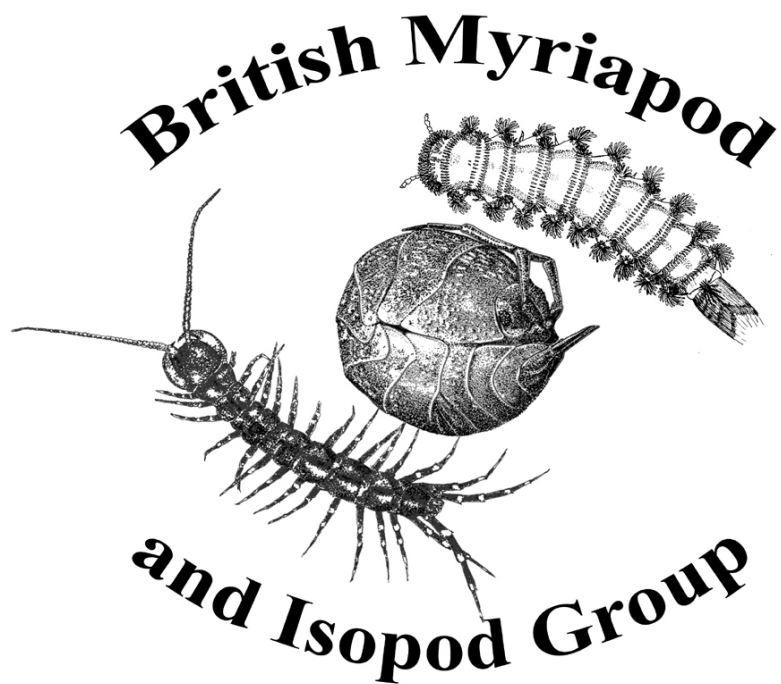


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Cover photograph: *Henia vesuviana* © Tony Barber

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EDITORIAL

This year has seen some fresh stimulus within the British Myriapod and Isopod Group. At the meeting at Easter 2010 we welcomed a new Chairman in Paul Lee, also co-ordinator of the Millipede Recording Scheme, and thanked Eric Philp for his years as Chairman. Eric stood in at short notice on the sad occasion of the death of Steve Hopkin and we are very grateful to Eric for steering us ably through the years when we have seen our membership rise, and publication of two centipede keys and atlases for both woodlice and millipedes. Electronic communication has also improved with the consolidation of the electronic discussion group and the website finding a new home with the hosting by the Biological Records Centre.

Paul Lee's leadership seems set to have a conservation focus, at least initially, as he was instrumental in the awarding of a grant from the Government (DEFRA) which has enabled fieldwork to be carried out for *Trachysphaera*, *Polyzonium*, *Metaiulus* and *Nothogeophilus*. This work has been successful so far (apart from *Nothogeophilus*) and it is likely that several publications in the Bulletin will result. The most recent field meeting in Kent (April 2011) was impressive for the work carried out by all participants in surveying a wide range of sites for *Polyzonium* using a sampling protocol set up by Paul.

In the last year the group has also been fortunate to secure two grants from OPAL (Open Air Laboratories - see www.opalexplornature.org). The first of these is for the production of three ebooks giving information about our groups and to help beginners and more experienced alike by showing some of the key identification features through the use of photographs and including pictures of the live animals. Paul Richards is working on the content of these which will be produced by Nature Bureau; details of how to obtain them will be circulated in due course. Paul Richards has also been responsible for redesigning the BMIG logo which is on the cover of the Bulletin this year. We are very grateful to him for producing this at short notice to be included on literature relating to OPAL. The second grant is for the purchase of equipment to show live specimens on a screen direct from a microscope which will be of significant help in identification workshops, including at regular BMIG meetings.

For a small society without membership fees, BMIG is currently punching above its weight. We hope that this momentum will continue and that the new initiatives will help encourage some new members. It is certainly encouraging to see new faces at the recent field meetings.

The Bulletin this year includes articles from several new authors too and heartening to see that the important collections at Manchester University are being curated and catalogued to make them more accessible and useful in the future. It is important to remember those key people that were the foundation of the BMIG and Myriapodology in Britain and Europe as well as looking to the future.

NOTES ON AUTHORSHIP, TYPE MATERIAL AND CURRENT SYSTEMATIC POSITION OF THE DIPLOPOD TAXA DESCRIBED BY HILDA K. BRADE-BIRKS AND S. GRAHAM BRADE-BIRKS

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ABSTRACT

H.K. Brade-Birks and S.G. Brade-Birks described eight Diplopoda taxa as new to science: two nominal genera and three nominal species in the Family Brachychaeteumatidae (Genera *Jacksoneuma* and *Iacksoneuma*, species *Iacksoneuma bradeae*, *Brachychaeteuma melanops* and *B. quartum*), one nominal species in the Family Blaniulidae (*Proteroiulus pallidus*), and two nominal subspecies in the Family Chordeumatidae (*Chordeumella scutellare brolemanni* and *Chordeumella scutellare bagnalli*). Over many years the fact that there were two Brade-Birks' seems to have become forgotten and some of the authorships quoted for these names is certainly wrong because of this. This is discussed in detail and correct authorship for these names is provided. Similarly the nature and location of type material for these species is largely unknown and details of what is known are given where this has been ascertained. The currently accepted systematic position of these taxa is described.

INTRODUCTION

Hilda K. Brade (1890–1982) and S. Graham Birks (1887–1982) (who took the surname Brade-Birks on marriage, hereafter in the plural as Brade-Birks') were the most important British myriapodologists of the early 20th century. In the period 1916 to 1939 they left us 36 of their "Notes on Myriapoda" which provided very valuable additions to knowledge of the British Diplopoda and Chilopoda, as well as synthesising the literature pertinent to British taxa. In addition, in just over four years from June 1916 to October 1920 they were responsible for eight nominal taxa new to science from British collected material. These taxa have been referred to many times since then but it is clear that some of the details, especially the authorship of the taxa, have not been properly cited. The taxa under discussion are:

1. *Jacksoneuma* (Brachychaeteumatidae)
2. *Iacksoneuma* (Brachychaeteumatidae)
3. *Iacksoneuma bradeae* (Brachychaeteumatidae) [currently *Brachychaeteuma bradeae*]
4. *Brachychaeteuma melanops* (Brachychaeteumatidae)
5. *Brachychaeteuma quartum* (Brachychaeteumatidae) [currently considered a synonym of *B. bradeae*]
6. *Proteroiulus pallidis* (Blaniulidae) [currently *Archiboreoiulus pallidus*]
7. *Chordeumella scutellare brolemanni* (Chordeumatidae) [Currently *Melogona scutellaris*]
8. *Chordeumella scutellare bagnalli* (Chordeumatidae) [Currently *Melogona scutellaris*]

This note discusses the authorship for these taxa, describes what is known of the type material for them and examines their current systematic position. In what follows the Articles (Art.) and Recommendations (Rec.) of the current (4th) edition of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999) are used to determine the proper formulation and authorship of these names. Potential type material held by the Natural History Museum London (NHML, formerly British Museum (Natural History)), the Muséum National d'Histoire Naturelle (MNHN) in Paris, and the Manchester Museum (MM) is discussed (see Proudlove and Logunov (2011) for further details of the myriapod holdings in the Manchester Museum). The taxa are treated in descending order of inclusiveness (genera, species, subspecies) and within these groups in chronological order.

GENUS *JACKSONEUMA*

The first new generic name to be published, in July 1917, was *Jacksoneuma* (Brade and Brade-Birks, 1917:117). The generic name was erected in the following text:

“*Jacksoneuma bradeae* nobis Brolemannque. This new genus and species occurs in rockeries and other situations where the soil is fairly soft. It is not uncommon at Darwen, where it is often associated with *Chordeumella scutellare* var. *brolemanni*. A full description of this animal will be published shortly. It may be added that this is probably the animal recorded in our fourth paper [Brade and Birks 1916b:145] under *Brachychaeteuma bagnalli* Verhoeff, with which it has some affinities.”

This was published five months before the description of *Iacksoneuma* in Brade-Birks and Brade-Birks (1917) which was published in December 1917.

The first issue is to be certain that the name is spelled with a capital “J”, and not a capital “I”. Reference to p. 114 line 9 which reads:

“In the body of the paper (J) after an occurrence indicates that we give the record solely on Dr. Jackson’s diagnosis”

provides the solution. There is no confusing the “I” of “In” with the “J” of “(J)” or of “Dr. Jackson’s”, they are easily distinguished. So we can be as certain as possible that the name is spelled with a “J” as it was meant to honour Dr. Jackson, from whom they had learned their myriapodological trade (Brade-Birks, 1974:4-5).

The second issue is to determine whether this is a valid generic name or a *nomen nudum*. This is an important point because if valid it takes date priority over *Iacksoneuma*. In order to be a valid generic name it must conform to Art. 12 of the code which states:

“To be available every new name published before 1931 must satisfy the provisions of Article 11 and must be accompanied by a description of the taxon that it denotes, or by an indication.”

This name does satisfy the provisions of Article 11. We need to decide if the text provided by Brade and Brade-Birks constitutes either a description, a definition or an indication. It seems clear that this short text is neither a description, nor a definition nor an indication in the sense of Art. 12. So the generic name *Jacksoneuma* Brade and Brade-Birks, 1917 is a *nomen nudum*. Neave (1939:804) includes the name but as misspelling of *Iacksoneuma*, as pointed out by Jeekel (1971:68). Strangely, neither Jeekel (1971), nor the corrections to it (Jeekel, 2000), cover this generic name.

GENUS *IACKSONEUMA*

With the nominal taxon *Jacksoneuma* being a *nomen nudum* we can examine the valid generic name *Iacksoneuma* which was erected to contain a new species of millipede found in Whitehall Park, Darwen, Lancashire in 1916.

The various authoritative *Nomenclators* (Neave, 1939; Jeekel, 1971; Sierwald, 2006) give the authorship of this genus as follows:

Neave: *Jacksoneuma* Brade-Birks 1917, (J. Zool. Res. 2: 135 1939)

Jeekel: *Iacksoneuma* H.K. Brade-Birks & S.G. Brade-Birks, 1917 (J. Zool. Res. 2:135). N.

Sierwald: *Iacksoneuma* H.K. Brade-Birks, 1917 J. Zool. Res. 2:135. N.

[The Nomenclator II of Shelley et al (2000) is not relevant here].

The authorship for the generic name *Iacksoneuma* must be H.K. Brade-Birks and S.G. Brade-Birks, 1917 as these are the authors of the paper in which the genus was proposed and no other explicit authorship is provided, suggested or implied. Therefore the genus is accurately:

Iacksoneuma H.K. Brade-Birks and S.G. Brade-Birks, 1917.

Only Jeekel’s Nomenclator provides the correct authorship for this genus.

JACKSONEUMA BRADEAE

Jacksoneuma bradeae was described as a new species in 1917. The title and authorship of the paper is:

“Notes on myriapoda VII. A new member of the order AscospERMOPHORA (*Jacksoneuma bradeae*, gen. et sp. nov.) by Hilda K. Brade-Birks and the Rev. S. Graham Brade-Birks.”

However, at the beginning of the species description (p. 138) the title is given as:

“*Jacksoneuma bradeae*, n. sp. Brölemann and Brade-Birks”

And we are to understand from this that the species is described by Brölemann and (one of the) Brade-Birks’.

It is certainly possible for the nomenclatural act to be performed by person(s) other than the main authors of the publication (Art. 50.1.1) and the authors of this new species description certainly could be “Brölemann and Brade-Birks”, as given. The “Brölemann and Brade-Birks” authorship formulation has been used by subsequent authors, e.g. Blower, 1958, 1985; Jeekel, 1971; Enghoff, 1989; Lee, 2006; Sierwald, 2006). However, under Arts. 50 and 51 of the Code this authorship cannot be correct.

Two additions are necessary to correct the authorship. First, Rec. 51E recommends that it should be explicitly stated that the description of the species *I. bradeae* provided by Brölemann and Brade-Birks is contained within the paper authored by H.K. Brade-Birks and S.G. Brade-Birks giving authorship as:

Jacksoneuma bradeae Brölemann and Brade-Birks, 1917 in H.K. Brade-Birks and S.G. Brade-Birks, 1917

This is a necessary but not sufficient correction as Rec. 51A is clear that ambiguous authorship should be avoided. To achieve this we need to decide which of the Brade-Birks’ is the author of the name in conjunction with Brölemann. If it is only one of them it must be one or the other and we must (ideally) be able to know which one.

It is relatively easy to determine that H.K. Brade-Birks is the author of the name. She drew all of the 20 diagnostic figures (see foot note to Brade-Birks and Brade-Birks 1917: fig 21) and she probably composed the whole text. A footnote on p.135 says:

“For this honour and compliment *I* must here express *my* best thanks. –*H.K.B-B*” (emphasis added)

[this refers to the specific name *bradeae* suggested by Brölemann as the name for the species]. This first person singular response, to a letter from Brölemann, strongly suggests that she wrote the text. If this is the case then the authorship is:

Jacksoneuma bradeae Brölemann and H.K. Brade-Birks, 1917 in H.K. Brade-Birks and S.G. Brade-Birks, 1917

However it is unclear why only one of the two Brade-Birks’ is responsible for the name. Surely they were both responsible?

It is relatively easy to determine that, in fact, both H.K. and S.G. Brade-Birks *were* responsible for the work to describe the new species. Firstly they were responsible together for the genus *Jacksoneuma* only three pages earlier. Secondly the following statement appears near the beginning of the paper on p.135:

“*We* referred specimens of this animal, last year, to *our* eminent friend, Monsieur le Docteur Henry W. Brölemann, of Pau, who, with his customary courtesy and kindness, undertook their partial examination, and suggested the specific name *bradeae* for them. Dr Brölemann also sent *us* drawings of the gonopods of the male and furnished *us* with a description of these organs, leaving the *publication* of a detailed study *of the new species to us*.” (emphasis added).

It seems clear that the “us”, “we” and “our” in this text refer directly to H.K. and S.G. Brade-Birks together, and not to either, or both, of them and Brölemann. This is also supported by the main authorship of the paper. Support is also found in Brade and Brade-Birks (1917) where the authorship of the invalidly proposed name *Jacksoneuma bradeae* is given as:

“*Jacksoneuma bradeae* nobis Brolemannque”

Where the Latin term “nobis” means “us”. It seems abundantly clear that both Brade-Birks’ were involved in this description. [It has been pointed out by a referee of this paper that the plural term “nobis” was sometimes used, incorrectly, as a singular to mean “me”. This may very well be true but we cannot know in what sense the Brade-Birks’ used it. In the absence of any evidence to judge the matter we can at least

assume they were using it correctly as a plural as one of them was using it incorrectly as a singular. The fact that they were clearly a team in all of their other jointly authored papers is a strong pointer that they were working as a team on this paper as well.]

If this is the case, and accepting Brölemann as first author of the description, the authorship would be:

Iackstoneuma bradeae Brolemann, H.K. Brade-Birks and S.G. Brade-Birks, 1917 in H.K. Brade-Birks and S.G. Brade-Birks, 1917

The alternative of:

Iackstoneuma bradeae Brolemann, S.G. Brade-Birks and H.K. Brade-Birks, 1917 in H.K. Brade-Birks and S.G. Brade-Birks, 1917

seems unlikely for the reasons given above.

The final part of this story is to determine the full authorship of the species *bradeae* once it was transferred to the genus *Brachychaeteuma* by Brade-Birks and Brade-Birks (1918a).

Using the formulation of Rec. 51G, to show the authorship of the original combination and the new combination, the authorship is:

Brachychaeteuma bradeae (Brolemann, H.K. Brade-Birks and S.G. Brade-Birks, 1917) H.K. Brade-Birks and S.G. Brade-Birks, 1918

We will probably never know why the Brade-Birks' chose to alter the initial letter of the generic name from a "J" to an "I".

[It may be of interest to note that I was brought up, from birth to leaving for University, 100 yards from the type locality of *Iackstoneuma bradeae* in Whitehall Park, Darwen and no doubt trampled many of the beasts in the thousands of hours I spent there!]

Type material

There are similarly complicated issues with the type material.

The original description is, unusually for the time, very explicit in its description of the type material (p.145):

"Types. – Male: Manchester Museum, reg. no. G, 3214 (micro. slide showing anterior gonopods in lateral profile); Brade-Birks Collection, reg. no. 1006 (micro. slide specimen mounted whole).

Female: Brade-Birks Collection, reg. no. 1006 (micro. slide).

Note. – M.M. : G. 3214. Coll. S.G. B-B. 27/i/1916. Prep. Brolemann, mounted Brade-Birks. B-B, 1006: col. And mounted Brade-Birks, xi/1917. The three specimens were all taken in Whitehall Park, Darwen."

In the absence of an explicit statement that the description was based on a single individual (the holotype) (and avoiding an assumption of holotype: Rec. 73F), these "three specimens" must be considered as syntypes (Art. 73.1, 73.2).

The first mentioned of these syntype specimens (Figs. 1–5) was found within the slide collection of Harry Britten in the Manchester Museum in October 2010.

The label on the slide envelope reads (Fig. 1):

Brachychaeteuma (= *Iackstoneuma*) *bradeae* Brole & Brade-Birks. Male Gonopods. G3214
Whitehall Park, Darwen, Lancashire, 27-1-1916, S.G. Brade-Birks, TYPE.

Details on the slide are as follows (Fig. 2):

"TYPE. *Iackstoneuma braedae* (sic) Brole & Brade B.

G3214. Type specimen of *Iackstoneuma bradeae* Brölemann et Brade-Birks

Male mounted to show anterior gonopods in lateral profile. (Brade-Birks no 984)

Coll Whitehall Park, Darwen 27.1.1916 S.G.B. Prep by Brölemann & Brade-Birks"

The museum Register record for this slide is:

"20/IX/1917 (Coll 27/I/16) *Iackstoneuma bradeae* Male. (Type of genus). [Mounted to show anterior gonopods in lateral profile]. Darwen. Brade-Birks donors. Brölemann and Brade-Birks prep."

It seems likely, given that they have the same accession number, that the second male and the female are mounted on the same slide. This has not yet been found but further investigation in the Brade-Birks' collection in the Manchester Museum may turn up these syntypes.

The slide label is clear that the animal is mounted to show the gonopods in lateral profile but this seems not to be right. The specimen (Figs. 3 - 5) clearly shows the gonopods in anterior view.

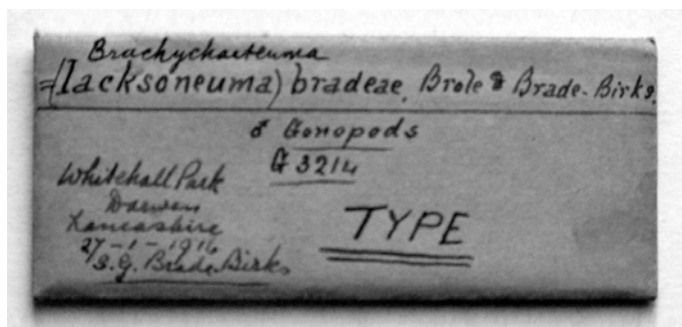


FIGURE 1 (above): Envelope containing Manchester Museum slide, accession number G3214, syntype of *Iacksonneuma bradeae*. Found among the Harry Britten slide collection of myriapoda in the Manchester Museum in October 2010.

