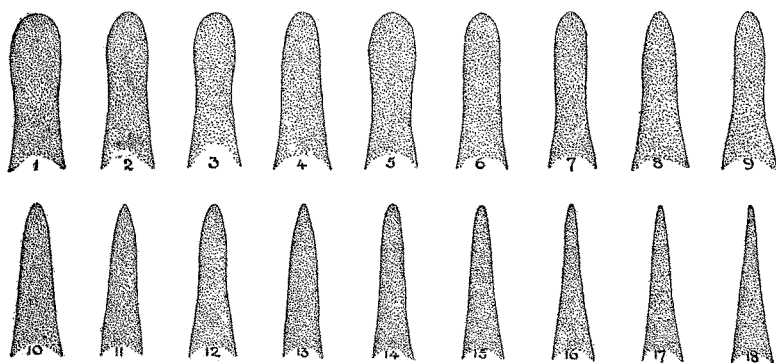
Comparing the females :—In the northern species the sides of the thorax are more or less parallel, so that it is about as wide, or very nearly as wide, posteriorly as anteriorly. Also the length in the median line from the anterior to the posterior edge is usually rather more than half the breadth at the broadest part. In the common species the sides of the thorax contract, so that it is distinctly narrower behind than in front, and the length in the median line is not quite half the breadth at the broadest part.

The form of the thorax is, however, not an entirely reliable character, as some males of the northern species are more parallel-sided, and some males of the common species, especially perhaps from some of the northern localities, have the thorax with at least a suggestion of greater width behind. In the females this character is even less reliable, which is specially unfortunate, since it is the best I can find, the female sexual armatures being quite similar. I will go so far as to say that the variation and overlapping of the two species in the form of the thorax in the female are such that I do not feel confident in determining the species from female specimens only. In three cases in which I had only females I named them tentatively. In two of these cases I later found males, and I happened to have been right in my determination, but I still feel that the female character is not reliable.

2. *The anterior tarsal claws of the males* form a useful character for distinguishing the two species. In the northern one these claws are usually much longer and the inner claw is much more strongly curved than in the common species. In both cases the curve is nearer the apex than the base, but the claw is more bent in the northern species, while in the common one the curve is gentle and regular. Whereas the outer (posterior) claw in the northern species is often slightly shorter than the inner (anterior) one, in the common species the two claws are more usually equal in length. The claw-

characters, taken in conjunction with the thorax-characters, generally enable one to separate the males with comparative ease, and so far, with one exception, I have always been able to determine the species on these characters, a subsequent examination of the ædeagus confirming my previous determination.

3. *The Ædeagus*.—In the northern species this organ, viewed from above, has a broad apex, while in the common form it has a pointed one, and until my recent visit to Gallo-way I regarded this character as definitely proving that we have two distinct species. On looking through my additional material from eighteen more lochs, I had no difficulty in separating the males of the two forms on the thoracic and



Apices of ædeagi of specimens of *D. depressus* ("the northern species") and *D. elegans* ("the common species"), chosen to show the range of variation.—Figs. 1-9. *D. depressus* (1, Talkin Tarn; 2, L. of the Lowes; 3, L. Urr; 4, L. Doon; 5-9, L. Dungeon). Figs. 10-18. *D. elegans* (10, 11, R. Spey; 12, 13, Long L. of the Dungeon; 14, L. Stroan; 15, L. Aber; 16, L. Skene; 17, Broadford River, Skye; 18, Moorlinch, N. Somerset).

tarsal claw-characters except in one case—Loch Dungeon, the specimens from which I put down as "uncertain." On examining the ædeagus of these specimens I found a range of width in the apex from that of typical "northern" specimens to a comparatively narrow and bluntly pointed form (*vide* figs. 5-9 *infra*).

Now I had previously noticed that there was a variation in

width in both species, but until I examined the Loch Dungeon specimens there was always a wide gap between the two types of ædeagus, the northern form being rounded at or even slightly flattened across the apex, and the common form pointed; and here, in specimens from this one loch, I found intermediates closing the gap. In the tarsal claw-character the males are mostly of the northern type, but in the shape of the thorax there is considerable variation. The females, too, are mostly what, in the absence of males, I should have left unnamed or put down very doubtfully as the common species.

The first explanation which will occur to anyone is that we have in Loch Dungeon a hybrid; but there are one or two objections to this view. In the first place, I did not find in the loch any male with an ædeagus of the normal "common species" type. The narrowest ædeagus is as broad as or broader than the broadest ædeagus of the common species (*v. fig. 10*), although the surrounding lochs contain the common species with a narrower ædeagus.