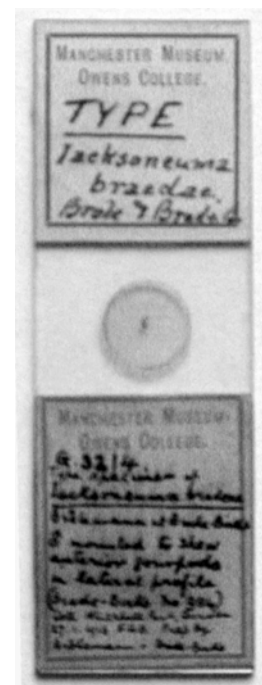


FIGURE 2 (right): Manchester Museum slide, accession number G3214, syntype of *Iacksonneuma bradeae*.

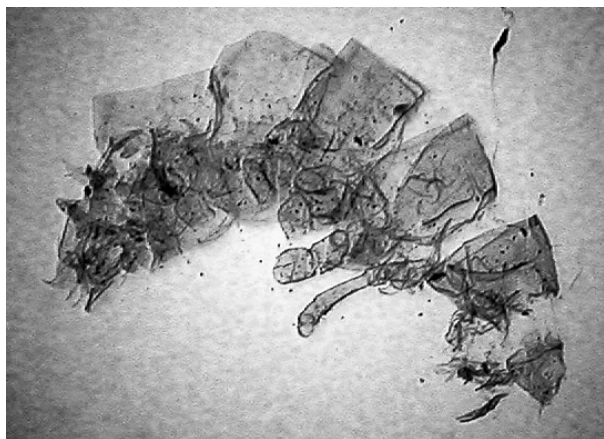


FIGURE 3 (left): Manchester Museum specimen G3214 as seen in an ordinary microscope. Gonopods at left hand end. Photograph by Dmitri Logunov, Manchester Museum.

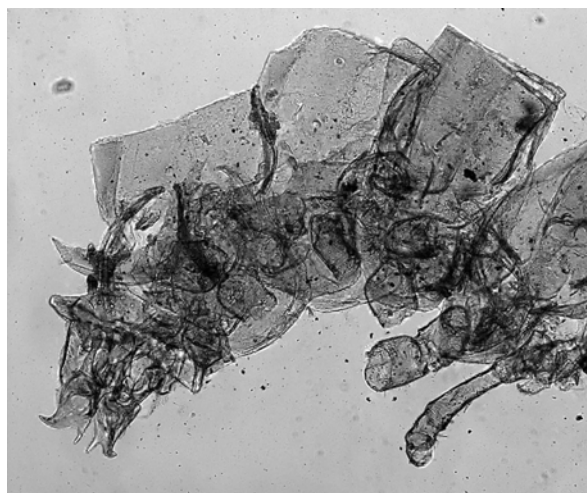


FIGURE 4 (right): Manchester Museum specimen G3214 as seen in a Zeiss axioskop upright microscope with an axiocam colour CCD camera and axiovision software. A x10/0.5 air fluar objective and a x20 0.75 air plan achromat objective were used to take the images in Figs. 4 and 5. Photograph by Jane Kott, Bioimaging Unit, Faculty of Life Sciences, Manchester University

Information in Sierwald and Reft (2004) suggest that there is type material from Brölemann and Brade-Birks in MNHN and the diplopod collection at MNHN does indeed contain three lots of this species (Jean-Jacques Geoffroy pers. comm.):

1. Brade-Birks/Brölemann no. 7125 (MNHN fiche 748): 3 males, 1 juvenile male, 4 females, 1 juvenile female. Collected 01/11/1916 Whitehall Park, Darwen, Lancashire, UK [Type locality] by Brade-Birks. Material in 1 tube. MNHN database entry contains word “Syntypes” against this lot.
2. Brade-Birks/Brölemann no. 7108 (MNHN fiche 749): 1 female. Collected 27/01/1916 [same date as Manchester syntype], Whitehall Park, Darwen, Lancashire, UK [Type locality] by Brade-Birks. Material in 1 tube.
3. Brade-Birks/Brölemann no. 7108 (MNHN fiche 750): 1 female. Collected 27/01/1916 [same date as Manchester syntype], Whitehall Park, Darwen, Lancashire, UK [Type locality] by Brade-Birks. Material in 1 tube.

There is one possible further lot of this species in MNHN, for which see the discussion below under *B. melanops*.

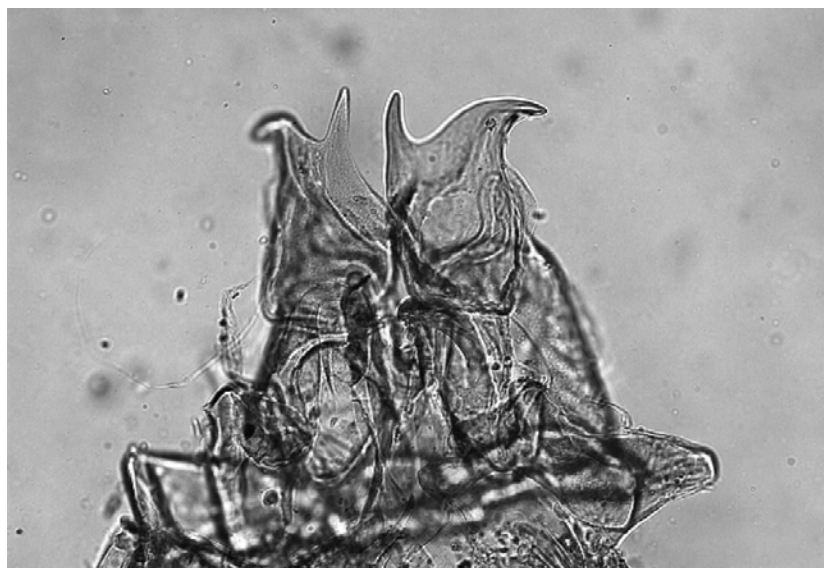


FIGURE 5: Enlarged view of the gonopods of G3214. Orientation is as in Blower (1986) to facilitate comparison. Photograph as Figure 4.

It seems very unlikely that any of this material is actually from the type series despite one lot being labelled as such. The composition of the lot labelled “syntypes” is wrong, as is the date on which it was collected, and it is contained in a tube, rather than on a slide. The same is true for the other two lots which do not accord with the original description in any way. They are in tubes rather than on a slide, they were collected on a date different to that claimed for the other syntypes in the original description. It seems clear that the remaining two syntypes of *Iacksoneuma bradeae* remain to be found, if they are still extant.

***BRACHYCHAETEUMA MELANOPS* (Fig. 6)**

Authorship

Authors up to, and including, Blower (1985) gave the authorship for this species as Brade-Birks, 1918. This is clearly wrong. The authors of the paper, and of the name, are H. K. Brade-Birks and S. G. Brade-Birks. This is followed by Lee (2006) in his latest checklist, although he does not differentiate the two Brade-Birks by initial to follow Rec. 51A. Authorship is:

Brachychaeteuma melanops H.K. Brade-Birks and S.G. Brade-Birks, 1918.

Type material

It is impossible to determine, from the original description, the nature and quantity of the type material, other than it consists of an unknown number of syntypes of both sexes. Further investigation in the Brade-Birks' collection in the Manchester Museum may turn up these syntypes.

There are two British lots of this species in MNHN, one of which is labelled as syntypes:

Brölemann No. 7421, Brade-Birks no. 1544 (MNHN fiche 1205): 3 females collected 04/1918 at Swanage, Dorset by Brade-Birks. Material in 1 tube. MNHN database records these 3 females as syntypes.

There are several issues with this database entry. First, it was not Brade-Birks but R. Bagnall that collected the material in April 1918 in Swanage (Brade-Birks and Brade-Birks, 1918b). Second, the lot is listed as three females but the original description is quite clearly based on both sexes. It may be that the male(s) used have since been lost.



FIGURE 6: *Brachychaeteuma melanops* in Otter Hole Cave, Chepstow. Photograph by Phil Chapman 1979. Identity confirmed by J. Gordon Blower and Paul Lee.

The second MNHN lot of this species is particularly interesting:

Brölemann No. 7108, Brade-Birks No. 507 (MNHN fiche 1220): 3 females collected 27/01/1916 in Whitehall Park, Darwen, Lancashire by Brade-Birks. Material in 1 tube.

It will be remembered, from the discussion above, that the type specimens of *Iackstoneuma bradeae* were taken in Whitehall Park, Darwen by S.G. Brade-Birks on the same date as these apparent specimens of *B. melanops*. Did S.G. Brade-Birks really pick up two species new to science in the same place on the same day? Sadly, almost certainly not as *B. melanops* is not recorded from that area (Lee, 2006:76-77). In fact it is hardly known north of the Severn-Thames line. So it looks very likely that this is a misidentified, or mislabelled, lot of *B. bradeae* or some other species.

The data for specimens Brölemann No. 7421 are a close enough match to the data in the original description (except for the absence of any males, and the error in the collector) to strongly suggest that these are, in fact, syntypes for this species.

BRACHYCHAETEUMA QUARTUM

Authorship

The authorship of this name is clearly H.K. Brade-Birks and S.G. Brade-Birks.

Brachychaeteuma quartum H.K. Brade-Birks and S.G. Brade-Birks, 1918

Type material

It is impossible to determine, from the original description, the nature or quantity of the type material, other than it consists of an unknown number of female syntypes (males being unknown). Further investigation in the Brade-Birks' collection in the Manchester Museum may turn up these syntypes which are slide mounts with Brade-Birks' accession numbers 1275 and 1276 and tube 1277 (Brade-Birks and Brade-Birks, 1918c). There is no material of this nominal species in MNHN (Jean-Jacques Geoffroy pers. comm.). Blower (1952, 1958) says that: "This species was founded on a single female from Derbyshire". Although the type material has not been seen to confirm this, it can hardly be true if the types are on two slides and in one tube, as explicitly stated by the authors of the name.

Current systematic position

Blower (1952, 1958, 1985) placed this species in the synonymy of *Brachychaeteuma bradeae*. Without access to the original type specimens of both nominal species this cannot be confirmed explicitly. The synonymy was based on the observations of Brade-Birks and Brade-Birks (1920) who found that females found with undoubted males of *B. bradeae*, in Norfolk, were identical in vulval characteristics to those of *B. quartum*. Only a re-assessment of the type material, which has never been done as far as I can ascertain, will answer this question conclusively. However, the fact that no specimens ascribable to this species have turned up since 1918 is supportive of this synonymy.

The full synonymy for this species is:

Brachychaeteuma bradeae (Brolemann, H.K. Brade-Birks and S.G. Brade-Birks, 1917) H.K. Brade-Birks and S.G. Brade-Birks, 1918

Syn. *Brachychaeteuma quartum* H.K. Brade-Birks and S.G. Brade-Birks, 1918

A NOTE ON THE FAMILY PLACEMENT OF THE GENERA *BRACHYCHAETEUMA* AND *JACKSONEUMA*

All authors, bar one, examined for this paper (e.g. Brade-Birks and Brade-Birks, 1918a; Blower, 1952, 1958, 1985; Lee, 2006; Sierwald, 2006) place the genus *Brachychaeteuma*, and its junior subjective synonym *Jacksoneuma*, in the nominotypical Family Brachychaeteumatidae (incorrectly stemmed as Brachychaeteumidae in early authors and Blower (1952, 1958) and on p. 76 of Blower (1985)). Hoffman, uniquely, (1980:137) places the genus in the subfamily Brachychaeteumatinae of the Family Anthroleucosomatidae. The subfamily Brachychaeteumatinae was re-elevated to family status by Shear (2000).

PROTEROIULUS PALLIDUS

Authorship

This taxon is the only one of the eight to be described by S.G. Brade-Birks alone and authorship is:

Proteroiulus pallidus S.G. Brade-Birks, 1920

Brölemann (1921) erected the genus *Archiboreoiulus* and placed *P. pallidus* in this new genus. The authorship following Rec. 51G is:

Archiboreoiulus pallidus (S.G. Brade-Birks, 1920) Brölemann, 1921

This was followed by all authors from Brade-Birks (1922) onward with the exception of Hoffman (1980:105) who placed *Archiboreoiulus* into synonymy of *Boreoiulus* as he considers: "The two "genera" *Archiboreoiulus* and *Archichoneiulus* are outstanding examples of splitting too finely." However this position is not generally recognised and the species is kept in *Archiboreoiulus* by most authors and in the Fauna Europaea database (www.faunaeur.org).

Type material

It is not possible to tell from the, very brief, original description the nature or quantity of the type material. The only information presented is: "Types in the Brade-Birks collection." If still extant these may be in the Brade-Birks' collection in the Manchester Museum.

There is one British lot of this species in MNHN:

Brölemann No. 7731 (MNHN fiche no. 5412). 2 males. Collected 08/06/1920 bean plot, Wye, Field, Wye Kent [Type locality] by S.G. Brade-Birks.

In the original description S.G. Brade-Birks says that he submitted a specimen of this species to Brölemann who told him the species was new and also gave "me some account of its systematic position." It is possible, though probably unprovable, that the specimen in MNHN is the very one on which this opinion was based (of the 2 males one is dissected). [If this is the case then a very quick bit of timing is evident here. The 2 males were collected on 8th June, the paper is dated 21st July and it was published in October].

There is no suggestion in the MNHN database that these specimens are part of the type series. However, if the type series is never found, and it becomes necessary at some point to designate a neotype, these two males would be prime candidates from which to choose the neotype. They are topotypes and comply with all of the rules of Art. 75.3 and Rec. 75A. Only if their condition was too poor would it be necessary to obtain a new specimen for neotypification.

CHORDEUMELLA SCUTELLARE BROLEMANNI

Authorship

This subspecies was erected in the paper by Hilda K. Brade and S. Graham Birks (1916a) so authorship is:

Chordeumella scutellare brolemanni Brade and Birks, 1916

Type material

There is no specific mention of type material in the paper. However, the following statement is present:

"Spirit specimens of *Chordeumella scutellare* var. *brolemanni* as well as prepared slides of the modified appendages will be placed at the disposal of the Manchester Museum authorities shortly."

Additional information is as follows:

Male (Tube 509) Darwen Cemetery, 10/01/1916 (Coll S.G. Brade-Birks)

Female (Tube 526) Darwen Cemetery, April 1916 (Coll. S.G. Brade-Birks)

Both preserved in spirit. So these may perhaps be considered as the type specimens. However, type material is mentioned by Brade and Brade-Birks (1917) who clearly state:

"*Chordeumella scutellare* var *brolemanni* nobis. We have handed type specimens of the Variety to the Manchester Museum authorities (Reg. No. G.3194)"

The Museum Register entry for G3194 says:

"*Chordeumella scutellare brolemanni*, males and females, many, acquired in May 11, 1917."

And there is no mention of this collection containing types. However, the previous entry, G3193, does contain the word "type" and is almost certainly either a single holotype or one of an unknown number of syntypes for this subspecies. Although the Register entry strongly suggests that this material is in the Manchester Museum it has not been found at the time of writing.

The NHML has one lot of this taxon

BM1918.8.1.23-30, Whitehall Park, Darwen, Lancashire, -/xi.17. Presented by Graham Brade-Birks and Hilda K. Brade-Birks

But this is not type material (Jan Beccaloni pers. comm.).

Current systematic position

Blower (1957) pointed out that the anterior paragonopods and the peltogonopods in chordeumatidans are very variable, and, further, that the two subspecies, *C. s. brolemanni* and *C. s. bagnalli*, are found sympatrically. They are therefore not subspecies in the sense of Mayr (1970) which requires that subspecies “inhabit definite geographic subdivisions of the range of a species”. Blower (1958) considered these taxa as members of the genus *Microchordeuma* but they are now members of the genus *Melogona* with the spelling of the specific name corrected from *scutellare* to *scutellaris* (Lee, 2006). So the final placement is:

Melogona scutellaris (Ribaut, 1913)

[It is worth mentioning here, as advised to me by the referee of the paper, that the species-group name *brolemanni* Brade and Birks, 1916 is a junior secondary near-homonym of *Microchordeuma broelemanni* Verhoeff, 1897, now valid as *Melogona broelemanni* (Verhoeff, 1897)].

CHORDEUMELLA SCUTELLARE BAGNALLI

Authorship

The authorship of this name is the authorship of the paper:

Chordeumella scutellare bagnalli H.K. Brade-Birks and S.G. Brade-Birks, 1918

Type material

In contrast to *C. s. brolemanni*, where no types are specified in the original paper, this subspecies has the following type material:

“Tube 1271, slides 1272, 1273, 1274, and 1349, Brade-Birks collection.”

All males. These have not been found at the time of writing but may be in the collection of the Manchester Museum.

Current systematic position

See discussion under *C. s. brolemanni*.

DISCUSSION

Some of the arguments and discussions in this paper may seem to be very abstruse and a long way from biology. However it is critical to all biologists, whatever their interests and specialities, that zoological nomenclature is accurate and stable. Authorship can be important in tracking down names within the literature and so it is vital that they are quoted correctly wherever possible. At a less critical, though still important, level it is only right that the authors who carried out, the often very meticulous and detailed, work required to determine a species as new and then to describe it as well as possible within the rules of nomenclature, get the credit they deserve. Perhaps more important than either of these is the ability of present and future taxonomists and systematists to find type material if they need to address questions relating to nomenclature, taxonomy and phylogenetic relationships. Anyone who doubts that these topics are not highly complex, not to say contentious, should read Hoffman's Classification! A good discussion of the importance of accuracy in nomenclature is given by Kuhn and Wahl-Jensen (2010).

ACKNOWLEDGEMENTS

For early encouragement and example I am indebted to J. Gordon Blower who stimulated my interest in the Myriapoda during our Swansea field course of 1976. It has lain deeply buried, though not extinguished, for most of the years since then and I am happy to have lately regained that interest. Thanks are due to Dmitri Logunov for encouraging and supporting this late resurgence. Helen Read and Dmitri Logunov commented

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REFERENCES

- Blower, J.G. (1952) British millipedes with special reference to Yorkshire species. *Naturalist* **1952**: 145-157.
- Blower, J.G. (1957) On some new and little-known British millipedes. *Annals and Magazine of Natural History* (12) **10**: 497-508.
- Blower, J.G. (1958) *British millipedes (Diplopoda)*. Synopses of the British Fauna 11. Linnean Society, London.
- Blower, J.G. (1985) *Millipedes*. Synopses of the British Fauna 35. E.J. Brill, Leiden.
- Blower, J.G. (1986) Distribution and variation of the species of *Brachychaeteuma* occurring in Britain and Ireland. *Bulletin of the British Myriapod Group* **3**: 43-48.
- Brade-Birks, S.G. (1920) Notes on myriapoda XXIV. Preliminary note on a millipede new to science. *Annals and Magazine of Natural History* (9) **6**: 364-365.
- Brade-Birks, S.G. (1922) Notes on myriapoda XXVI. The names of some Iulidae and Blaniulidae. *Annals and Magazine of Natural History* (9) **4**: 160-163.
- Brade-Birks, S.G. (1974) Presidential address: Retrospect and prospect in Myriapodology. *Symposia of the Zoological Society of London* **32**: 1-12.
- Brade, H.K. and Birks, S.G. (1916a) Notes on myriapoda I. On a new variety of *Chordeumella scutellare* Ribaut. *Lancashire and Cheshire Naturalist* June **1916**: 49-55.
- Brade, H.K. and Birks, S.G. (1916b) Notes on myriapoda IV. A preliminary list for south Lancashire. *Lancashire and Cheshire Naturalist* September **1916**: 141-148.
- Brade, H.K. and Brade-Birks, S.G. (1917) Notes on myriapoda VI. Report on Chilopoda and Diplopoda 1916-17. *Lancashire and Cheshire Naturalist* **69** (July 1917): 113-122.
- Brade-Birks, H.K. and Brade-Birks, S.G. (1917). Notes on myriapoda VII. A new member of the order AscospERMOPHORA (*Jacksononeuma bradeae*, gen. et sp. nov.). *Journal of Zoological Research* **2**: 135-149.
- Brade-Birks, H.K. and Brade-Birks, S.G. (1918a) Notes on myriapoda X. On the family Brachychaeteumidae. *Journal of Zoological Research* **3**: 47-53.
- Brade-Birks, H.K. and Brade-Birks, S.G. (1918b) Notes on myriapoda XI. Description of a new species of Diplopoda (*Brachychaeteuma melanops*). *Journal of Zoological Research* **3**: 55-61
- Brade-Birks, H.K. and Brade-Birks, S.G. (1918c) Notes on myriapoda XII. A preliminary list for Derbyshire, with a description of *Brachychaeteuma quartum* sp. n. and *Chordeumella scutellare bagnalli* var. n.. *Annals and Magazine of Natural History* **9**: 319-336.
- Brade-Birks, H.K. and Brade-Birks, S.G. (1920) Notes on myriapoda XXV. Preliminary list for Lincolnshire and Norfolk. *Annals and Magazine of Natural History* (9) **6**: 470-477.
- Brolemann, H.W. (1921) Clef dichotomique des divisions et des especes de la famille des Blaniulidae (Myriap.). *Archives de Zoologie Expérimental et Générale* **60** (Notes et Revue) **1**: 1-10.
- Enghoff, H. (1989) *Brachychaeteuma bradeae* (Brölemann & Brade-Birks, 1917) - a new Danish millipede (Diplopoda, Chordeumatida, Brachychaeteumatidae). *Entomologiske Meddelelser*. **57**: 150.
- Hoffman, R. L. (1980) *Classification of the Diplopoda*. Museum D'Histoire Naturelle, Geneve.
- International Commission on Zoological Nomenclature 1999. International code of zoological nomenclature. 4th Edition. International Trust for Zoological Nomenclature, London.
- Jeekel, C.A.W. (1971) *Nomenclator generum et familiarum Diplopodorum*. A list of the genus and family-group names in the Class Diplopoda from the 10th edition of Linnaeus, 1758, to the end of 1957. *Monografieën van de Nederlandse Entomologische Vereniging* **5**: I-XII, 1-412.

- Jeekel, C.A.W. (2000). Errata to Jeekel, (1970) 1971, *Nomenclator Generum and Familiarum Diplopodorum*. *Myriapod Memoranda* **2**: 15-21.
- Kuhn, J.H. and Wahl-Jensen, V. (2010) Being obsessive-compulsive about terminology and nomenclature is not a vice, but a virtue. *Bionomina* **1**: 11-14.
- Lee, P. (2006) *Atlas of the millipedes (Diplopoda) of Britain and Ireland*. Pensoft, Sofia.
- Mayr, E. (1970) *Populations, species, and evolution*. Belknap Press, Cambridge.
- Neave, S.A. (1939) *Nomenclator Zoologicus*. **2**: 804.
- Proudlove, G.S. and Logunov, D.V. (2011) Myriapodological resources in the Manchester Museum. *Bulletin of the British Myriapod and Isopod Group* **25**:14-36.
- Shear, W.A. (2000) On the milliped family Heterochordeumatidae, with comments on the higher classification of the Order Chordeumatida (Diplopoda). *Invertebrate Taxonomy* **14**: 363-376.
- Shelley, R.M., Sierwald, P., Kiser, S.B. and Golovatch, S.I. (2000) *Nomenclator generum et familiarum Diplopodorum* II. *A list of the Genus and Family-group names in the Class Diplopoda from 1958 through 1999*. Pensoft, Sofia.
- Sierwald, P. (ed.) (2006) *Nomenclator Generum Diplopodorum. Version 2. A complete listing of all genus-group names in the class Diplopoda from 1758 through 1999*. Authors: Jeekel, C. A.W., Hoffman, R.L., Shelley, R.M., Sierwald, P., Kiser, S.B. and Golovatch, S.I. On-line publication available at: myriapoda.org/milliPEET/
- Sierwald, P. and Reft, A.J. (2004) The Millipede collections of the world. *Fieldiana Zoology* N.S. **103**: 1-100.

MYRIAPODOLOGICAL RESOURCES IN THE MANCHESTER MUSEUM

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ABSTRACT

The Manchester Museum houses eleven significant myriapodological resources: 1. Holotype, Paratype and Syntype material of extant and fossil species. 2. The whole spirit collection of J. Gordon Blower and his students, including a reference collection of British Diplopoda. 3. Part of the collection of K. W. Verhoeff. 4. Probably the whole spirit collection of H. K. and S. G. Brade-Birks. 5. The myriapodological library derived mainly from the personal collections of Blower and Brade-Birks' but with some modern additions. 6. A collection of ten theses on myriapodological topics in the John Rylands University Library of Manchester. 7. Fossil material in the Department of Geology of the Museum. 8. A dried collection probably attributable to H. K. and S. G. Brade-Birks. 9. The Harry Britten slide collection of myriapoda. 10. A miscellaneous dried and spirit collection. 11. An archive of unpublished material, mainly from the offices of J. Gordon Blower. The Blower spirit collection has been fully examined, re-curated and catalogued, while the Verhoeff and Brade-Birks' collections remain to be dealt with in detail. The Blower collection contains 4560 tubes in 181 boxes. A reference collection of British species has been extracted from the main collection. It contains 51 of the 61 British native and introduced species. The library contains 40 books and about 2000 reprints.

INTRODUCTION

The Manchester Museum, a constituent part of the University of Manchester, has the third largest entomological collection in the UK (Logunov, 2011a, b). It covers a wide spectrum of arthropod classes and is particularly important in Coleoptera, Lepidoptera and Dermaptera. Two groups that are also well represented, but which to date are relatively unstudied and unknown, are the Diplopoda (millipedes) and, to a smaller extent, the Chilopoda (centipedes). There are also small collections of Symphyla and Pauropoda. Work over the past three years has revealed that the Museum collection of Myriapoda, and various other related materials, constitute important resources which deserve to be better known.

A significant part of these resources owe their presence in the Museum to the influence of J. Gordon Blower (1923-2001, Read 2002, Bulletin BMIG 2003), the most important British diplopodologist of the second half of the 20th century [the chilopodological equivalent being E. H. Eason]. His contribution to myriapodology has been adequately covered by a number of authors and is not repeated here in detail here (see Read, 2002 for fuller information). He became interested in myriapods, and in particular the Diplopoda, around 1948, but it is not known exactly how this interest originated. One possibility is that he was urged to study the group by Professor Ralph Dennell in the Zoology Department at Manchester University, and subsequently took a deep and abiding interest in it (Lawrence Cook, Helen Read and John Lewis pers. comm.). Blower and his students made major contributions in the fields of taxonomy, distribution and ecology of Diplopoda over a 40 year period.

The myriapodological resources in the Museum, in approximate order of importance, are:

1. Type material of extant Myriapoda held in the Entomology collection and type material of fossils held in the Geology collection.
2. The J. Gordon Blower spirit collection, including those of his research students, and the reference collection of British Diplopoda.
3. A part of the K. W. Verhoeff spirit collection (260 species).
4. The H.K Brade-Birks and S.G Brade-Birks spirit collection (possibly including the A. Randell Jackson and other collections).
5. The amalgamated H. K. and S. G. Brade-Birks and J. Gordon Blower literature collections (books and reprints), with tens of additional reprints added in recent years.

6. A collection of M.Sc. and Ph.D. theses on myriapodological topics in the John Rylands University Library of Manchester (written by or supervised by J. Gordon Blower).
7. Collections of fossil myriapods from the Devonian and Carboniferous periods.
8. A dried collection probably attributable to H. K. and/or S. G. Brade-Birks.
9. The Harry Britten slide collection of Myriapoda.
10. A miscellaneous dried and spirit collection.
11. The J. Gordon Blower archive of unpublished materials.

This article briefly describes what we currently know of these resources. Taken together they probably constitute one of the most important collections of myriapodological resources in Great Britain and Ireland, with the exception of the type material held in the Natural History Museum London. The accession numbers (e.g., G3214, L.9941, etc.) mentioned in the following text refer to the corresponding numbered records in the Register Book retained in the Manchester Museum's Entomology (G series) or Geology (L series) departments. If this figure consists of two parts (e.g., G7484.633), its first half (G7484) is the registration number of the corresponding Myriapoda collection and the second one (633) a unique number of the sample within the collection G7484.

Abbreviations used in the text: BM(NH) = British Museum (Natural History) now NHML = Natural History Museum London; MNHN = Museum national d'Histoire naturelle, Paris; VMNH = Virginia Museum of Natural History.

1. TYPE MATERIAL OF MYRIAPODA HELD IN THE ENTOMOLOGY AND PALAEOLOGY COLLECTIONS

The collection contains the following type material:

Extant species

Iacksoneuma bradeae (H.K Brade-Birks and S.G. Brade-Birks, 1917).

One syntype of three, G3214. Found among the unrelated Harry Britten slide collection in November 2010.

The label on the slide envelope reads:

Brachychaeteuma (= *Iacksoneuma*) *bradeae* Brole & Brade-Birks. Male
Gonopods. G3214
Whitehall Park, Darwen, Lancashire, 27-1-1916, S.G. Brade-Birks, TYPE.

The label on the slide (Fig. 1) reads:

"TYPE. *Iacksoneuma braedae* (sic) Brole & Brade B. / G3214. Type specimen of *Iacksoneuma bradeae* Brölemann et Brade-Birks / Male mounted to show anterior gonopods in lateral profile. (Brade-Birks no 984) / Coll Whitehall Park, Darwen 27.1.1916 S.G.B. Prep by Brölemann & Brade-Birks".

The museum Register Book record (G3214) for this slide is:

"20/IX/1917 (Coll 27/I/16) *Iacksoneuma bradeae* Male. (Type of genus). [Mounted to show anterior gonopods in lateral profile]. Darwen. Brade-Birks donors. Brölemann and Brade-Birks prep."

This specimen is a possible future lectotype should this be required. [Species now in *Brachychaeteuma*]. Further details of this specimen, and of other type material for this species, are given by Proudlove (2011).

It is possible that the Brade-Birks' collection contains further types of this species and of the other three Brade-Birks' species, *Brachychaeteuma melanops*, *B. quartum* and *Proteroiulus pallidus* (see Proudlove, 2011, for further details on these names).



FIGURE 1:
Slide G3214

There is no type material for these four species in the Natural History Museum London (Janet Beccaloni pers. comm.).

***Prosopodesmus panporus* Blower and Rundle, 1980.**

Two paratypes, G7484.633 and G7484.634. The type series for this species is divided among several locations according to Blower and Rundle (1980): Holotype NHML; Paratypes at Portici and the Hoffman Collection at VMNH. However the NHML does not appear to have these specimens, or at least their database contains no information on them (Jan Beccaloni pers. comm.).

A note on *Metaiulus pratensis* Blower and Rolfe, 1956

Type material for the only other species described by Blower, *Metaiulus pratensis* Blower and Rolfe, 1956, is in the NHML (Holotype BM1957.1.3.1; Paratypes BM1957.1.3.3; BM1957.1.3.4-10; BM1957.1.3.11-17; BM1957.1.3.2). The original description had more material than the type series but a full re-curation of the Blower collection in the Manchester Museum turned up no type material for this species, indeed no material at all from the original collection of this species in the 1930s, 40s and 50s. Only one specimen, from Petersham, Surrey in 1978 (an extension to the known range), is present in the Museum collection (G7484.1117). The absence of any original material in Blower's personal collection is very perplexing.

Fossil species

***Palaeosoma giganteum* (Baldwin, 1911)**

L.9941. Holotype. For further information see Baldwin (1911), Jackson et al. (1919) and Jackson (1952). (= *Acantherpestes giganteus* Baldwin, 1911).

2. THE J. GORDON BLOWER SPIRIT COLLECTION

John Gordon Blower (1923–2001) (Read, 2002) was employed in the Department of Zoology at Manchester University from c. 1948 to c. 1984, and upon retirement was appointed Honorary Research Associate in the Zoology Department of the Manchester Museum until his death and beyond! His collection of millipedes forms part of the Manchester Museum collections. A commemorative volume, based on a meeting in Manchester in April 2003, was provided in volume 19 of the Bulletin of the British Myriapod and Isopod Group (2003). A full list of Blower's publications was given in the same volume as the obituary. In addition a short obituary of Blower was also published in Museum Annual Report for 2001-2002 (p. 21).

The history of the collection in Manchester Museum

Upon his retirement from the University of Manchester in 1984, or possibly later, Blower donated much material to the Museum. An uncertainty in date is because the acquisition of Blower's myriapod collection was not properly recorded. No records of this acquisition exist in Museum Annual Reports (1984-86) and no Annual Reports were produced during the period 1986-95, when the achievements of the Manchester Museum were included in the University's annual reports (Report 1996-97: p. 2). There is also no record of this collection in the Register Book. Actually, the latter does not contain any records for the period 1982-84, only two records for 1985, three records for 1987, 1989 and 1993 (the latter a giant captive-bred millipede, G7166). Regular records in this Register Book continue only from mid-1998. Therefore, the exact quantity and nature of the material was not known in full detail until 2010. We have what is probably the full spirit collection which was housed in the soil laboratory in the Williamson Building (though there are some perplexing omissions). The collection had been untouched until October 2007 when the first author took on the task of re-curation and cataloguing.

Details of collection in the Manchester Museum

The main body of the Blower Collection is housed in 5cm screw-top "Bijou bottles" (small versions of the popular McCartney bottle). These in turn are kept in 17cm x 112cm plastic boxes with up to 38 bottles per box (known to Blower and all Manchester students as sandwich boxes: Figs. 2 and 3). These are catalogued under Manchester Museum Accession numbers G7484.1–G7484.4560 in Boxes 1–181. The usage of Bijou

bottles, which have a very good seal, has ensured that the great majority of this collection has remained in good condition, despite some of it being nearly 60 years old. In addition to this main body there is a further body which has not yet been re-curated and catalogued, a medium sized collection of Bijou bottles which appear to house the field collections of research students. This latter collection will be dealt with at a later date. The earliest discovered date for specimens in the collection is May 1952 for *Ommatoiulus sabulosus* from Padockwood and the latest date is 5th April 1997 for specimens of *Thalassiosobates littoralis* (a major find!) from Mullock Bay, Galloway. This represents a life works of 44 years.



FIGURE 2: The J. Gordon Blower spirit collection. Most of the collection is kept in boxes.



FIGURE 3: The J. Gordon Blower collection.

Many tubes contain cryptic labels (e.g. II E 2 S in tube G7484.3618) for which no-one now seems to be able to provide an explanation. Despite the not-obviously-useful nature of such tubes they have been re-curated and catalogued in case these labels can be understood in future if any further information/material becomes available. The great majority of the tubes contain Diplopoda and Chilopoda but there are many with other groups of other soil animals. In particular there are many Isopoda, Diptera larvae and large numbers of beetles and spiders. All specimens of non-myrriapod groups have been extracted and kept separately for further re-curation and in order to be merged with the collections of corresponding groups.

Significant sub-collections within the Blower collection

Throughout his working life Blower, and his students, made several in-depth ecological studies of numerous sites around the UK and the collection is composed mainly of samples taken during these activities. The following list briefly highlights the main sub-collections, and more details of each will be available once a full database of the whole collection is available.

Scott's collection of *Tachypodoiulus niger* (Leach, 1814)

Dr Hugh Scott lived in house in Henley-on-Thames which was often invaded by the large cylindroiuline *Tachypodoiulus niger*. Fairhurst (1968, 1970, 1974), Blower and Fairhurst (1968) made very good use of this most valuable material.

Geoglomeris subterranea Verhoeff, 1908

Previously known as *Stygioglomeris crinata* and *Geoglomeris jurassica* this species was studied in detail by Bocock, Heath and Blower (1973). A specimen in the reference collection from 1962 (G7484.326) seems to be one of the earliest collections of this species though it is not mentioned in Blower (1985b).

Milldale, Derbyshire (SK 135545)

An important site for millipede ecology worked by numerous students.

Gower and Llethrid, South Wales (SS 535915)

The Zoology Department of the University of Manchester ran a two-week faunistics field course at the University of Swansea, with the Gower Peninsula as the main area of faunistic interest. Blower attended these courses from their inception. Students were allocated a taxonomic group to become familiar with, one of which was the Myriapoda and many samples remain in the collection.

[In 1976 I was assigned to, or chose, I cannot remember which, Blower's myriapod group – the inception of my, extremely latent, interest].

Ernocroft Wood, Cheshire (SJ 982910)

The woodland near Compstall in Cheshire, Encroft Wood, is one of the most important of Blower's field sites.

Kerridge, Cheshire (SJ 936769)

Another important ecological site.

Harpford Wood, Devon (SY 091907)

Harpford Wood, Sidmouth, Devon is the "Devon oak wood" of the seminal Blower and Gabbutt paper of 1964. The millipedes were collected, from samples extracted by Tullgren funnel, by Gabbutt during a separate study for his Ph. D. Blower took the opportunity of this excellent sample to undertake the ground-breaking work on the ecology and development of six common millipede species.

Trelill, Cornwall (SX 045785)

Near Camelford in north Cornwall, this site has revealed the following species: *Brachyiulus pusillus*, *Ophiodesmus albonanus*, *Polydesmus angustus*, *Polydesmus denticulatus* and the very local *Chordeuma sylvestre* (2 10km squares only, both in Cornwall, Lee (2006:62-63)). Trelill was the first recorded British site for *C. sylvestre*, found by Blower in August 1961, though adults were not obtained until April 1962. Specimens from April 1962 are present in the reference collection.

Bernac, France

The second year field course was moved from Gower to the French town of Bernac after Blower's retirement but he attended a number of these courses and there is a small number of samples.

The islands of Madeira

In 1981 Blower and a number of colleagues visited Madeira and there is a significant collection of diplopod material from this visit.

Woodchester Park, Gloucestershire (SO 815015)

Manchester Zoology Department ran a two-week terrestrial ecology field course, for students at the end of their second year, at Woodchester Park, Nailsworth, Gloucestershire from 1967 to 1994. Very many samples of myriapods were taken over these years.

Waterbarrow (Levens area, Cumbria, exact location unknown)

Samples from Waterbarrow are among the last to appear in the Blower collection and were probably obtained after he retired.

The Reference Collection of British Diplopoda (Appendix 1)

During re-curation and cataloguing an opportunity was taken to extract four or five examples (where possible) of each British species (native and introduced, see Appendix 1). These now form the core of the *J. Gordon Blower reference collection of British Diplopoda* and includes most of the species given in Lee (2006). The Museum would very much welcome donations of further Diplopoda to add to this collection, including not only those species we do not currently have but also further material of species already in the collection. The reference collection is housed in various sizes of glass tubes, stoppered with cotton wool, and kept immersed in 70% ethanol in rubber sealed preserving jars. Information about the reference collection and a full species list will soon be databased and available online via the Manchester Museum home page.