In the second place, if this loch contains hybrids, why does no other of the thirty-two lochs I have examined contain them? * With one exception I have not found both species present together in any loch, and in the exceptional case—Loch Stroan—I only found a single male of the northern species, while the common one was abundant there.

It seems open to question, therefore, whether we have merely one species showing extreme range of form or whether we have two species very closely related to one another. On the evidence in my possession, *i. e.*, after examining considerably more than five hundred specimens, I am inclined to adopt the latter view, first, because the variation in the ædeagus does not overlap in the two forms, and connecting-links have so far only turned up in the one loch, and, secondly, because of the extraordinary distribution, isolation, and rarity of this northern one, to which I will refer in detail later on.

Having come to the conclusion that these are two distinct species, the question arises, are they, as has been suggested, the *depressus* of Fabricius and the *elegans* of Panzer, or is one of them something new? The most direct method of settling the question would have been by comparison with the types of the two species, and I had great hopes that the "*depressus*"

* I have altogether examined forty-five lochs in southern Scotland, but seventeen of these contained neither species.

type might exist in this country. Fabricius, in his 'Entomologia Systematica,' frequently mentions where his type-specimens are to be found, but in the case of "*Dytiscus depressus*" he gives no such information; and an examination of the Banksian Collection in the Natural History Museum and of Graham Kerr's published list of Fabrician types in the Glasgow University Museum failed to discover its location. It is presumably in Copenhagen or some other Scandinavian museum if it is still in existence.

As to Panzer's type, I could get no information, and in the absence of the types I had to fall back upon the literature. I therefore started with Fabricius's Ent. Syst., and examined most of the important works from 1792 up to the present time, and I have looked up more than forty references in the course of this examination. Two points have struck me during this part of the work: one is the exceeding vagueness of the original descriptions, which give only colour-characters for the recognition of the species, and the other is that, where subsequent authors have treated *depressus* and *elegans* as distinct species, they have mostly shown an extraordinary lack of originality, relying, like their predecessors, mainly upon colour-characters and merely varying the words of the original descriptions.

I have included at the end of this paper a bibliography of the works I have looked up, with, in each case, a short note as to the view taken by the author, but a short *résumé* of some of the more important works may be of interest.

Fabricius's original description was published in 1792 and that of Panzer about 1793—Paykull, Illiger, and Marsham following in order of date. The first only refers to Fabricius's species, without giving any indication as to whether he knew *elegans*. Illiger describes the colouring of Panzer's species, and then says "the *D. depressus* appears to be closely related to this species," showing that he only knew the latter from a description.

How Marsham identified our common British species as *elegans* we have no means of knowing, but we can assume that either he did not know *depressus*, which seems probable, or that he regarded it as distinct from Panzer's species.

Dufschmidt seems to have been the first to regard "*elegans*" as a synonym of "*depressus*," though the remark he makes suggests that he possibly had the latter, since he mentions that whereas Panzer and Illiger describe their species as having the underside rusty red, his specimens have that part black.

From that time on the writers can be divided into those who regarded "*elegans*" as a synonym of "*depressus*" and those who recognized two distinct species. Among the former are Schonherr, Gyllenhal, Kunzé, Stephens, Zetterstedt, Wilson and Duncan, Aubé, Schiödte, Schaum (1868), and Sharp.

So far as I can make out, Stephens has merely followed Kunzé, since in his later work (1829) he gives the species as "*depressus*, Kunzé." Aubé regards individuals with the black reduced as *elegans*, Sturm, and his long description is mainly a colour one. Schaum, in an earlier paper (1843), regarded *elegans* as a distinct species, and he mentions its occurrence in salt lakes in Saxony, refers to the synonymy, and points out the longer form and darker underside of "*depressus*, F., Gyll., Sahlb., and Sturm, and also refers to the distribution of this latter species, which, he says, appears to be indigenous to Finland, Sweden, Denmark, and Kief (Mid-Russia), *elegans* being found throughout Mid and South Germany, France, and Switzerland. In 1868, however, he alters his opinion, giving "*elegans*" as a synonym of "*depressus*," but remarking that Swedish examples ("*H. depressus*, Gyll.") are longer and darker than the German ones.