3. A PART OF THE VERHOEFF COLLECTION

Karl Wilhelm Verhoeff (1867 – 1945) was a prolific worker in several arthropod groups but is mainly known for his works on Diplopoda, Chilopoda and Isopoda (see Mayermayer (1962) for details of his biography and publications). The history of his collection is not known in any detail because of the somewhat chaotic nature of its development. It is certain that the collection labelled as the Verhoeff collection in the Manchester Museum is but a small part of the whole. It may be one of the lots he sold to pay for his lifestyle. This collection was purchased from Verhoeff for £17.10.0 in 1908 (£1300-£7000 today depending on the comparison used). The collection was mounted in separate tubes, labelled and registered by Mr Robert Standen, Assistant Keeper (later Senior Assistant Keeper) of the Museum (Report, 1907-08: p. 9-11). It is evident that any material which was worked by Verhoeff is, potentially, of very great value. The Manchester collection is thus a logical part of the whole Verhoeff Collection which is physically kept in several museums including Zoologische Staatssammlung München, Museum für Naturkunde, Berlin and the Natural History Museum London. The whole collection is to be databased as part of the *GloMyrIS* project run from Munich (gbif.de/evertebrata2/GloMyrIS). The Manchester Museum's Register Book contains 258 records of myriapod species purchased from Verhoeff (G1045-G1301), yet the number of specimens in this collection remains unknown. It will take a considerable time to re-curate the whole spirit collection and compare its contents against these records. Full details will appear at a later date. However, in broad terms the spirit collection consists of about 50 jars and many hundreds of specimens (Fig. 4). As this collection is recurated individual lots are being provided with new accession numbers in the range G7506.1 – G7506.259.

4. THE BRADE-BIRKS' SPIRIT COLLECTION

Hilda Kathleen Brade (1890–1982) and Stanley Graham Birks (1887–1982) (Blower, 1985a; Lusted, 1991) were the most prominent and influential myriapod workers of the first third of the 20th century and worked together as a married couple with the joined surname of Brade-Birks (referred to in the plural below as Brade-Birks'). Their 36 papers on British Myriapoda formed the backbone of myriapodological work in the first half of the 20th century. Between 1916 and 1939 they laid the very firm foundations of taxonomy and literature that stabilised the knowledge of diplopods in Great Britain, as well as enlarging that knowledge with their own, most significant, contributions. They described two genera, four species and two subspecies from British collected material (see Proudlove, 2011, for a full discussion of these taxa). This enormously valuable synthetic work played a significant part in enabling Gordon Blower to make his own major contribution a generation later.

It is likely, though not now provable, that the whole Brade-Birks' collection was gifted to Gordon Blower sometime in the 1950s. It probably resided in his laboratories in the Beyer Building of the University of Manchester from arrival until it was moved to the Williamson Building upon relocation of the Department of

Zoology in 1974. It probably moved to the Museum in the 1980s with the Blower Collection. It is conceivable that it came to the Museum directly but there is no evidence (e.g. accession numbers or a record in Annual Reports) for this.

At this time it is not possible to say much about this collection as it has not been examined in detail. It is currently housed in large metal cabinet and in broad terms it consists of 100 or more bottles, some quite large and with much material (Fig. 5).



FIGURE 4: The Manchester Museum portion of the Verhoeff Collection.



FIGURE 5: The Brade-Birks' spirit collection.

5. MYRIAPOD LITERATURE IN THE MANCHESTER MUSEUM

During his 40+ years of studying Myriapoda, especially Diplopoda, but also soil biology, population biology, and other aspects of ecology and zoology, Blower accumulated a substantial and significant collection of books, reprints and other literature. In addition, his friendship with the Brade-Birks' meant that they passed their own literature resources to Blower. When this happened is not known. This library was also added by several tens of myriapodological reprints donated by the Field Museum of Natural History (Chicago, USA) in 2003, courtesy Petra Sierwald. Consequently the present Manchester Museum literature collection on Myriapoda is probably among the best in the UK, along with that at the Natural History Museum London and the collection of the British Myriapod and Isopod Group. The building of an Endnote library is in progress and its completion will facilitate an internet searchable index to this irreplaceable collection of literature.

Books

Although Blower would have had a substantial number of books on many aspects of zoology most were not passed to the Museum with his spirit and reprint collections and the location of these books is not known. There is a small collection of about 40 books plus a larger number of books from the original Brade-Birks' library. Although the book component of the myriapod library is small it contains some very important works by, among others, Schubart, Verhoeff and Brolemann. Another perplexing absence is that of any of the nine theses he supervised (see below).

Reprints

In contrast the reprint collection is internationally significant and is housed in 41 box folders and, though not counted, must have in excess of 2000 individual reprints. It is planned to provide a web-based index to this collection and, if the legal position is agreed, full digitisation and download ability. Until this is achieved requests for copies of papers can be made to the first author.

Other materials

The collection contains a full set of Bulletins of the British Myriapod Group (BMG), 1-16 (1972-2000) and, its successor, the British Myriapod and Isopod Group (BMIG), 17-26 (2001-2011) and a full set of newsletters of the BMIG. There are no copies of Isopoda, the preceding journal of the British Isopoda Study Group (BISG) nor of the newsletters of BMG, of which there were 31, or the BISG.

6. THESES ON MYRIAPODOLOGICAL TOPICS IN THE JOHN RYLANDS UNIVERSITY LIBRARY OF MANCHESTER

During his time at Manchester University Gordon Blower produced his own M.Sc. thesis and supervised 7 Ph.D. and 2 M.Sc. theses. These provided significant additions to knowledge of both diplopods and chilopods as well as to general ecology. Copies of all are kept in the John Rylands University Library of Manchester (JRULM). A copy of each would have remained with Blower but it is not known what has become of these. They are not among his book collection currently in the Museum. There is now an internet tool (ethos.bl.uk) provided to access many of the theses published in British Universities in the past 50 years. None of the Blower-supervised theses are yet available through this tool though they may become so in the future. Currently the JRULM policy on theses is that they are for use in the library only, but that they can be loaned to other libraries, also for use in the library only. The theses, and published papers resulting directly from the thesis work, are listed in the reference list. [N.B. The thesis by Healey is on Isopoda, not Myriapoda, but is highly relevant to the ecological studies carried out on millipedes in the other theses, and to the ecology of Ernocroft Wood. Because of this relevance, and because it will be of interest to members of the British Myriapod and Isopod Group, it is included for completeness.] Future studies will aim to match the collection of voucher specimens resulting from the ecological studies and retained in the Manchester Museum, to the locality and ecological data given in the theses.

7. FOSSIL MYRIAPOD MATERIAL IN THE MANCHESTER MUSEUM

In addition to the Holotype of *Palaeosoma giganteum* (see above) the Museum has a representative sample of fossil myriapods from the Devonian and Carboniferous Periods (415 – 300 mya).

The type, figured and referred fossil material in the Manchester Museum is catalogued by Jackson (1952) and Nudds (1992, 2005) and the details from these are given below. Other sources are given with each description. Wilson (1999) studied the biology of the fossil diplopod family the Arthropleuridae and her thesis is included in the reference list.

- L.6970.a-b. *Euphoberia brownii* Woodward, 1871. Carboniferous, Westphalian A, Soapstone Bed Carr Heys, Colne, Lancs (Fig. 6). See Woodward (1871).
- L.8193. *Archiulus* sp. Carboniferous, Middle Coal Measures UK, Lancashire, Rochdale, Sparth Bottoms
- L.8541. *Kampecaris forfarensis* Peach, 1882. Devonian, Lower, Lower Old Red Sandstone UK, Forfarshire, Leysmill Quarry. See Almond (1985).
- L.9942. *Palaeosoma giganteum* (Baldwin, 1911) (syn. *Acantherpestes giganteus*). See Baldwin (1911) and Jackson, Brade-Birks and Brade-Birks (1919).
- L.9943. *Palaeosoma robustum* (Baldwin, 1911). (syn. *Euphoberia robusta*). See Baldwin (1911) and Jackson, Brade-Birks and Brade-Birks (1919).
- L.9944. *Palaeosoma robustum* (Baldwin, 1911). (syn. *Euphoberia armigera*). See Baldwin (1911) and Jackson, Brade-Birks and Brade-Birks (1919).
- L.10281. *Kampecaris forfarensis* Peach, 1882. Devonian, Lower, Lower Old Red Sandstone UK, Forfarshire, Balgavies Quarry. See Almond (1985).
- LL.131. *Euphoberia ferox* (Salter, 1863). Middle Coal Measures, Crawcrook, Ryton on Tyne, plaster cast. See S.G. Brade-Birks (1928).

- LL.11165. *Arthropleura* sp. Westphalian A, Upper Carboniferous. Bickershaw Colliery, Leigh, Lancashire, UK. Figured in Anderson et al. (1997: 203; figs 3d,e,f).
- LL.11166.a-b. *Arthropleura* sp. Upper Carboniferous, Westphalian A, Coal Measures, Bickershaw Colliery, Leigh, Lancashire, UK. Referred to in Anderson et al. (1997: 203).
- LL.11167.a-b. *Arthropleura* sp. Upper Carboniferous, Westphalian A, Coal Measures, Bickershaw Colliery, Leigh, Lancashire, UK. Referred to in Anderson et al. (1997: 203).
- LL.11176. *Arthropleura* sp. Upper Carboniferous, Westphalian A, Coal Measures, Bickershaw Colliery, Leigh, Lancashire, UK. Figured Anderson et al. (1997: 203; figs 3d,e,f).
- LL.11219. *Arthropleura* sp. Westphalian A, Upper Carboniferous. Bickershaw Colliery, Leigh, Lancashire, UK. Figured in Anderson et al. (1997: 203; figs 3d,e,f).
- LL.11294. *Xyliolius* sp. Wigan Four Foot coal seam roof shales, Upper Westphalian A, Upper Carboniferous. Westhoughton, 3 miles east of Wigan, Lancashire [SD 669004]. Figured in Anderson et al. (1999: fig 5a).
- LL.15944.1. Unnamed specimen. St Helens, Lancashire, UK.
- LL.15944.3. *Xylobius* sp. Carboniferous, Middle Coal Measures Europe, England, South Lancashire, Ashton Moss.



FIGURE 6: A fossil myriapod in the collection of the Manchester Museum.



FIGURE 7: The dried collection probably by one or both of H.K. and S.G. Brade-Birks.

8. A DRIED MYRIAPODA COLLECTION

This collection seems to be historically important, as it is probably attributable to H.K. and/or S.G. Brade-Birks and includes specimens from other collections. It contains purposely dried (not accidentally dried) specimens housed in cork stoppered glass tubes within cardboard boxes with clear glass lids (Fig. 7). Each tube lies on pads and is surrounded by white card to highlight the specimen. All specimens are accompanied by a card with various handwritten comments. Each card is cut very precisely to fit the width of the box. Some of the tubes contain an internal label, some readable, some not. However at the current time it is deemed too damaging to remove these labels. Only in exceptional circumstances should these internal labels be removed. Where readable the data are included below (Appendix 2). It is a very nicely presented collection and is probably unique.

There are 50 boxes in all, 30 boxes of Diplopoda and 20 boxes of Chilopoda, each with one tube. Each box is provided with a Manchester Museum accession number in the series G7505.1-50 and details are provided in Appendix 2. Verbatim text of the labels is given in inverted commas, comments, including the current name, in square brackets. The collection must date from 1921 or later as this is the year that *Proteroiulus pallidus*, one of the species included in the collection, was moved to the genus *Archiboreoiulus* (Proudlove 2011).

Several lines of evidence point to a Brade-Birks' origin for this collection.

1. There is one mention of the Lancashire town of Darwen (G7505.6), and several mentions of Kent (G7505.4, G7505.38, G7505.47). It is known that the Brade-Birks' were resident in Darwen between 1916 and 1919, and continued to visit after moving to Kent, and one of their species, *Iacksoniema bradeae*, was described from material collected in the town in 1916. Darwen is a very ordinary Lancashire town and it is exceedingly unlikely that any other myriapodologist would light on it as a place to look for millipedes. It is also known that they moved to Wye in Kent in 1919 which helps explain the Kent entries.
2. G7505.25, *Polydesmus gallicus*, contains an internal label with evidence that it was collected by S. Graham Brade.
3. It seems highly unlikely that there was anyone in the country, after 1920 and before 1950, except for one or both Brade-Birks', that had the knowledge and determination to put together such a collection. Certainly it is not Blowers work as the handwriting is not his.
4. It is remotely possible that the collection was made by A. Randell Jackson. Tube G7505.28 contains an internal label indicating that the specimen was in Jackson's collection. However, it is more likely that, some or all of, the Jackson material found its way to the Brade-Birks' as they were very close to, and friendly with, Jackson. And the Darwen references are much more likely Brade-Birks' than Jackson.

9. THE HARRY BRITTEN SLIDE COLLECTION OF MYRIAPODA

Harry Britten (1870-1954) was the Manchester Museum's Assistant Keeper in Entomology (1919-1938), and was primarily responsible for building up the bulk of the extensive collection of British insects (Hincks 1954, Johnson 1996, Logunov 2011a,b). However he also made a small but useful collection of diplopods and chilopods which are slide mounted in various media (Canada Balsam, Euparal, PVA, Gum Chroral). The collection is of modest and mainly historical value and consists of 17 slides of Diplopoda (G7501.1 – G7501.17), 38 slides of Chilopoda (G7501.18 – G7501.55) and 7 slides of Symphyla (G7501.56 – G7501.62). All are of common species and no further details are provided here. During the documenting of this collection in November 2010 the long-lost syntype of *Iacksoniema bradeae* (see above) was found among these slides.

10. A MISCELLANEOUS DRIED AND SPIRIT COLLECTION

The miscellaneous part of the Manchester Museum's Myriapoda collection is an assemblage of occasional donations and of material collected in the field by various people, including the museum staff. For instance, in April-May 1894, Mr G. Pearcey, an Assistant Keeper in the Museum at that time, collected 44 specimens belonging to 11 British species of Myriapoda and presented them to the collection (G669-680, G682-689, G701-702). More British material on the Myriapoda was received as gifts and exchanges from Mr G.F. Sinclair in 1902 (G988-993; Report, 1902-03) and from several museum-based collectors, including Dr W. M. Tattersall (the Keeper of the Manchester Museum in 1909-1922 and famous carcinologist), in 1911, 1912 and 1914 (G1775-1792, G1808, G3130-3176). Some exotic taxa (e.g. a set of nine tropical species of *Scolopendra*, *Rhysida longipes*, *Rhinocricus* sp., etc.; G690-699) are of uncertain origin, as neither the Register Book, nor the Annual Reports provide the names of their collectors or donors. There are also some undetermined specimens originating from the (sub)tropics, e.g. collected from the Cape Verde Islands or India (G1348, 1351), or imported from Trinidad (G1810-1811). Large and showy tropical species from the miscellaneous collection (e.g., *Scolopendra* spp.) are regularly used as educational material.

11. THE BLOWER UNPUBLISHED ARCHIVE

In his working life in the Department of Zoology at the University of Manchester Blower would have amassed a great deal of paperwork, notes, laboratory note books, experimental analyses, drafts of papers and books he wrote or co-authored, teaching materials (his teaching materials were first class), minutes of departmental meetings and probably a huge file of correspondence both received and sent. It is greatly unfortunate that very little of this material was gifted to the Museum with his other materials. It is particularly sad that he did not provide his correspondence as this must contain a huge amount of important information. We currently have a small archive which is being actively built as material is discovered.

DISCUSSION

The first major collection of Myriapoda arrived in the Manchester Museum in 1908 and this was followed by further major collections in the 1980's. Investigations in various Museum record books, minutes etc seem to show that very little work was done on these collections until very recently (though there are indications that some work was done in the 1950s but we do not know by whom). The total resources in the Museum are highly significant. Comparing the information presented here with information on other British millipede collections (in Sierwald and Reft, 2004) it would seem that the Manchester Museum diplopod collection is second only to that in the Natural History Museum London. The British Myriapod and Isopod Group also has a considerable collection but its size and composition has not been published. The present paper is only an outline of these resources. Full re-curation of the Verhoeff and Brade-Birks' collections are in progress, as is a full database of all specimens in the collections. Full analyses of these collections will be published as data become available.

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REFERENCES

- Almond, J.E. (1985) The Silurian – Devonian fossil record of the Myriapoda. *Philosophical Transactions of the Royal Society of London B* **309**: 227-237.
- Anderson, L.I., Dunlop, J.A., Horrocks, C.A., Winkelmann, H.M. and Eagar, R.M.C. (1997) Exceptionally preserved fossils from Bickershaw, Lancashire, UK (Upper Carboniferous, Westphalian A (Lansettian)). *Geological Journal* **32**: 197-210.
- Anderson, L.I., Dunlop, J.A., Eagar, R.M.C., Horrocks, C.A. and Wilson, H.M. (1999) Soft bodied fossils from the roof shales of the Wigan Four Foot coal seam, Westhoughton, Lancashire, UK. *Geological Magazine* **136**: 321-329.
- Baldwin, W. (1911) Fossil Myriapods from the Middle Coal-measures of Sparth Bottoms, Rochdale, Lancashire. *Geological Magazine* **2**: 74-80.
- Barber, A.D. (2009) *Centipedes*. Synopses of the British Fauna 58. Linnean Society of London, London.
- Blower, J.G. (1949) Histological and histochemical studies on the integument of Chilopoda and Diplopoda. M. Sc. Dissertation. Th1847. Joule Library. 98 pages.
- Blower, J. G. (1950) Aromatic tanning in the myriapod cuticle. *Nature* **165**: 569-570.

- Blower, J. G. (1951). A comparative study of the chilopod and diplopod cuticle. *Quarterly Journal of the Microscopical Society* **92**: 141-161.
- Blower, J.G. (1952) Epidermal glands in centipedes. *Nature* **170**: 166-167.
- Blower, J.G. (1985a) Obituary. The Rev. Cannon Stanley Graham Brade-Birks. *Bull.Brit. Myriapod Group* **2**: 3-4.
- Blower, J.G. (1985b) *Millipedes*. Synopses of the British Fauna 35. Linnean Society of London, London.
- Blower, J.G. and Fairhurst, CP. (1968) Notes on the life-history and ecology of *Tachypodoiulus niger* (Diplopoda, Iulidae) in Britain. *Journal of Zoology* **156**: 257-271.
- Blower, J.G. and Gabbutt, P.D. (1964) Studies on the millipedes of a Devon Oak Wood. *Proceedings of the Zoological Society of London* **143**: 143-176.
- Blower, J.G. and Rolfe, S.W. (1956) *Metaiulus pratensis*, gen. et sp. nov., and *Leptoiulus kervillei* (Brolemann) from Britain. *Annals and Magazine of Natural History* (**12**) **9**: 513-520.
- Blower, J.G. and Rundle, A.J. (1980) *Prosopodesmus panporus*, an interesting new species of polydesmoid millipede from the Royal Botanic Gardens, Kew, England. *Myriapodologica* **1**: 27-34.
- Bocock, K.L., Heath, J. and Blower, J.G. (1973) Some observations on the biology of the millipede *Geoglomeris jurassica* Verhoeff, 1915. *Journal of Natural History* **7**: 691-697.
- Brade-Birks, H.K. and Brade-Birks, S.G. (1917) A new member of the AscospERMophora (*Jacksoneuma bradeae* gen. et sp. nov.). *Journal of Zoological Research* **2**: 135-149.
- Brade-Birks, S.G. (1928). Notes on myriapoda XXXII. An important specimen of *Euphoberia ferox* from the Middle Coal Measures of Crawcrook. *Geological Magazine* **65**: 400-406.
- Brooks, C. H. (1963) Some aspects of the life-histories and ecology of *Proteroiulus fuscus* (Am Stein) and *Isobates varicornis* (Koch) with information on other blaniulid millipedes. Ph. D. thesis. Th2068. Joule Library. 301 pages.
- Brooks, C. H. (1974) The life-cycle of *Proteroiulus fuscus* (Am Stein) and *Isobates varicornis* (Koch) with notes on the anamorphosis of Blaniulidae. *Symposium of the Zoological Society of London* **32**: 485-501.
- Brooks, C. H. and Willoughby, J. (1978). An investigation of the ecology and life-history of the millipede *Blaniulus guttulatus* (Bosc) in a British woodland. *Abhandlungen und Verhandlungen des Naturwissenschaftlichen Vereins zu Hamburg* (NF) **21/22**: 105-114.
- Fairhurst, C. P. (1968) Life cycles and activity patterns in schizophylline millipedes. Ph. D. thesis. Th3841. Joule Library.
- Fairhurst, C. P. (1970) Activity and wandering in *Tachypodoiulus niger* (Leach) and *Schizophyllum sabulosum* (Linne). *Bulletin du Museum National D'Histoire Naturelle Paris* (2) **41**, Supplement 2: 61-66.
- Fairhurst, C. P. (1974) The adaptive significance of variations in the life cycles of schizophylline millipedes. *Symposium of the Zoological Society of London* **32**: 575-587.
- Gregory, S.J., Jones, R.E. and Mauries, J.P. (1993) A new species of millipede (Myriapoda: Diplopoda: Chordeumatidae) from the British Isles. *Journal of Natural History* **28**: 47-52.
- Healey, V. (1963) Studies on the ecology of the woodlouse *Trichoniscus pusillus pusillus* Brandt 1833. Ph. Thesis. Th5299. Joule Library. 187 pages.
- Hincks, W.D. (1954) Obituary. Harry Britten, M.Sc., A.L.S., F.R.E.S. *Journal of the Society for British Entomology* **4**: 225-228.
- Jackson, J.W. (1952) Catalogue of types and figured specimens in the Geological Department of the Manchester Museum. *Manchester Museum Publication* No. **6**.
- Jackson, J.W., Brade-Birks, H.K. and Brade-Birks, S.G. (1919) Notes on myriapoda XIX. A revision of some fossil material from Sparth Bottoms, Lancs. *Geological Magazine* **6**: 406-411.
- Johnson, C. (1996). The Manchester Museum, Department of Entomology. In: Underwood, R. (ed.), *The Raven Entomological and Natural History Society, Fifty Years, 1946 to 1996*. The Raven Entomological and Natural History Society. p. 202-207.
- Kayed, A. N. T. (1974) Food consumption, assimilation and growth in *Ophiulus pilosus* (Newport). M. Sc. thesis. Th6327. Joule Library. 115 pages.

- Kayed, A. N. T. (1977) Bioenergetics of *Ophiulus pilosus* (Newport) with notes on other millipedes. Ph. D. thesis. Th6328. Joule Library. 377 pages.
- Kayed, A. N. (1978) Consumption and assimilation of food by *Ophiulus pilosus* (Newport). *Abhandlungen und Verhandlungen des Naturwissenschaftlichen Vereins zu Hamburg* (NF) **21/22**: 121-128.
- Kheirallah, A. M. (1966) Studies on the feeding behaviour of the millipede *Iulus scandinavicus* (Latzel, 1884). Ph. Thesis. Th6539. Joule Library. 271 pages.
- Kheirallah, A. M. (1979) Behavioural preference of *Iulus scandinavicus* to different species of leaf litter. *Oikos* **33**: 466-471.
- Lee, P. (2006) *Atlas of the millipedes (Diplopoda) of Britain and Ireland*. Pensoft, Sofia and Moscow.
- Littlewood, P. M. H. (1983) Studies in the structure and function of the coxal glands of *Lithobius forficatus* (L.) (Chilopoda: Lithobiidae). Ph. D. thesis. Th7026. Joule Library. 304 pages.
- Littlewood, P. M. H. (1983) Fine structure and function of the coxal glands of lithobiomorph centipedes: *Lithobius forficatus* and *L. crassipes* (Chilopoda, Lithobiidae). *Journal of Morphology* **177**: 157-179.
- Littlewood, P.M.H. (1988) The chemosensory behaviour of *Lithobius forficatus* (Myriapoda: Chilopoda). 2. Bioassay and chemistry of the coxal pheromone. *Journal of Zoology* **215**: 523-535.
- Littlewood, P.M.H. (1991) The water relations of *Lithobius forficatus* and the role of the coxal organs. *Journal of Zoology* **223**: 653-665.
- Littlewood, P. M. H. and Blower, J. G. (1987) The chemosensory behaviour of *Lithobius forficatus*. 1. Evidence for a pheromone released by the coxal organs (Myriapoda: Chilopoda). *Journal of Zoology* **211**: 65-82.
- Logunov, D.V. (2011a) The Manchester Museum's entomology collection. *Antenna* **34**: 163-167.
- Logunov, D.V. (2011b) British entomology collections of the Manchester Museum. *Journal of the Lancashire and Cheshire Entomological Society* (in press).
- Lusted, F.P. (1991) Cannon Stanley Brade-Birks: An appreciation. *Bull.Brit. Myriapod Group* **8**: 39-45.
- Mayermayer, G. (1962) Karl Wilhelm Verhoeff 1867–1945. Selbstdarstellung eines deutschen Zoologen mit einem Verzeichnis seiner Veröffentlichungen. *Lebensdarstellungen deutscher Naturforscher* **9**: 9–50.
- Miller, P.F. (1973) The consumption and utilisation of food by millipede populations. Ph. D. thesis. Th8043. Joule Library.
- Miller, P. F. (1974) Competition between *Ophiulus pilosus* (Newport) and *Iulus scandinavicus* Latzel. *Symposium of the Zoological Society of London* **32**: 553-574.
- Nudds, J.R. (1992) Catalogue of type, figured and referred fossils in the Geological Department of the Manchester Museum: Supplement. *Proceedings of the Yorkshire Geological Society* **49**: 81-94.
- Nudds, J.R. (2005). Catalogue of type, figured and referred fossils in the Geological Department of the Manchester Museum: Supplement. *Proceedings of the Yorkshire Geological Society* **55**: 173-182.
- Proudlove, G.S. (2011) Notes on authorship, type material, and current systematic position of the Diplopod taxa described by H.K. and S.G. Brade-Birks. *Bull.Brit. Myriapod & Isopod Group* **25**: 2-13.
- Read, H. J. (1984) Study of endemic Madeiran millipedes. M.Sc. thesis. Th9425. Joule Library. 109 pages.
- Read, H.J. (1988) The life histories of millipedes: a review of those found in British species of the order Julida and comments on endemic Madeiran *Cylindroiulus* species. *Revue d'Ecologie et Biologie du Sol* **25**: 451-467.
- Read, H. (2002) Obituary. John Gordon Blower 1923 – 2001. *Bull.Brit. Myriapod and Isopod Group* **18**: 5-6.
- Report (1902-03) Report of the Museum Committee. The Manchester Museum, Owens College, Manchester. 39 pp.
- Report (1956-57) Report of the Museum Committee. The University, Manchester: 20 pp.
- Report (1957-58) Report of the Museum Committee. The University, Manchester: 20 pp.
- Report (1996-97) The Manchester Museum Annual Report: 22 pp.
- Report (2001-02) The Manchester Museum Annual Report: 32 pp.
- Sierwald, P. and Reft, A.J. (2004) The millipede collections of the world. *Fieldiana Zoology* N.S. **103**: 1-100
- Wilson, H.M. (1999) Palaeobiology of the Arthropleuridea. Ph. D. Thesis. Th21261. Joule Library.
- Woodward, H. (1871) II.—On *Euphoberia Brownii*, H. Woodw., a New Species of Myriapod from the Coal-measures of the West of Scotland. *Geological Magazine* **8**: 102-104.

APPENDIX 1: THE J. GORDON BLOWER REFERENCE COLLECTION OF BRITISH DIPLOPODA IN THE MANCHESTER MUSEUM

Species in the collection with geographic data (where known). Species list from Lee (2006).

(I) =Introduced species, all others are native. See discussion below for the missing species.

Species	Acc. No. G7484	Location	Date	Collector	Stadium, abundance & sex	Notes
POLYXENIDA						
<i>Polyxenus lagurus</i>	331 332 335 336	Toleworth, Rutland Lee over Sands, Essex Wytham Wood Godmerstham	26/9/1977 31/7/1963 10/8/1963 10/7/1954	C. Johnson	2F	
GLOMERIDA						
<i>Glomeris marginata</i>	1306	Llethrid	22/7/1964			
<i>Geoglomeris subterranea</i>	321 322 323 326 3395	Kerridge Milldale Kerridge Wytham Slade, Gower probably	5/1970 20/10/1975 20/11/1971 21/11/1962 25/9/1987	P.F. Miller	F	First Welsh record
<i>Adenomeris gibbosa</i>	1107 1109 1112	Ballygall, Dublin None, probably Dublin Dublin	18/11/1978 24/2/1981	D. Doogue D. Doogue D. Doogue		First "British" record
<i>Trachysphaera lobata</i>	NONE					
POLYZONIIDA						
<i>Polyzonium germanicum</i>	NONE					
<i>Rhinotus purpureus</i>	1144	Cambridge University Botanic Garden	3/6/1978	A.J.Rundle		First British record
CHORDEUMATIDA						
<i>Craspedosoma rawlinsii</i>	553 559	Ernocroft Wood Delamere	03/1966 27/5/1975			

<i>Nanogona polydesmoides</i>	1353	Llethrid	22/6/1968		2	
	1355	Llethrid	24/10/1968		1	
	2690	Sulby Glen	No date		3	M28 rings, F28 rings
<i>Anthogona britannica</i>	NONE					
<i>Chordeuma proximum</i>	457	Llethrid	23/9/1986		VIII	28 rings
	457	Llethrid	23/9/1986		VIII	
	530	Bishops Wood	18/9/1968		VIII, 19	For comparison
	3399	Slade, Gower probably	22/9/1987			
<i>Chordeuma sylvestre</i>	274	Trelill	12/4/1962		M	
	292	Trelill	12/4/1962	J.G. Blower	3M, 3F	First British record
	1078	Trelill	12/4/1962			
	1081	Trelill				
	1084	Camelford	04/1975	R.Daniels		
	4374	Trelill SX053778	19/6/1995	J.G. Blower		
<i>Melogona gallica</i>	1281	Old Radnor Wood	07/04/1971?		2M	
	1282	Delamere	27/5/1975			
	1284	Old Radnor Wood	7/4/1971		3F	
	1286	Barr??? Wood	17/4/1970		3F	
	1286	BMIG meeting 1970	1970			
<i>Melogona scutellaris</i>	530	Bishops Wood	18/9/1968		VII 3	For comparison
	617	Llethrid	26/9/1969			
	617	Llethrid				
	628	Compstall	2/1969			
	1292	Woodchester Park	17/5/1967			
<i>Melogona voigti</i>	NONE					
<i>Anamastigona pulchella</i>	NONE					
<i>Brachychaetuma bagnalli</i>	NONE					
<i>Brachychaetuma bradeae</i>	1096	No location.	16/4/1983			
<i>Brachychaetuma melanops</i>	558	Rucky Valley, Cornwall	4/1963			

POLYDESMIDA						
<i>Oxidus gracilis</i>	516 1105	Kew Gardens No location given	23/5/1976 3/8/1984	A.J.Rundle		
<i>Stosatea italica</i>	1106	No location given	No date			
<i>Brachydesmus superus</i>	511 1055 1066 1301	Ailsa Craig Woodchester Park Silwood Park Llethrid	3/6/1976 17/5/1967 14/11/1968 21/9/1970	R.A.Crowson	1M, 3F 1M, 2F	
<i>Polydesmus angustus</i>	479 1060 1063 1068	Ecology Study Area Manchester University Delamere Trelill Great Haldon	23/3/1983 14/5/1975 12/4/1962 1/4/1967		1 2M, 1F	
<i>Polydesmus barberii</i>	NONE					
<i>Polydesmus coriaceus</i>	964 966 3482	Port Erin Old Park Wood Brendon Pastures	18/3/1961 1/9/1954 17/4/1970	J.G. Blower		BMG 1970
<i>Polydesmus denticulatus</i>	1057 1072 1073 1212	Delamere West Suffolk Trelill Brigg and Manby Woods	14/5/1975 8/1968 12/4/1962 16/5/1959			
<i>Polydesmus inconstans</i>	4021	Bernac, France	9/7/1991	J.G. Blower	1F	
<i>Propolydesmus testaceus</i>	NONE					
<i>Cylindrodesmus hirsutus</i>	1142	Kew Gardens	12/7/1986	A.J.Rundle		First British record
<i>Prosopodesmus panporus</i>	633 634 1099 1108	Kew Gardens Kew Gardens No location given Kew Gardens	16/5/1976 16/5/1976 No date No date	A.J.Rundle A.J.Rundle	28M 15F M	Paratypes Paratypes
<i>Prosopodesmus juvenile</i>	1119	Leicester Museum Botanic Gardens	14/9/1985	A.J.Rundle	juvenile	

<i>Poratia digitata</i>	637	Kew Gardens	9/5/1976	A.J.Rundle	VII 27M	
	638	Kew Gardens	9/5/1976	A.J.Rundle	VIII 22F	
	645	Kew Gardens	9/5/1976	A.J.Rundle	VII 18F	
	1115	Kew Gardens	12/7/1986	A.J.Rundle		
	1140	Wisley, Surrey	14/6/1986	A.J.Rundle	1M	
<i>Macrosternodesmus palicola</i>	554	Brooms Barn	13/5/1966			
	956	Lincoln	1930	W.J.Letts		
	3397	Dunkeld Grounds	6/4/1971	Lewis		
	4093	Burnbarrow Scar	8/4/1990	J.G. Blower		
	4129	Raxsons Wood SD463860	24/4/1990	J.G. Blower	5F	
<i>Ophiodesmus albonanus</i>	256	Trelill	12/4/1962			
	265	St Nectans	4/1963			
	269	Parcle Breas Quarry	20/9/1969			
	955	No location given	1930	Letts, W.J.		
	1098	Gaitbarrow	16/4/1983			
	1114	Dublin	24/2/1981	D. Kime		
	3397	Dunkeld Grounds	6/4/1971	Lewis		
SPIROBOLIDA						
<i>Paraspirobolus lucifugus</i>	NONE					
JULIDA						
<i>Choneiulus palmatus</i>	352	Manchester			M	
	355	Merlewood	3/9/1964		M	
	400	Kew Gardens	16/3/1976	A.J.Rundle		
	1164	Lundy ???				
	4359	Sand Point ST329659	25/4/1987	J.G. Blower	1M, 5F	
<i>Nopoiulus kochii</i>	1143	Kew Gardens	12/7/1986	A.J.Rundle		
<i>Proteroiulus fuscus</i>	507	Ailsa Craig	3/6/1976	R.A.Crowson		
	1154	Castletown, Caithness	30/3/1969	Blumfield		
	1156	Birkrigg	20/7/1960			
	1159	Silwood Park	14/11/1964			

<i>Blaniulus guttulatus</i>	339	Buckingham Palace	20/5/1960			
	340	Buckingham Palace	20/5/1960			
	1149	Brooms Barn	13/5/1966			
	1300	Llethrid			5M, 3F	
<i>Archeboreoiulus pallidus</i>	338	Milldale	20/5/1976			
	961	No location given	1930	Letts, W.J.		
	1157	No location given				
	1158	Helmsley, Rievaulx				
<i>Boreoiulus tenuis</i>	957	No location given	1930	Letts, W.J.		
	1113	Dublin	24/2/1981	D. Kime		
	1150	Sutton Bridge, Lincolnshire	5/1964	Marie Wolfe	20F	
	1152	Sutton Bridge, Lincolnshire	4/1964	Marie Wolfe	3M	
<i>Nemasoma varicorne</i>	351	Llethrid	22/9/1982		VII 3F	
	1151	Suffolk	8/1968		4M	
<i>Thalassiosobates littoralis</i>	341	No location given				
	344	No location given				
	349	No location given				
	4092	Mullock Bay	5/4/1997	J.G. Blower		
<i>Julus scandinavicus</i>	362	Wonwell	7/4/1967		X M	
	367	No location given				
<i>Haplopodoiulus spathifer</i>	NONE					
<i>Ophiulus pilosus</i>	359	Llethrid	9/1979		IX F	
	480	Ecology Study Area Manchester University	23/3/1983		1	
	1093	Kerridge	11/1975	Nabil Kayed	XIII F	12RO, 55 or 56 +1
	1116	Kew Gardens	30/3/1976	A.J. Rundle		
<i>Leptoiulus belgicus</i>	374	Cornwall			2M	
	1102	Falmouth	No date		IX 2M, 4F IX	
	1102	Falmouth			IX 2M, IX 4F, VIII F	
	1104	No location given				

<i>Leptoiulus kervillei</i>	295	Southampton	2/6/1989			
	369	Widlake Wood	4/1982		IX M	
	369	Widlake Wood	4/1982		IX M	
	369	Widlake Wood	4/1982		IX F	
	369	Widlake Wood	4/1982		IX F	
	4373	Trethin SX101820	21/6/1995	J.G. Blower		
<i>Metaiulus pratensis</i>	1117	Petersham, Surrey	15/10/1978	A.J.Rundle		New record
<i>Allajulus nitidus</i>	280	Milldale	29/7/1968		1M, 10F, 1 intersex	
	287	Sawrey, Windermere	16/8/1964		1M, 1F	
	364	No location given			1M, 1F	
<i>Cylindroiulus caeruleocinctus</i>	358	Woodchester Park	2/4/1979		2M	
	370	Woodchester Park			M	
	409	Woodchester Park	2/4/1979		F	
<i>Cylindroiulus britannicus</i>	401	Kew Gardens	14/12/1975	A.J.Rundle		
	417	Oxwich Wood	22/9/1970		VII	
	419	Oxwich Wood	22/9/1970		IV	
	423	Woodchester Park	7/1974			
	481	Ecology Study Area Manchester University	23/3/1983		1	
<i>Cylindroiulus latestriatus</i>	509	Ailsa Craig	3/6/1976	R.A.Crowson	1	
<i>Cylindroiulus londinensis</i>	363	Ryhope Dean		D. Kime	2M	
	365	Ryhope Dean	20/8/1982	D. Kime	2M	
	405	Dune Park	30/6/1961			
	561	Kent	9/1983	A.J.Rundle	VII M, IX F	
<i>Cylindroiulus parisiorum</i>	395	Kew Gardens	14/12/1975	A.J.Rundle		
	396	Kew Gardens	16/3/1975	A.J.Rundle		
	397	Kew Gardens	14/12/1975	A.J.Rundle		
	398	Kew Gardens	30/3/1976	A.J.Rundle		
	399	Kew Gardens	8/2/1976	A.J.Rundle		
	402	Kew Gardens	14/12/1975	A.J.Rundle		

<i>Cylindroiulus punctatus</i>	357 508	Truro Ailsa Craig	3/6/1976	R.A.Crowson		
<i>Cylindroiulus salicivorus</i>	NONE					
<i>Cylindroiulus truncorum</i>	392	Kew Gardens	30/5/1976	A.J.Rundle	VIII M, V IIM	
<i>Cylindroiulus vulnerarius</i>	267 390 391 394 1125	Avon Gorge Fletcher Moss Fletcher Moss Mortlake Gower	20/5/1905 28/4/1978 18/5/1978 4/1976 24/9/1979	M. Jones M. Jones A.J.Rundle	1M 2F 1M 2M, 2F	
<i>Enantoiulus armatus</i>	375 406 1094	Great Haldon Salcombe Hill No location given	1/4/1967 10/5/1958 3/8/1984	E.H.Eason	1M, 1F 5M, 3F	
<i>Unciger foetidus</i>	NONE					
<i>Brachyiulus pusillus</i>	360 366 548 1101	No location given No location given Little Hampden Trelill	4/4/1980 No date		VII 2M 2	
<i>Ommatoiulus sabulosus</i>	298 361 368 512	Abbotts Moss Llethrid No location given Ailsa Craig	12/10/1986 22/7/1964 3/6/1976	R.R.Askew R.A.Crowson		
<i>Tachypodoiulus niger</i>	372 372 372 1319 3945	Bowker's wall Bowker's wall No location given Llethrid Castle Eden Dene, Durham	3/3/1965 3/3/1965 18/8/1977 2/9/1970 2/6/1986	C. Johnson Noel Jackson	VII M IX M VIII M 1M	Albino

The missing species

Anamastigona pulchella (I)

Not discovered in Britain (Northern Ireland) till 1994, after the end of Blower's main interest.