Sharp, in his '*Dytiscidæ*,' says nothing about *elegans*, and gives what is mainly a colour-description of "*Dytiscus depressus*, Fab." His types (no. 241. 1 ♂ and 1 ♀ "*Anglia*" and 1 ♀ "*Europa*"), in the Natural History Museum, are, however, our common species, and I have therefore concluded that he regarded "*elegans*" as a synonym of "*depressus*."

Among those who regard *elegans* as a distinct species we find Sturm, Murray, Bach, Bosé, Seidlitz, Ganglbauer, Everts, and Reitter, while we may perhaps include the Sahlbergs and Thomson, who only describe *depressus*, but from a region where *elegans* would be less likely to occur.

Sturm makes three species out of his material, calling his new one "*brevis*," but, according to Schiödte, he admits that he has only seen a single specimen of the northern *depressus*, and his descriptions, beyond referring to minute differences in form, only deal with colour-characters. Subsequent authors have regarded his "*brevis*" as a synonym of "*elegans*."

In his '*Icones*' on pl. cciii. he has a typical *elegans* labelled "*H. depressus*," which he explains is a mistake for "*H. brevis*." On pl. ccv. he illustrates "(A) *H. elegans*, Illig.,"

and “(B) *H. depressus*, Gyll.” The sex of the individuals drawn is not mentioned, but by the shape of the thorax A is more like *depressus*, while the dark colouring of B agrees with his description of that species, the shape of the thorax in his drawing suggesting either a ♀ *depressus* or a ♂ *elegans*.

Murray gives *H. elegans*, Illiger, as our British species, with the synonyms “*depressus*, Aubé, Steph., not Fab., *brevis*, Sturm,” and this elimination of Fabricius’s species as something distinct is interesting. Further, his synonymy shows that he regarded Aubé and Stephens as wrong in their species.

Bach’s remarks are of interest mainly because of what he says as to the habitat of *elegans*. He describes *depressus* as very rare, while *elegans*, he says, occurs in the salt lake at Eisleben, a statement which agrees with Schaum’s observations at Sülldorf and Stassfurth, also in Saxony but a little farther north. For a species which elsewhere occurs in lakes and rivers this habitat is remarkable, but we find other Hydradephaga and Hydrophilidæ showing similar peculiarities—in fact, several at least of our brackish-water beetles are freshwater species in the Mediterranean district.

Seidlitz for the first time gets off the beaten track, and about ninety years after the discovery of the two species finds reliable characters upon which they may be separated. He refers to the different forms of the two insects, mentioning the thorax, and he also mentions the difference in form and size of the anterior tarsal claws of the males; and from his description, which has been enlarged upon by Ganglbauer, I regard our northern species as his “*depressus*” and our common one as his *elegans*.

In a footnote (1886, p. 57) he states that Sturm was the first to separate the two species, and that the earlier writings of Panzer and Illiger refer to *depressus*. Undoubtedly Sturm is the first author to refer to both and to describe them as separate species, but I can find no evidence for the statement as to Panzer and Illiger. So far as colour is of any value as a discriminating character, it is quite evident that Panzer is referring to lighter-coloured specimens than Fabricius, and from the chain of evidence which I have outlined I regard *elegans* as his species.

Habitat and Britannic Distribution.

So far as habitat is concerned, *D. elegans* is a river and loch species in our islands, whereas, omitting Ireland, which

requires further investigation, *D. depressus* is apparently only a loch species.

The same type of loch suits both, and they occur upon a stony, gravelly, or sandy bottom, but apparently not on a peaty one. Some sort of vegetation seems to be necessary, but whereas in some lochs I found the beetles on ground carpeted with *Lobelia dortmanni*, in others this weed failed to produce any. The most fertile spot was usually where there was a patch of *Myriophyllum* or other weed on a stony bottom, but even such a place sometimes failed to produce a single individual.

I examined seventeen lochs without finding either species, and the following is a list of these:—

"Upper Loch," Lochmaben.	Dumfries.
Clearburn L.	Selkirk.
L. Smaddie.	Kirkcudbright.
L. Lurkie.	
L. Arthur or Lotus L.	Kirkcudbright.
Knocksting L.	"
Lochenbreck L.	"
Little Dornell L.	"
Blates Mill L. (by Woodhall L.).	Kirkcudbright.
Dry Loch (Dungeon of Buchan).	"
L. Dow (Craignaw).	"
Craiglee L. (top of Craiglee).	"
Long L. of Glenhead.	"
L. Minnoch.	"
L. Enoch.	"
L. Arron.	"
L. Neldricken.	"