Anthogona britannica

Described as new in 1993 (Gregory, Jones and Mauri s 1993), after the end of Blower's main interest.

Brachychaeteuma bagnalli

This is a curious omission as Blower clearly had the animal: collected "by myself in a garden in Easingwold, North Riding, a male in April 1956 and a female with two immature stadia ... in August 1961." (Blower 1985:82). It is also likely that Declan Doogue (specimens from Ballygal, Dublin) and Adrian Rundle (specimens from several locations) would have sent material to Blower as they did with other species (Doogue sent *Adenomeris gibbosa* from the same site and this is in the collection).

Cylindroiulus salicivorus (I)

Not recorded in Britain (Scotland) until 1987.

Haplopodoiulus spathifer (I)

Not known from Britain (Kew Gardens, London) until 1986.

Melogona voigti

Not known from Britain (Lothian, Scotland) until 1995.

Paraspirobolus lucifugus (I)

Not discovered in Britain (The Eden Project, Cornwall) until 2005.

Polydesmus barberii (i)

Discovered in Devon in 1995.

Polydesmus inconstans

As the 14th most common millipede at the time of Blower's synopsis (1985) this is a remarkable omission.

Polyzonium germanicum

Though it is very restricted in distribution, being known only from extreme east Kent, it is surprising that Blower did not collect even a few animals for his collection. What little evidence there is suggests that he did not. Despite nearly all drawings in the synopsis being drawn from material in his collection, two of the drawings of this species are "drawn from photographs by Dr S. M. Manton." A third drawing, of the head, looks much more like other drawings in the synopsis and may have been from a real animal.

Propolydesmus testaceus

Long known as *Polydesmus testaceus* and found in Britain in 1903. This is a major, and unexplained, omission from the Blower collection.

Trachysphaera lobata

Not known from Britain (The Isle of Wight) until 1986.

Unciger foetidus (I)

Not found in this country until 27th April 1983. However, the synopsis contains a full account, with a drawing of the whole animal in lateral view and four details of the gonopods. All appear to be in Blower's unique style.

APPENDIX 2: THE DRIED MYRIAPODA COLLECTION ATTRIBUTABLE TO H.K. AND S.G. BRADE-BIRKS.

Each box is given a unique accession number in the series G7505 e.g. G7505.1. Contents of the labels provided with the boxes are given in “inverted commas” *verbatim*, comments on the samples, including the presently accepted name, are given in [square brackets].

Diplopoda

- G7505.1. “*Cylindroiulus luscus* (Meinert)”
- G7505.2. “*Polydesmus coriaceus* Porat. Widespread. A small species. Gonopods of male are diagnostic.”
- G7505.3. “The so-called “*Polydesmus complanatus* (L)” of British authors. Male (larger) and female. This is our commonest species of *Polydesmus*.” [*Polydesmus angustus* ?]
- G7505.4. “*Polyzonium germanicum* Brandt. The only British member of the order Colobgnatha is known only from the neighbourhood of the North Downs of Kent.”
- G7505.5. “*Archiboreoiulus pallidus* (Brade-Birks), probably widespread.” [Widespread but not common]
- G7505.6. “*Chordeumella scutellare brolemanni* Brade-Birks. Local. Common under leaves on surface of soil Darwen, Lancashire. Gonopods are diagnostic.” [*Melogona scutellaris*]
- G7505.7. “*Microbrachyiulus pusillus* (Leach). Widespread. Size and colour (note dorsal markings) are guides to diagnosis.” Internal label: “*Julus pusillus*.” [*Brachyiulus pusillus*]
- G7505.8. “*Brachydesmus superus mosellanus* Verhoeff. This is the only British representative of the genus. Common in gardens. Attacks delicate roots of seedlings.”
- G7505.9. “*Brachychaeteuma bradeae* (Brölemann and Brade-Birks). Four British species of this genus have been described. The gonopods of the male are diagnostic.” [Only three species now recognised in the genus]
- G7505.10. “*Iulus (Micropodoiulus) scandinavicus* Latzel. Quite common in some localities, absent in others. There is a diagnostic process on the second walking leg of the male.” [Note spelling of generic name with an I rather than a J. This usage discussed by Jeekel 1971]
- G7505.11. “*Cylindroiulus londinensis caeruleocinctus* (Wood). Widespread. Occurs as a subspecies in some parts of England and on the continent but also occurs as a variety with the true *C. Londinensis*.” [Now considered to be *C. caeruleocinctus*, see discussion in Blower (1985:140-141, 144)]
- G7505.12. “*Macrosternodesmus palicola* Brolemann. Local. Chester etc.” [Chester was the base of A. Randell Jackson]
- G7505.13. “*Proteroiulus fuscus* (Am Stein). Commonly found between the bark and trunk of rotting timber. Males are remarkably rare. The arrangement of the eyes and the habitat are clues in diagnosis.”
- G7505.14. “*Polymicrodon polydesmoides* (Leach). As this is the only known British representative of the genus the form of the body serves to distinguish the animal.” [*Nanogona polydesmoides*]
- G7505.15. “*Tachypodoiulus niger* (Leach). Common in most places in the British Isles. The anterior part of each body segment has striations at right angles to the length of the body and these are diagnostic.” Internal label: “*T. Niger* 587: Co Down, Ireland.”
- G7505.16. “*Blaniulus guttulatus* (Bosc). Very common. Injurious to beans strawberries and other crops.”
- G7505.17. “*Isobates varicornis* (C. L. Koch). Local. Habitat and eye-structure are aids to diagnosis.” Internal label: “*I. varicornis* 920.” [*Nemasoma varicorne*]
- G7505.18. “*Brachychaeteuma bagnalli* Verhoeff. Local.” See Figure 7.
- G7505.19. “*Craspedosoma rawlinsi* Leach. Widespread. Sparsely distributed.”
- G7505.20. “*Cylindroiulus londinensis* (Leach). The largest British millipede.” [Specimen measures 42mm x 5mm]
- G7505.21. “*Glomeris marginata* Villers. The common black “pill-millipede”.”
- G7505.22. “*Boreoiulus tenuis* (Biglen). Local.” Internal label: “*M. Tenuis* 1140.”
- G7505.23. “*Ophiulus pilosus* (Newport). Widespread. The form of the limbs of the first body segment in the male is diagnostic.”
- G7505.24. “*Cylindroiulus nitidus* (Verhoeff).” [*Allajulus nitidus*]

- G7505.25. "*Polydesmus gallicus* Latzel. A swamp lover. Local. In this genus the modified legs (gonopods) of the 7th body-segment of the male are diagnostic." Internal label: "Fever swamp, Chester, 7/X/15, Coll. S.G.B". [S.G.B is S. Graham Brade] [*Polydesmus coriaceus*]
- G7505.26. "*Nopoiulus kochi* (Gervais). Widespread. This is the "*Iulus venustus* Meinert" of various authors." [*Nopoiulus kochii*]
- G7505.27. "*Schizophyllum sabulosum* (L.). Widespread. Note dorsal marking indicated by the inclusion of a small part of a second animal." [*Ommatoiulus sabulosus*]
- G7505.28. "*Polydesmus denticulatus* C.L. Koch. Widespread, but local. Gonopods of male are diagnostic." Internal label: "P. dentic ARJs coll [unreadable location]". [ARJ is A. Randell Jackson]
- G7505.29. "*Choneiulus palmatus* (Nemec). One of our rarer species. Sometimes occurs in greenhouses." [Widespread but still uncommon]
- G7505.30. "*Paradesmus gracilis* (C. L. Koch). Not uncommon in greenhouses." [*Oxidus gracilis*].

Chilopoda

- G7505.31. "*Brachygeophilus truncorum* (Bergsoe and Meinert, 1886). Widespread. The form of the ventral body plates is diagnostic." [*Geophilus truncorum*]
- G7505.32. "*Hydroschendyla submarina* (Grube). Below high-water mark."
- G7505.33. "*Lithobius calcaratus* C. L. Koch. Local. The specific name has reference to a characteristic projection on the last leg of the male."
- G7505.34. "*Lithobius lapidicola* Meinert. Local." [May be *L. borealis* (Barber 2008:75)]
- G7505.35. "*Lamyctes fulvicornis* Meinert. Local. Often abundant. The legs are spineless and only a single pair of ocelli is present." [*Lamyctes emarginatus* (Newport, 1844)]
- G7505.36. "*Scolioplanes acuminatus* (Leach). Uncommon. There are several records for North of England localities." [*Strigamia acuminata*]
- G7505.37. "*Cryptops hortensis* Leach. The only British member of the order Scolopendromorpha. Widespread. Common in some gardens and greenhouses." [Now three native, and one introduced, species in the genus in Great Britain]
- G7505.38. "? *Lithobius muticus* C. L. Koch. North Downs, Wye, Kent. No other British specimen of this species is known."
- G7505.39. "*Geophilus insculptus* Attems. A common species in parts of the north of England. The ventral body plates are diagnostic."
- G7505.40. "*Geophilus longicornis* (Leach). Widespread. The long segments of the antennae are diagnostic." [*Geophilus flavus*]
- G7505.41. "*Geophilus carpophagus* Leach. Widespread and often common. Typical ventral plates." [*G. carpophagus* now split into two species, the other is *G. easoni* Arthur et al., 2001]
- G7505.42. "*Stigmatogaster subterraneus* (Shaw). Widespread, but somewhat local; often common. Structure of ventral plates diagnostic." [*Stigmatogaster subterranea*]
- G7505.43. "*Lithobius variegatus* Leach. Often common on moorlands and in the open country. Distinguished from all other British Lithobiidae by its colour. Known only from the British Isles." [Now known from France and Spain, Barber (2009)]
- G7505.44. "*Lithobius forficatus* (Linne). The common brown centipede."
- G7505.45. "*Scolioplanes crassipes* (C. L. Koch). Widespread but local." [*Strigamia crassipes*]
- G7505.46. "*Schendyla nemorensis* (Leach)."
- G7505.47. "*Monotarsobius duboscqui* (Brolemann). Widespread. Common in Kent." [*Lithobius microps*]
- G7505.48. "*Lithobius melanops* Newport. Widespread."
- G7505.49. "*Scolioplanes maritimus* (Leach). A shore form." [*Strigamia maritima*]
- G7505.50. "*Monotarsobius crassipes* (L. Koch). Common in Lancashire and in some other districts." [*Lithobius crassipes*]

ARMADILLIDIUM DEPRESSUM BRANDT, 1833 CLIMBING TREES IN DORSET

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INTRODUCTION

The specialist fauna of encrusting algae and lichens on exposed surfaces has been little studied in Britain and merits more attention from ecologists. Many mollusc species and a few woodlice and millipedes are especially characteristic browsers to be found on tree trunks and/or exposed rock surfaces (including walls). There remain many questions, however, about the seasonality of their use of the situation, and the relative importance of the wider landscape. There is much to learn, and habitat classification schemes need to acknowledge exposed surfaces as an important feature for invertebrates.

Gregory (2009) describes *Armadillidium depressum* Brandt, 1833 as favouring dry, relatively exposed places and typically occurring on drystone walls in Limestone country as well as loosely mortared walls. Semi-natural sites tend to be restricted to exposures of hard limestone rocks. This was certainly the present authors experience until 2010 when the species was found on the dry exposed trunk bark of large old trees forming an ancient beech avenue in parkland in east Dorset. Interestingly the same trees also had a population of Lapidary Snail *Helicigona lapicida*, a snail with otherwise similar rocky habits but also occurring on old trees in places with long continuity of old trees such as ancient woodlands and old hedgerows.

ST GILES' PARK, WIMBORNE, DORSET

St Giles' Park is an old designed landscape park dating back at least into the 17th century. Although it has suffered badly from modern intensive agriculture and forestry, it still contains an ancient avenue formed of old beech trees. An invertebrate survey was commissioned by Chris Burnett Associates in 2010 as part of a Parkland Plan being developed for a Higher Level Stewardship application.

On 30th May 2010, full grown *A. depressum* were found in small numbers active over the bark surface of some of the old beech trees. They appeared to be browsing on the epiphytes; these appeared to be predominantly algae. One was also knocked from a large bracket fungus *Ganoderma australe* on one of the old beech trees while seeking beetles. Further specimens were found in debris within a rotting pine trunk lying in deep shade beneath the beech trees. None were seen on later visits on 13th July and 20th September. The May visit was during fine dry and sunny weather, while the July day was very wet and showery, and the September visit dry at the time, but closely following a showery period.

DISCUSSION

The discovery of a population in a long-established semi-natural tree situation alongside other characteristic species such as Lapidary Snail raises an interesting point about its native habitats in Britain. While it is best known from synanthropic situations, it is also a typical inhabitant of natural bare rocky ground on Limestone formations in the south-west, such as along the Cotswold escarpment and the Portland/Purbeck coastal limestone cliffs of Dorset.

Unfortunately the habitat data analysis provided in Harding & Sutton (1985) – based on the Non-Marine Isopod recording card used for the British Isopoda Study Group's survey scheme from 1970-82 – provides few supporting facts. It did not ask for distinction between long-established semi-natural habitat and more disturbed situations. However, 6% of records came from natural cliff face, demonstrating a significant association with natural features as opposed to man-made or man-disturbed situations.

There does appear to be a strong association with dry, relatively exposed places, with some availability of deep crevices providing shelter. This association fits tree bark surfaces as much as natural rock exposures - both providing foraging habitat in the form of epiphytic (tree) or saxicolous (rock) algae and lichens. Woodlice are known to feed on a wide variety of material, including lichen, algae, fungi, partly decomposed plant material and even flesh from dead animals (Gregory, 2009) but nothing is known of any specialism in *A. depressum*. Could it be that the key food in native situations in Britain is algae and/or lichen on exposed surfaces? This does seem to be the case with many molluscs, not just Lapidary Snail. Some share the dual situation, such as *Clausilia bidentata*, while others specialise on just rock, e.g. *Clausilia dubia*, or only on trees, e.g. *Ena montana*, *Merdigera obscura* and *Cochlodina laminata*. These all tend to concentrate on the lower tree trunks, where they are closer to the soil and general debris for humid shelter. *Porcellio spinicornis* is another exposed rock associated woodlouse which can also be found on tree bark (S. Gregory, pers. comm.), while *P. scaber* is well known to ascend tree trunks during the summer months (Gregory, 2009).

None of these species appear to remain on tree trunks during the winter months, retiring into soils crevices around the tree base whenever conditions are less suitable for foraging. So are they soil invertebrates which extend their foraging onto tree trunks when conditions are suitable? Or are they arboreal invertebrates which shelter amongst debris when conditions are unsuitable? This distinction may seem academic, but habitat and assemblage classification schemes are often used in assessment of conservation values and may be used to inform land management for conservation purposes. It is therefore useful to gain a better understanding of invertebrate behaviour in relation to the landscapes in which they live.

ACKNOWLEDGEMENTS

I would like to thank Steve Gregory for his comments on an earlier version of this note, and for stimulating a wider discussion.

REFERENCES

- Gregory, S. (2009) *Woodlice and Waterlice (Isopoda: Oniscidea & Asellota) in Britain and Ireland*. Wallingford: Biological Records Centre.
- Harding, P.T. & Sutton, S.L. (1985) *Woodlice in Britain and Ireland: Distribution and Habitat*. Huntingdon: Biological Records Centre.

THE *CRYPTOPS* SPECIES FROM A WELSH GREENHOUSE COLLECTED BY I.K. MORGAN WITH A DESCRIPTION OF A PROBLEMATIC SPECIMEN OF A SPECIES NEW TO THE BRITISH ISLES (CHILOPODA: SCOLOPENDROMORPHA: CRYPTOPIDAE).

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INTRODUCTION

Tony Barber sent me for comment, five specimens of *Cryptops* collected by Ian Morgan from a heated Greenhouse in Singleton Park, Swansea (grid ref, SS 629947) in April 2007. They comprise three *C. hortensis* (Donovan, 1810) one *C. parisi* Brolemann, 1920, and a specimen which is closely related to *C. hispanus* Brolemann, 1920 and may belong to that species. It has been designated *C. cf. hispanus* Brolemann. The specimens were cleared in 2-phenoxyethanol (ethylene glycol monophenyl ether). Brief notes are provided below on the *C. parisi* and *C. hortensis*, and *C. cf. hispanus* is described in detail.

CRYPTOPS HORTENSIS (DONOVAN, 1810)

Specimen 1. A male, body length 15 mm, containing three fully formed and a fourth spermatophore forming. Two loose ultimate legs with 9+3 and 8+3 tibial and tibial saw teeth probably from either of the larger specimens.

Specimen 2. A female, body length 15 mm, containing large ova from segment 9 to 19. The number not discernable.

Specimen 3. A male, body length 10 mm, containing three fully formed spermatophores.

NB Barber (2009) gives for *C. hortensis* “up to 30mm, often much smaller.” The fact that specimen 3 measuring ca 10 mm was a mature male suggests that there are a number of mature stadia.

CRYPTOPS PARISI BROLEMANN, 1920

One specimen, a female, body length c. 29 mm, the ultimate legs with nine tibial and six tarsal saw teeth and containing an estimated 28 large ova.

CRYPTOPS CF. HISPANUS BROLEMANN, 1920

Figs 1-13, below.

(*Cryptops hispanus* Brölemann 1920 Memorias de la Real Sociedad Española de Historia Natural. **11** (4): 144. Figs. 19-21.)