In the case of one or two of these the peaty bottom perhaps made the habitat unsuitable (*e. g.*, Little Dornell L., Blates Mill L., and "Upper" L.), while in others perhaps altitude excluded them (*e. g.*, L. Enoch, 1600 ft.; L. Arron, 1400 ft.; Craiglee L., 1700 ft.; and L. Dow, 1300 ft.), but in the case of most of the others I cannot imagine why I found neither species, except that I was unlucky. Why, for instance, should L. Neldricken not have either of them, when both L. Valley and L. Narroch possess *elegans*? The Long L. of Glenhead is to all appearance quite as suitable for the species as the Round L., which contains *elegans*. Knocksting L. and L. Arthur I worked thoroughly and over very promising ground, and yet without result. L. Minnoch, lying between Lochs Harrow and Dungeon, I worked three times, and examined it all round, and yet failed to find any water-beetle at all. Such a result is very rare in my experience. Lochen-

breck L. being the only other loch in the list which gave a like result.

Seeing that *D. depressus* is a northern species, I certainly expected to find it at higher altitudes than *D. elegans*, and yet, whereas the latter occurred in several lochs above the 1000-foot line, usually with the true "Arctic" species *D. griseo-striatus*, the former was in no loch above this level—in fact, excepting L. Dungeon, which is about 1000 feet above the sea, all the other lochs in which it occurred are at a much lower altitude.

The habits of the two species seem to be identical. In some places the beetles occur in shallow water at the side, so that they can be caught without one having to take off shoes and stockings, while in other places the only way to get them is to strip and go in almost to the waist. In one part of L. Doon, for instance, I got a few specimens in about 2 feet of water, but none closer in, whereas in another part I failed to get any until I scraped about in the shallowest places. In Loch Dungeon I caught a single specimen in the shallows, and then found them in abundance in a place where the gravel suddenly sloped downwards into deep weedy water. In Loch Narroch I got nothing until I stripped and went in, and then I found plenty of specimens in 3 to 4 feet of water. Again, in Loch Ken, wading to the knees enabled me to obtain a dozen and more specimens within five minutes.

Possibly, of course, the beetles vary their depth at different times, and the same place in a loch might yield quite different results at different hours or on different days; but I have not yet investigated this point, and am merely recounting my experiences in obtaining my material.

With regard to the Britannic distribution of the two species, I have already mentioned that apparently only *D. depressus* occurs in Ireland, and I have in my collection or have seen specimens from Antrim, Fermanagh, Cavan, Sligo, and Cork West. In Britain the only counties in which I have so far taken this species are Cumberland, Selkirk, Dumfries, Kirkcudbright, Ayr, and perhaps Dumbarton (Loch Lomond); but in the latter case I have only a female specimen, and, as I have said, I do not feel quite certain as to the species in the absence of a male.

Of the thirty-two lochs examined in which one or other of the two species occurred, *depressus* was only found in eleven, and the following is a list of these:—

Talkin Tarn.	Cumberland.
St. Mary's Loch.	{ Selkirk.
L. of the Lowes.	

L. Urr. Dumfries and Kirkcudbright (specimens taken in various parts of the loch).

L. Roan. Kirkcudbright.

L. Ken. "

L. Dungeon. "

L. Stroan (1 only). Kirkcudbright.

L. Dornell. "

Woodhall L. "

L. Doon. Ayr.

With the exception of L. Stroan, where only one specimen (♂) occurred amongst many *elegans*, these lochs, scattered over a large district, were occupied by *depressus* to the entire exclusion of *elegans*. In some, *e. g.*, Talkin Tarn, L. of the Lowes, L. Roan, and L. Ken, it was abundant and easily taken, whereas in others an hour or more was necessary to get sometimes only a few specimens.

A glance at the Ordnance Map will show the extraordinary nature of this distribution. In the Merrick and Kells district, out of thirteen lochs examined only one (L. Dungeon) gave me this species, while seven gave me *elegans*. Why should Lochs Urr, Ken, Roan, Woodhall, and Dornell contain *depressus*, when Howie, Skerrow, Auchenreoch, Milton, Lochrutton, Aber, and Kinder contain *elegans*, or why should St. Mary's L. and the L. of the Lowes have the former, while L. Skene, an "Arctic" loch dammed up by moraine material, only contains the common species?

If *depressus* occurred in such lochs as Enoch and Skene, we could quite easily account for its distribution, on the ground that it is a remnant of the old fauna of the Glacial Period still holding on in a few isolated habitats; but its "spotty" distribution and its isolation from *elegans* are facts as to the explanation of which I can at present make no guess. When things once more settle down to their normal, I hope to further investigate the matter and to follow out the life-histories of the two species, from which, perhaps, something may be learnt.

The common species, *elegans*, is undoubtedly much more widely distributed than my records indicate; but this is not the time to worry other Coleopterists to send me their specimens for examination, so that I have been limited in material almost to what I have collected myself. I have in my collection or have seen specimens from the following counties and vice-counties:—Cornwall, W.; Devon, S.; Somerset, N. and S.; Hants, S.; Kent, E. and W.; Middlesex; Bucks; Herts; Cambs; Norfolk, E.; Suffolk, E.; Cumberland; Isle of Man; Dumfries; Kirkcudbright; Lanark; Renfrew; Peebles; Edinburgh; Mid-Perth; Easternness and Ebudes N.

I have records for *depressus*, Brit. auct., for 43 out of the 70 English and for 21 out of the 41 Scottish county and vice-county divisions, and it is most probable that the majority of these refer to *elegans*, which is almost certainly a typical "British" species in Watson's sense of the term*.

With regard to the distribution of this species in the southern Scottish counties, it occurred in the following twenty-one lochs:—

L. Ettrick.	Dumfries.
L. Skene.	"
Castle L.	} Lochmaben, Dumfries.
Kirk L.	
Mill L.	
Hightae L.	
L. Kinder.	Kirkcudbright.
Lochrutton L.	"
Milton L.	"
Auchenreoch L.	"
L. Aber.	"
L. Howie.	"
L. Stroan.	"
L. Skerrow.	"
L. Dee.	"
Long L. of the Dungeon.	Kirkcudbright.
Round L.	" " "
L. Narroch.	" Kirkcudbright.
L. Valley.	"
Round L. of Glenhead.	Kirkcudbright.
L. Harrow.	"

In Cumberland the only loch I examined other than Talkin Tarn was Tindale Tarn, about 3 miles distant, and there this species occurred commonly.

So far I have not found *depressus* in any British stream, but if it occurs in Irish rivers—a point not yet determined, as all my Irish specimens are from lochs and canals—it may perhaps also occur in Scottish ones.

I have, or have seen, river specimens of *elegans* from the Nith, Dumfries; Spey, Easternness; Broadford R., Skye; Almond R., Mid Perth; and the Water of Leith, Edinburgh. These river specimens are always more brightly coloured than loch specimens, and I think I should not hesitate to determine female river specimens of *elegans* even in the absence of males. However, if *depressus* also occurs in some rivers it may have brightly coloured individuals also.

Much remains to be done on the economy of these two

* 'Cybele Britannica, or British Plants and their Geographical Relations,' 1847.

species, but, as further investigations must be postponed indefinitely in these moving times, I have thought it well to put on record the existence of this additional species in the British beetle fauna, together with the notes I have made up to date.

Summary.

There are apparently two species included by British authors under the name *Deronectes depressus*. One of these I regard as *D. depressus* of Fabricius and the other as *D. elegans* of Panzer.

The characters upon which these species may be separated are :—

1. The shape of the thorax in ♂ and ♀. By itself this is of little value, especially in the ♀, and in the latter sex there is, unfortunately, no other means of separating the species except by size, which, of course, is equally unreliable.
2. The anterior tarsal claws of the ♂, a character which, in conjunction with the shape of the thorax, makes the separation of the species easy in most cases.
3. The breadth of apex of the ædeagus. This varies in both species, and the variation is such that the narrowest ædeagus of *D. depressus* and the broadest of *D. elegans* are almost alike.

This discovery of a complete series from broad- to narrow-apexed ædeagus (*vide* text-figures) made me doubtful as to the specific distinctness of the two forms, but, having regard to the fact that the two species do not occur together, that the distribution of *depressus* in the district examined is limited to eleven out of thirty-two lochs and that these eleven lochs are scattered about in the district, I continue for the present to regard the two as good species very closely related to one another.

A short historical review of the two species is given, and a bibliography of the more important works referring to them.

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EXPLANATION OF THE PLATES.

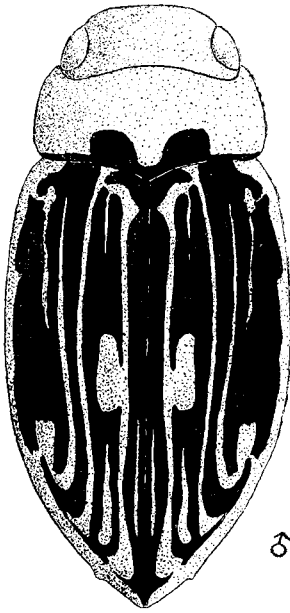
PLATE VII.