REMARKS

In Attems (1930) key the specimen runs down to *Cryptops megaloporus* Haase, 1887 (New Zealand) and *C. neocaledonicus* Ribaut, 1923 (New Caledonia). The key characters used by Attems were T1 with an anterior transverse suture but no paramedian or other sutures, ultimate leg articles without lateral and medial distal tubercles ("Endzänchen"). Anterior tergites without a median sulcus ("Medianfurche"). Head without, or with short paramedian sutures, and tarsi of legs 1-19 undivided. Attems separated *C. hispanus* (Spain) from these two species by its possession of divided tarsi on legs 1-19 and also implies in the key that it has distal medial tubercles on the ultimate legs but this latter contradicts Brölemann's (1920) description.

The Welsh specimen may be distinguished from *C. megaloporus*, as redescribed by Archey (1924), and *C. neocaledonicus*, by its lack of a femoral saw tooth on the ultimate leg and further from *C. neocaledonicus* by its total lack of cephalic sutures. I consider it to be closely related to *C. hispanus*, which was described by Brölemann (1920) from an unspecified number of specimens from Pozuela de Calatrava (Ciudad Real) in Spain, if not that species (see Discussion).

A fourth species with an anterior transverse suture but no other sutures on T1 was described by Verhoeff (1931) on the basis of a single specimen, length 20.5 mm, from Cap Martin, French Riviera. *Cryptops sublitoralis* Verhoeff, 1931 differs from the Welsh specimen in that the transverse suture on T1 is curved rather than angular, T2 has two lateral curved sutures on each side meeting an anterior curved suture and the ultimate legs have 11 + 5 saw teeth, those of the tibia increasing in size from the proximal to the distal end of the tooth row.

DESCRIPTION

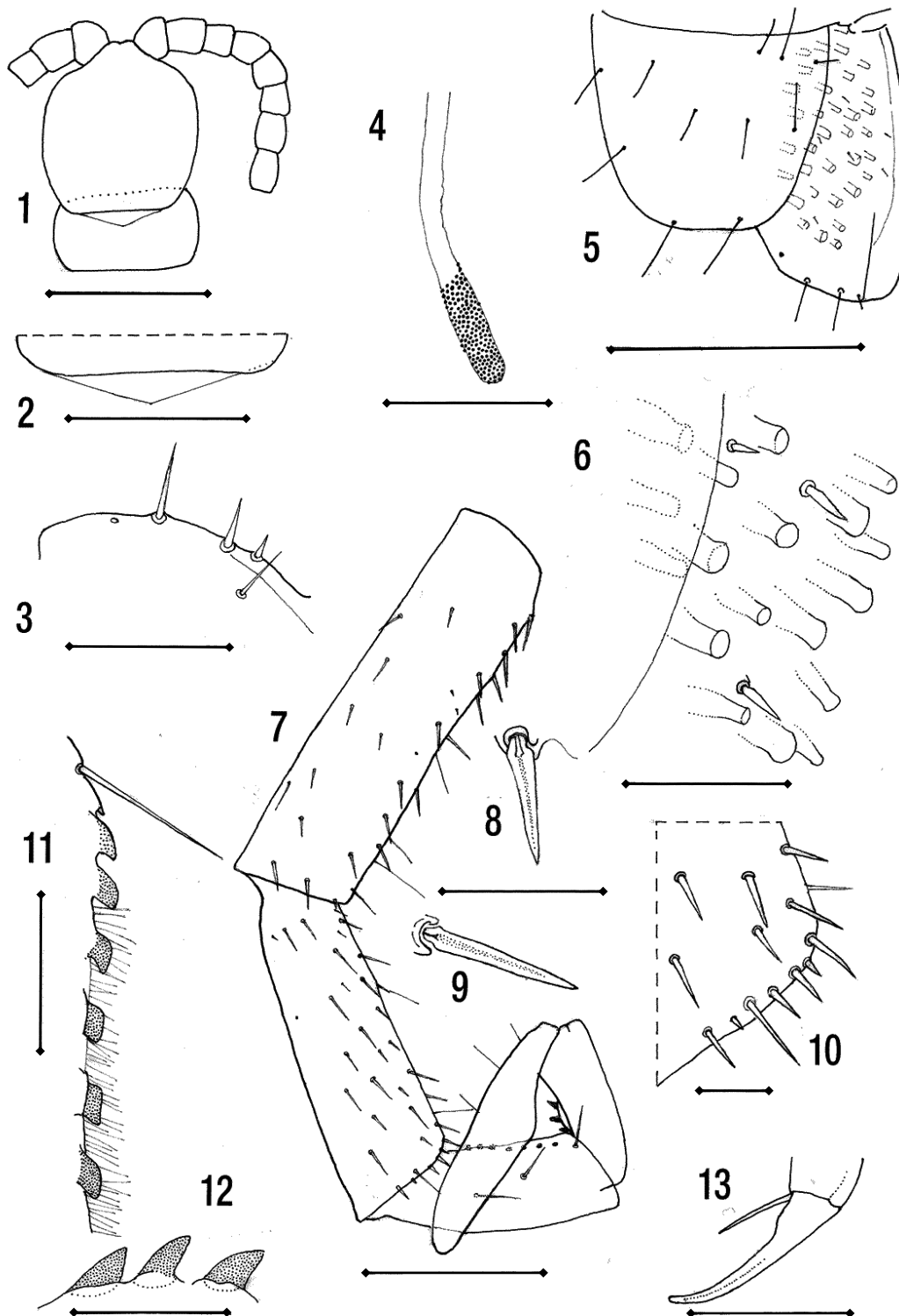
Body length 15 mm. Colour (in 70% ethanol) yellowish white without any dark subcutaneous pigment. Sex not determined. No eggs or spermatophores seen in the cleared specimen.

Antennae with scattered long setae on articles 1-3 with small setae increasing from 4. A double whorl of long basal setae from 5 or 6. Cephalic plate slightly wider than long, with fine scattered setae, without sutures, the posterior border straight and overlapping the anterior margin of T1 (Fig. 1). With a pair of post antennal clypeal setae, followed by one somewhat lateral (? of a pair) one median plus three further pairs of minute setae. Prelabral setae nine. Labrum unidentate.

Trunk tergites with fine scattered setae. Tergite 1 with an anterior transverse suture consisting of two straight oblique arms meeting in the mid line at an obtuse angle (Figs. 1, 2). Paramedian sutures very fine their extent difficult to see in the cleared specimen. Oblique (arcuate) sutures from T2 to T7. Lateral crescentic sulci from T4. Tergite 21 without a median longitudinal suture.

Forcipular coxosternite broken in middle, right side of anterior margin damaged, the left with two large and three smaller setae (one represented only by its socket) on or barely behind anterior margin (Fig. 3). Forcipular poison gland calyx club-shaped (Fig. 4) and situated in the femur and tibia.

Endosternite of sternite 1 obscured, endosternites gradually reducing in size from S2 to S9. Sternite cruciform sulci not observed. Transverse skeletal thickening straight, visible from S3 but barely apparent. Sternite 21 with sides converging and posterior margin straight (Fig. 5). Coxopleuron with ca 35 pores, five small spiniform setae in the pore field (Fig. 6) which occupies the anterior 84% of the coxopleuron. No setae in the narrow region between the pore field and the posterior margin of the coxopleuron which bears four fine setae.



FIGURES 1-13: *Cryptops* cf. *hispanus*.

- 1) Head plate and tergite 1. 2) Detail of anterior transverse suture on T1. 3) Left half of anterior margin of forcipular coxosternite. 4) Calyx and part of duct of forcipular poison gland. 5) Sternite 21 and left coxopleuron. 6) Detail of pore field. 7) Ultimate leg medial view. 8) Lanceolate seta from prefemur. 9) Lanceolate seta from femur. 10) Distomedial edge of femur. 11) Tibial saw teeth. 12) Tarsal saw teeth. 13) Pretarsus leg 12.

Scale bars = 0.1 mm; except Fig. 1 = 1.0 mm; Figs. 2, 5 & 7 = 0.5 mm.

Ultimate legs (Fig. 7). The single (detached) leg lacks the ultimate pretarsus. Prefemur with lanceolate setae dorsomedially and ventromedially (Fig. 8) and ventrally, with an almost glabrous medial strip. Fewer and only ventrolateral on lateral surface. Femur without a saw tooth, with lanceolate setae (Fig. 9) medially, ventromedially and ventrally with five of varying length on distomedial edge (Fig. 10). Only two ventrolateral setae. Tibia with one very small and six well-spaced blunt slightly rounded or flat-topped saw teeth which are flanked laterally by a dense brush of very fine setae (Fig. 11) and three setae medially. Tarsus 1 with 3 sharp saw teeth on a slight eminence (Fig. 12) and two fine ventral setae only. Tarsus 2 with a few scattered fine setae, (three laterally and four ventrally) and a dense brush of very fine setae ventrally in proximal half. Oddly Tarsus 1 lacks a brush of fine setae.

Ambulatory legs. Tarsi of 1-19 undivided. Pretarsi each with a long single accessory spur varying between 35 and 44% the length of the claw (Fig. 13).

DISCUSSION

The only detailed description of *C. hispanus* is Brolemann's (1920) original one. Serra (1985) examined numerous specimens from Portugal and Andalucía which, he stated, generally agreed with Brölemann except for the number of saw teeth, namely 12 and 6 as opposed to 8 and 4 and incomplete sutures on the head capsule and evidence traces of longitudinal sutures on T1. His figure shows a curved anterior transverse suture. He noted that these coincide with Brolemann's examples from Argelia: I have been unable to find a reference to these. Serra suggested that these differences might be due either to individual variation or justify a new species.

The specimen here described closely resembles Brolemann's (1920) description, the cephalic plate without sutures and with a truncated hind margin, T1 with a rectilinear anterior transverse suture and no other sutures. Ultimate legs without dorsodistal teeth or tubercles (épines). No saw tooth on ultimate femur.

The differences between Brolemann's description and the Welsh specimen are:

- 1) 12 prelabral setae (shown in Brolemann's figure 19) as opposed to 9.
- 2) Anterior margin of coxosternite almost straight, 2 setae on anterior margin and 2 larger just behind rather than curved on each side, the two larger very close to the margin.
- 3) Tarsi of legs 1-19 divided with functional articulation as opposed to tarsi undivided.
- 4) According to Brölemann ultimate femur and tibia with a marginal row of 4 lanceolate setae ("spinules") on the distal medial edge but in the Welsh specimen five on the femur but the tibia has no lanceolate setae.

Differences 1 and 2 may be juvenile characters and the specimen containing no eggs or spermatophores appears to be immature, however, Brölemann states 25 coxal pores: there are ca 35 in the Welsh specimen. Brölemann did not record the size of his specimens merely stating the same size as *C. hortensis* which he gives (Brolemann, 1930) as up to 30 mm. With regard to difference 3, tarsi divided or not may be a good character but is not always reliable (Lewis, 2009). The absence of a marginal row of lanceolate setae on the ultimate tibia in the Welsh specimen (difference 4) may be significant.

Brölemann made no mention of the club-shaped forcipular poison gland calyx, the pretarsal spur, or of the fine longitudinal brush of setae on the ultimate tibia and tarsus 2.

As suggested above this single specimen may well be a *C. hispanus* but without a fuller description of that species and data on individual variation it would be unwise to describe it as a new species. As full a description as possible as *C. cf. hispanus* is given which should allow any future specimens to be recognised pending clarification of its true identity.

Cryptops cf. hispanus is clearly distinguishable from other *Cryptops* species recorded from the British Isles by the lack of cephalic sutures and T1 having an angular anterior transverse suture but no other sutures.

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My thanks are due to Tony Barber for advice on various matters and to Roger Lewis for processing the figures.

REFERENCES

- Archey, G. (1924). Notes on New Zealand Chilopoda. *Transactions of the New Zealand Institute*. **53**: 181-195.
- Attems, C., (1930a) Scolopendromorpha. *Das Tierreich*, **54**, Walter de Gruyter, Berlin. 308 pp.
- Barber, A. D. (2009). *Centipedes. Synopses of the British Fauna (New Series)* No. 58. Field Studies Council. 228 pp.
- Brolemann, H. W. (1920). Myriapodes recueillis par D. J.-M. de la Fuente. *Memorias de la Real Sociedad Española de Historia Natural*. **11** (4): 125-147.
- Brolemann, H. W. (1930). *Éléments d'une Faune des Myriapodes de France – Chilopodes*. Imprimerie Toulousaine. 405 pp.
- Lewis, J. G. E. (2009). A review of some characters used in the taxonomy of *Cryptops* (subgenus *Cryptops*) (Chilopoda: Scolopendromorpha: Cryptopidae). *Soil Organisms*. **81**: 505-517.
- Ribaut, H. (1923). Chilopodes de la Nouvelle-Calédonie et des Iles Loyalty. In: Sarasin, F. & Roux, J (eds) *Nova Calédonia, Zoologie* **3** (1) C. W. Kreidel Verlag, Berlin: 1-79.
- Serra, A. (1985). Contribución al conocimiento de los Scolopendromorpha (Chilopoda) del sur de la Península Ibérica. *Publicaciones del Departamento de Zoología Univeridada de Barcelona Facultad de Biología*. **11**: 37-43.
- Vehoeff, K. W. (1931). Über europäische *Cryptops*-Arten. *Zoologischer Jahrbücher (Abteilung für Systematik, Ökologie und Geographie der Tiere)* **62**: 263-288.

THE SHAPE OF THE LAST LEGS OF *SCHENDYLA NEMORENSIS* (C.L. KOCH) (CHILOPODA, GEOPHILOMORPHA)

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The Soil Biodiversity Group of the Natural History Museum, London has been studying soil and leaf litter invertebrates in a range of mainly southern English woodlands of National Vegetation Classification types W1 to W17 (Hall, Kirby and Whitbread, 2004) for nine years. Invertebrates were obtained from leaf litter samples collected in these woodlands using a three day Winkler extraction (Krell et al., 2005). Centipedes were identified to species where possible using keys (Barber, 2008, 2009) although a large proportion of individuals were juveniles some of which can only be identified to genus, family or order, with the later juvenile stages generally being easier to identify than the earlier ones.

Schendyla nemorensis has been found frequently in samples from W10 (*Quercus robur*- *Pteridium aquilinum*- *Rubus fruticosus*) woodlands, with smaller numbers in samples from W17 (*Quercus petraea*- *Betula pubescens*- *Dicranum majus*), W14 (*Fagus sylvatica*- *Rubus fruticosus*) and W5 (*Alnus glutinosa*- *Carex paniculata*) woodlands. After identifying over 700 specimens as *S. nemorensis*, it became apparent that the metatarsi of the last legs of some of the smallest individuals were proportionately wider than shown in the identification keys and that their last legs were more swollen than usual, leading to doubts over their true species. A specimen showing these features particularly clearly, collected in a W14 stand of Burnham Beeches on 3.6.2008, was referred to A.D. Barber and to L. Bonato for confirmation. The terminal segments of a similar example collected in Whitley Wood (W10), New Forest on 19.5.2009 and measuring approximately 7mm from the front of the head to the end of the terminal segments is shown in Fig. 1. In a selection of 59 individuals with representatives from woodland types W10, W17, W14 and W5, specimens with last legs as shown in Fig. 1 are 6 or 7mm long (9 specimens), those with intermediate last leg shapes are mostly 7 or 8mm long (13 specimens, including one 6mm and one 9mm long) and those with shapes as described by Barber are mostly between 9mm and 16mm long (37 specimens, including four 8mm and one 18mm). All are preserved in 80% alcohol.

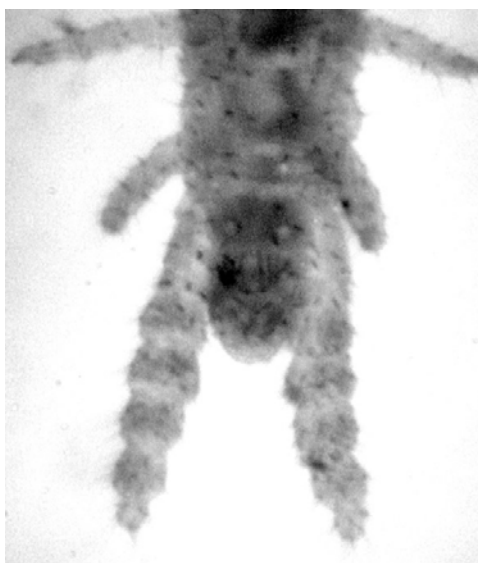
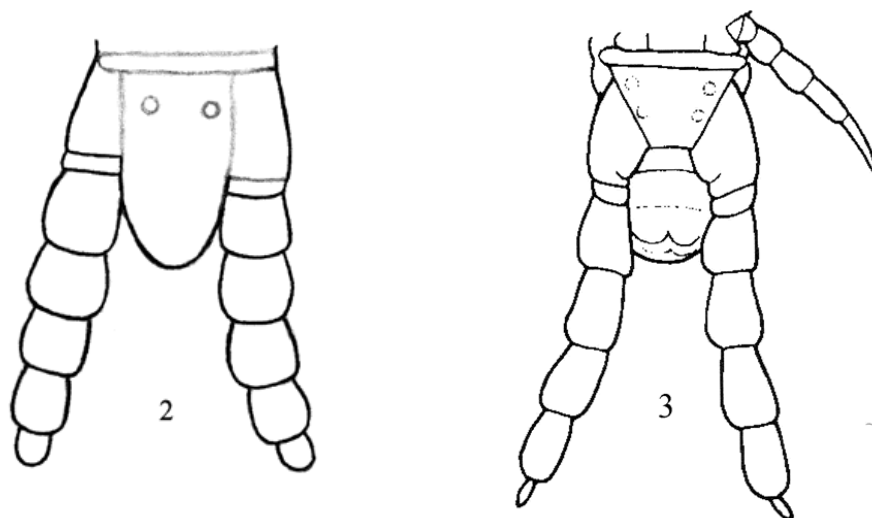


FIGURE 1: *Schendyla nemorensis*. Ventral view of last legs of a 7mm specimen from Whitley Wood showing shape of metatarsi.

The *S. nemorensis* centipedes studied appear to show a gradation in the shape of the last legs corresponding to the approximate size and colour of the animal. Small, white individuals have last legs as shown in Figure 2 with metatarsi almost as wide as long, while larger, pale orange-brown individuals have last legs as shown in the figures in the identification keys (Fig. 3), with metatarsi about three times as long as wide. In 1987, Kime, Lewis and Lewis reported variation in the ratio of length of tarsus to metatarsus of between 1:0.66 and 1:0.45 in larger specimens collected in Forêt de Bellême, Normandy, France which suggests that the metatarsi of *S. nemorensis* of all sizes can be quite variable in shape. It would be interesting to study the life history of *S. nemorensis* and to assess what contribution sexual dimorphism and individual variation make to the differences seen in the appearance of the last legs.



FIGURES 2 & 3: *Schendyla nemorensis*

2. Ventral view of last legs of a 7mm specimen from Whitley Wood (as fig. 1).

3. Ventral view of posterior extremity, female (from Barber, 2009).

ACKNOWLEDGEMENTS

I am grateful to Tony Barber and Lucio Bonato for confirming the identification of the specimen from Burnham Beeches and to Tony Barber and the anonymous reviewers for their comments.