- Fig. 1.* Drawing of *Deronectes depressus*, F., ♂. Talkin Tarn, Cumberland.
Fig. 2. Drawing of *Deronectes depressus*, F., ♀. Talkin Tarn, Cumberland.
Fig. 3. Drawing of *Deronectes elegans*, Pz., ♂. R. Cam, Cambridge.
Fig. 4. " " " ♀. " "

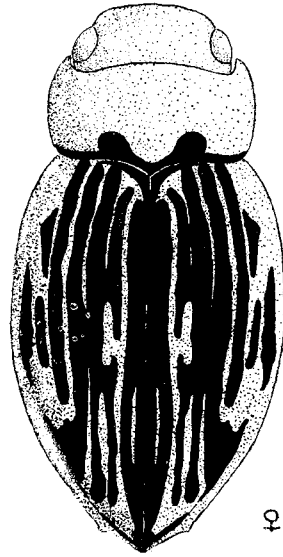
PLATE VIII.

- Fig. 1.* Right anterior tarsal claws of ♂ *D. depressus*, F. Talkin Tarn, Cumberland.
Fig. 2. Ditto, ditto. Loch of the Lowes, Selkirk.
Fig. 3. Ditto, ditto. Lagan Canal, Co. Antrim.
Fig. 4. Right anterior tarsal claws of ♂ *D. elegans*, Pz. Round L. of Glenhead, Kirkcudbright.
Fig. 5. Ditto, ditto. Auchencroch L., Kirkcudbright. (Note the inequality of the claws in this case, which is exceptional.)
Fig. 6. Lateral view of ædeagus of *D. depressus*, F.
Fig. 7. Dorsal view of ædeagus of *D. depressus*, F.
Fig. 8. Dorsal view of ædeagus of *D. elegans*, Panz.

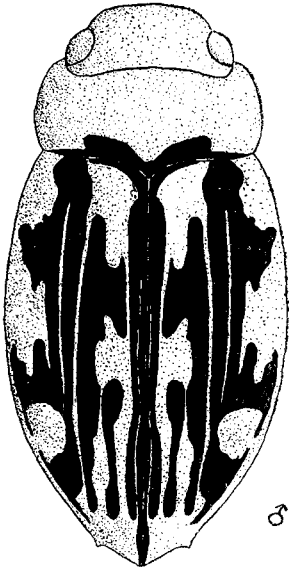
Drawings of the tarsal claws are all to the same scale.



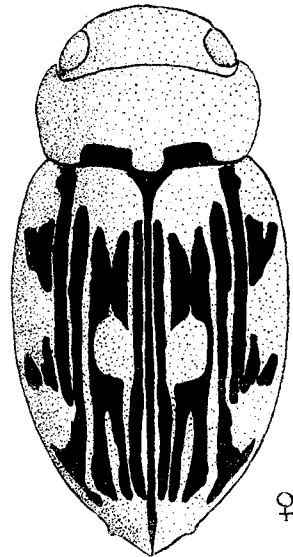
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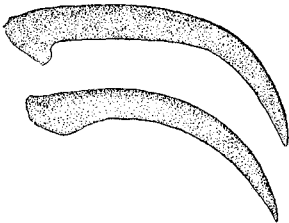
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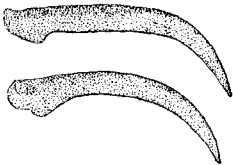
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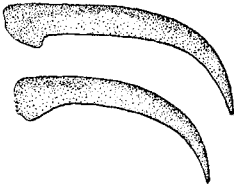
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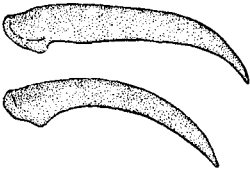
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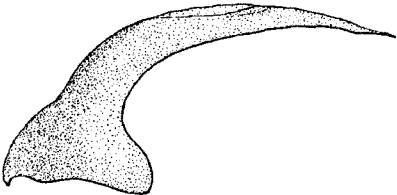
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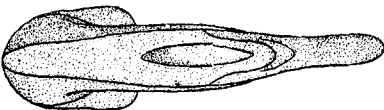
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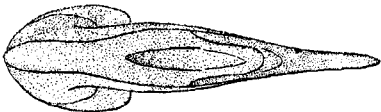
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