REFERENCES

- Barber, A.D., (2008) *Key to the identification of British centipedes*. Field Studies Council, Shrewsbury.
- Barber, A.D., (2009) *Centipedes*. Synopses of the British Fauna (New Series) No. 58. Field Studies Council, Shrewsbury.
- Hall, J.E., Kirby, K.J., & Whitbread, A.M. (2004) *National Vegetation Classification: Field guide to woodland*, Joint Nature Conservation Committee, Peterborough.
- Kime, R.D., Lewis, J.G.E. & Lewis S.J. (1987) Centipedes and Millipedes collected in Normandy, France. *Bulletin of the British Myriapod Group* 4: 30-36.
- Krell, F.T., Chung, A.Y.C., DeBoise, E., Eggleton, P., Giusti, A., Inward, K. & Krell-Westerwalbesloh, S. (2005) Quantitative extraction of macro-invertebrates from temperate and tropical leaf litter and soil: efficiency and time-dependent taxonomic biases of the Winkler extraction. *Pedobiologia*, 49: 175-186.

AN INDOOR RECORD OF *LITHOBIUS MELANOPS* NEWPORT, 1845 FROM THE FALKLAND ISLANDS

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A lithobiid collected from within the hospital pharmacy at Port Stanley last year and sent by Shona Strange of the Falklands Islands Government – Department of Agriculture to FERA (Food & Environment Research Agency) in Britain was sent on to me by Sharon Reid of that laboratory. It results from a DEFRA funded study on Improving Bio-security in the United Kingdom Overseas Territories. I tentatively identified it as a female *Lithobius melanops*, a diagnosis confirmed by Marzio Zapparoli (Viterbo) who remarked that all the main morphological characters agree with the descriptions given by Brölemann (1930) and Eason (1984) except that the gonopods spurs were different, being apparently larger than usual but that this could be simply individual variation within the species.

The specimen was collected by Juan Sanchez on top of a metal cabinet amongst paperwork in the pharmacy dispensary of the KEMH, Stanley (08.10.2010). Shona commented that “I think this *Lithobius melanops* might be around a bit as I am sure I have seen what looks like a centipede myself a few times. However they are quite fast moving and not always easy to catch”.

Lithobius melanops is a common species in Britain and is one of those centipedes recorded as entering houses (see, for instance, Cloudsley-Thompson, 1956) and is quite often found in greenhouses as well as in gardens and other disturbed habitats. Piles of loose bricks in a domestic garden are a highly likely site for finding the species here. It is widely recorded around the world (Europe including Iceland & the Faroe Islands, Canary Islands, Newfoundland, United States, Tristan da Cunha) and seems it could be dispersed as a result of human activity. Almost certainly this would be the way in which it arrived in the Falkland Islands, quite likely in material transported from the UK.

Mike McLeod (pers.comm.) reports that he had a couple of people reporting a problem with centipedes and has had two in his house although he sprays regularly “to keep the damm earwigs out”. He reports on someone having a lot in her garden and one running across the living room floor. Interestingly, this same person, now 80, said that they were very common when she was a child. Mike reported that he first saw centipedes in between concrete blocks and in large numbers when building their house 11 years ago. Nearly all concrete blocks are imported and most are made by a company near Brighton although there have been a number of imports of building materials from Chile. Obviously, without seeing specimens, we cannot identify which species is involved at this stage although the habits are certainly suggestive of *L. melanops*.

The only previous record of a lithobiomorph centipede from the Falklands appears to be that of Ted Eason’s *Anopsobius macfaydeni*, a henicopid described from there and belonging to a Gondwanan genus known from New Zealand, Chatham & Auckland Islands, Australia, New Caledonia, South Africa and South America (southern Chile & southern Argentina) (Eason, 1993; Edgecombe, 2003). This is a much smaller animal (7.6mm) and was recorded from rural sites on both East and West Falkland. The only Falklands geophilomorph of which I am aware is *Schendylodes alacer* (Pocock, 1891) which also occurs in mainland South America (Pereira & Minelli, 1992).

ACKNOWLEDGEMENTS

My thanks to Sharon Reid of FERA for giving us the opportunity to examine the specimen, to Shona Strange for information about its occurrence and to Marzio Zapparoli for his confirmation of its identity. Also to Mike McLeod for his comments on centipede occurrences in the islands.

REFERENCES

- Brölemann, H.W. (1930) Éléments d'une Faune des Myriapodes de France, Chilopodes. *Faune de France* **25**. Imprimerie Toulousaine.
- Cloudsley-Thompson, J.L. (1956) Notes on Arachnida 28 – Biological observations and records. *Entomologists' Monthly Magazine* **92**: 193
- Eason, E.H. (1984) *Centipedes of the British Isles*. London, Warne
- Eason, E.H. (1993) A new species of *Anapsobius* from the Falkland Islands with commentary on the geographical distribution of the genus. *Myriapodologica* **2** (12): 83-89
- Edgecombe, G.D. (2003) A new species of Gondwanan centipede Anopsobius (Chilopoda: Lithobiomorpha) from New South Wales, Australia. *Zootaxa* **204**: 1-15
- Pereira, L.A. & Minelli, A. (1992) A new record of *Schendyloides acer* (Pocock, 1891) from the Falkland Islands and a redescription of the species (Chilopoda, Geophilomorpha). *Boll.Soc.ent.ital., Genova* **124** (2): 83-90.

***HENIA VESUVIANA* (NEWPORT) (DIGNATHODONTIDAE), THE LATEST ADDITION TO ALIENS AT MOUNT STEWART, CO. DOWN, IRELAND.**

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The grounds of the National Trust property of Mount Stewart on the Ards Peninsula of Co. Down appear to be greatly favoured by alien invertebrates, a wide range of which have now been recorded.

The Italian anthroleucosomatid millipede *Anamastigona pulchella* (Silvestri) is abundant in many areas of the estate which comprises arable farmland, pasture, and broadleaf or mixed woods close to the sea at Strangford Lough. It occurs particularly where leaf litter is stable and deep, as under beech, or where rhododendron shades the soil surface but can be found in winter along field margins and on the upper shore. It was first recorded in the Sea Plantation on 24 December 1999 among ivy and leaf litter of a small promontory protected from encroachment of the sea by a long and recently reinforced bund. *Cylindroiulus truncorum* (Silvestri) was added to the Irish list from the same area on 13 September 2003 when a large colony was discovered tunnelling into flaky white rot of a large beech log which had fallen prey to salt water incursion and winter gales. With it was a New Zealand ironclad beetle of the genus *Pycnomerus* which has yet to be added to the British Coleoptera List. About 30% of *C. truncorum* males in the colony had much thicker than normal metazonite plates with more numerous flutings which gave them a characteristic glistening, slightly matt, stiff appearance quite unlike other British *Cylindroiulus*.

On 9 April 2010 I was visiting an area about 100m to the south of the Sea Plantation, on the coast at the entrance to Mount Stewart. This has the local name of The Gasworks, relating to a Victorian attempt at self-sufficiency – the ruins of the gasworks still occupy part of the site. Centipedes were not the object of the visit but before returning home I decided to turn over a few stones by the carpark. The very first was a boulder lying under a large sycamore and about 15 feet from the upper shore. Underneath were two large geophilomorph centipedes. The first impression was of a coil or knot of greenish bodies with lighter, more orange, extremities. Later, these were identified using Tony Barber's excellent new key to British centipedes (Barber, 2008) as *Henia vesuviana* (Newport). The grey or olive-greenish ground colour with darker sides and orange extremities, plus a white line along the dorsum are striking in the field. This and the slightly transverse head capsule are diagnostic. The Mount Stewart specimens were 28 and 34 mm long respectively. This species has hitherto been confined to southern counties of England, between London and Bristol.

There have been some unlikely finds at Mount Stewart but this is one of the most surprising. Ireland has a rather poor centipede list, not so much due to under-recording as to the cool, formidably wet, climate. One of the reasons why Mount Stewart gets more than its fair share of alien introductions must be its relatively favourable climate with low annual precipitation, closer to that of southern England than the rest of Ireland, and the close proximity of the sea, making heavy frosts uncommon and snow rare. I don't expect to find this species anywhere else in the northern part of Ireland although similarly warm and protected east coast sites such as the Hill of Howth at Dublin, may prove suitable.

REFERENCE

Barber, A.D., (2008) *Key to the identification of British centipedes*. Field Studies Council, Shrewsbury.

***THEREUONEMA TUBERCULATA*, A SCUTIGEROMORPH CENTIPEDE FROM CHINA, FOUND IN A WAREHOUSE AT SWINDON.**

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A scutigeromorph centipede found in a warehouse in Swindon (NGR: SU1984) last year (27/x/2010) and sent to FERA (Central Science Laboratories) was forwarded to me and examined by Greg Edgecombe (Natural History Museum) who identified it as *Thereuonema tuberculata* (Wood, 1863), sometimes called the Japanese House Centipede of which pictures may be found on the Internet. It seems to have been associated with a container from the Jiangning Economic Development Zone, Nanjing, Jiangsu Province, China which fits in with the known Asiatic distribution of the species (Würmli, 1975). The specimen is a female, 15 mm in body length.

Very characteristic of *Thereuonema* is the appearance of long, spike-like spiculae (Haarspitzen) which are hair-like outgrowths from the cuticular scutes that cover the surface of the tergites of the trunk (Würmli, 1975) (Fig. 2). Such structures are absent in *Scutigera coleoptrata* which, instead, has spinulae (Haarddörnsche), conical, bifurcating or multifurcating outgrowths on tergal plates. Edgecombe & Giribet (2006) illustrate both these type of structures (which are considered to be homologous).

Scutigera characteristically has a pair of spine-bristles (end-spines) at the distal end of the first tarsal segment of legs 5 or 6 to 14 (Fig. 1a), a diagnostic character of Scutigerinae. These tarsal spine-bristles are not present in *Thereuonema*, this absence being characteristic of the subfamily Thereuoneminae (Fig. 1b). In addition the arrangement of tarsal papillae on legs 1-9 as illustrated in the Synopsis (Barber, 2009) is characteristic of *S. coleoptrata*, whereas *Thereuonema tuberculata*, like other members of Thereuoneminae, has tarsal papillae on legs 1-14.

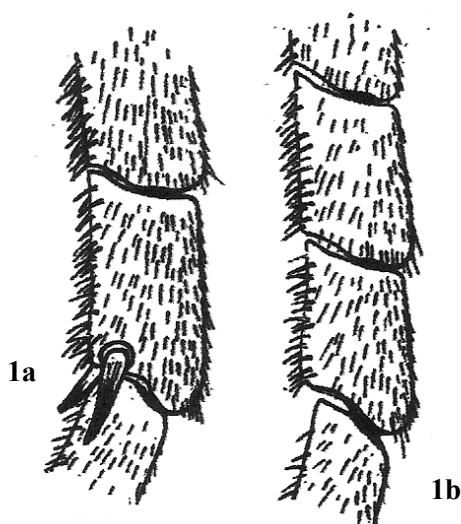


FIGURE 1: First tarsal segment of
a) *Scutigera coleoptrata* (b) *Thereuonema syriaca* x80 (from Demir,1948).



FIGURE 2: Part of a tergite of
Thereuonema syriaca x200
(from Demir,1948)

In the past, scutigeromorph specimens recorded in Britain have always been referred to *Scutigera coleoptrata*; it would seem important in the future to check these, especially any that are suspected of having been imported from outside Europe.

ACKNOWLEDGEMENTS

Thanks to Greg Edgecombe for identifying the specimen and for comments and references relating to it and to Henrik Enghoff for making available a copy of the paper of Demir (1948) from which the illustrations are taken.

REFERENCES

- Barber, A.D. (2009) *Centipedes*. Synopses of the British Fauna (New Series) 58. Shrewsbury, Field Studies Council.
- Demir, M. (1948) Türkiye Scutigerid'leri hakkında [Über türkische Scutigeriden]. *Revue de la Faculté des Sciences de l'Université d'Istanbul, Série. B: Sciences naturelles* **13**: 269-279.
- Edgecombe, G.D. & Giribet, G (2006) A century later – a total evidence re-evaluation of the phylogeny of scutigeromorph centipedes (Myriapoda: Chilopoda). *Invertebrate Systematics* **20**: 503-525.
- Würlmli, M. (1975) Revision der Hundertfüsser-Gattung *Thereuonema* (Chilopoda: Scutigeridae). *Entomologica Germanica* **2**: 189-196.

SHORT COMMUNICATIONS

***GEOPHILUS SEURATI* FROM CORE SAMPLES IN MUDDY SAND FROM THE HAYLE ESTUARY, CORNWALL**Phil Smith¹ & A.D. Barber²¹ Aquatonics, Searle St., Crediton, Devon EX17 2DB.

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Eleven specimens (adults and juveniles) of a centipede *Geophilus seurati* Brolemann, 1924 (*G. gracilis* Meinert, 1898) were retrieved from five cores taken by Aquatonics Ltd in July 2010. The site was in Lelant Water (Hayle Estuary) in Cornwall (NGR SW 547369). The sediment was an area of firm muddy sand, overlaid with filamentous green algae (approximately 65% cover). The centipedes were identified by PS as *Geophilus seurati* Brolemann, 1924 (*G. gracilis* Meinert, 1898) and later confirmed by TB. The mean density was approximately 260 per square metre.

The dominant alga on the site was *Ulva torta*, with some *Ulva prolifera* and *Ulva intestinalis* (about 1%) and very small amounts of *Ulva compressa* & *Rhizoclonium riparium* (all these species of *Ulva* were previously placed in *Enteromorpha*). The site was 1.52 m above Ordnance Datum Newlyn, in the mid to upper intertidal. The sediment contained very high level of contamination by metals (especially arsenic, copper and zinc) due to historic mining in the catchment and nearby copper smelting. This may indicate that *Geophilus seurati* is very tolerant of metal contamination.

There are records of this species from along the southern and western coasts of Britain including the Hayle Estuary area (Barber & Keay, 1988; Barber, 2009). Typically it has been found under stones on mud & in similar microsites but this was not the case in the present instance and in fact there were very few stones nearby. The survey looked at a large number of sites in the Hayle estuary complex to record any visible macroinvertebrates, but had not recorded the centipedes whilst sampling. Possibly at this location *Geophilus seurati* hunt under the layer of filamentous algae. They may feed on enchytraeid worms (the only other macrofaunal species at this location) which live under the algae and in the top layers of sediment. Presumably the animals remain on this site throughout the tidal cycle as any terrestrial habitat is 25 m away.

REFERENCES

- Barber, A.D. & Keay, A.N. (1988) *Provisional Atlas of the Centipedes of the British Isles*. Huntingdon. NERC.
- Barber, A.D. (2009) *Centipedes*. Linnean Society Synopses of the British Fauna (NS) **58** Shrewsbury, Field Studies Council.
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A FURTHER GREENHOUSE RECORD OF *LITHOBIUS LAPIDICOLA* MEINERT, 1872

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During a centipede, millipede and woodlice workshop organised by COFNOD, the biological records centre for North Wales, at the University Botanic Gardens, Treborth, Bangor, an opportunity was taken to search for specimens amongst the collection of orchids and other plants in the glasshouse attached to the centre where, amongst other myriapods, a small female (7mm) *Lithobius* was collected. Lacking any very obvious & distinct distinguishing features, a female and being from a heated greenhouse with tropical/subtropical plants, it was sent to Prof. Marzio Zapparoli of Viterbo for an opinion.

He identified it as *Lithobius lapidicola* Meinert, 1872. It had 28 antennal articles, 1+4,3,2 ocelli, 2+2 prosternal teeth, a double claw on the 15th leg, 2+2 spurs and a tridentate claw on the gonopods and 3/2, 3, 3, 3 coxal pores.

Spinulation of leg 14 was: dorsal 0, 0, amp, p, 0, ventral, m, amp, amp, m and of the 15th: dorsal 0, 0, mp, 0, 0, ventral, 0, m, amp, (a, asymmetric) m, 0.

There were no projections on either tergites 9 or 11 but very small projections on T13. This description fits with that in the synopsis (Barber, 2009); the absence of any one really distinct character and the somewhat variable nature of tergal projections means it is not always easy to recognise.

The species was first found in hothouses in Edinburgh by Charles Rawcliffe and subsequently out of doors on the coasts of both Kent and Suffolk whilst there is a further greenhouse record from Dorset; this would be the first record from Wales.

ACKNOWLEDGEMENT

My thanks to Marzio Zapparoli for examining and commenting on the specimen.

REFERENCE

Barber, A.D. (2009) *Centipedes*. Linnean Society Synopses of the British Fauna (NS) **58** Shrewsbury, Field Studies Council.

LITHOBIUS FORFICATUS (LINN., 1758) WITH APPARENTLY MASSIVE SCAR TISSUE ON DAMAGED FORCIPULES

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Amongst a small collection of centipedes from under the bark of a dead, fallen tree in parkland at Lanhydrock, Cornwall (National Trust; NGR SX08-63-) was an apparently mature female of *Lithobius forficatus* with an obvious cut in the forcipular coxosternite and conspicuous scar tissue. This is shown in the photograph, Fig. 1. The body length of the animal (preserved) was 19mm (25mm including 15th legs).

- A. There is massive blackish, presumably heavily chitinised, apparent scar tissue all along the ventral surface of the femoroid / coxosternite junction on the right hand side.
- B. There is clear damage to the shoulder of the coxosternite lateral to the teeth on the same side.
- C. On the same side there is a striking cut-like wound to the coxosternite running from the median margin in a sloping direction which seems to extend to about two-thirds of the distance across leaving the most medial teeth clearly separated from the body of this structure. Again, blackish, scar tissue is present.



FIGURE 1: *Lithobius forficatus*, ventral view of head indicating damaged forcipular coxosternite

There are a number of ways the animal could have received such damage but presumably it was in an encounter with another predator such as a carabid beetle or even a bird. What is striking, however, is that the animal could recover and continue to live an active, predatory life following such injury. Reports of damage (and subsequent recovery) to limbs, etc. are not uncommon in lithobiids but such massive damage to its poison claws might have been expected to have significant effects on its chance of survival. Lewis (1981) quotes an example from Verhoeff (1940) of the regeneration of a prehensor in *Lithobius latro sellanus* in which the claw is very small and the tibia and tarsus not fully demarcated. Such a condition, presumably, followed the loss of the whole of the distal segments of the forcipule.

REFERENCE

Lewis, J.G.E. (1981) *The Biology of Centipedes*. Cambridge, Cambridge University Press.

FIELD MEETING REPORTS

A REPORT ON THE BRITISH MYRIAPOD AND ISOPOD GROUP VISIT TO SWANSEA, 27-30th MARCH 2008

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The origins of this visit followed on from a discussion that I had the previous year with Mark Winder. Mark (with whom I was a Planning Ecologist with the City and County of Swansea), already had an interest in spiders and, given the potential of making good records in an area that ranged from urban habitats, brownfield sites and parks to maritime cliffs and saltmarsh, we volunteered to help organise the 2008 event. As I had (by Spring 2008) left employment with CCS, Mark arranged the logistics of the visit such as accommodation, whilst I helped with the choice of sites and the itinerary. I would like to thank Mark at this late stage for all his help and also to apologise for the lateness of this account. The participants visited some nine 10km squares in the Swansea area (vc41, Glamorgan) and in the extreme south-east of Carmarthenshire (vc44).

It is my view that Swansea, including the adjacent peninsula of Gower and nearby towns, has much to offer for the recording of myriapods and woodlice, as well as other invertebrate groups. The general area is not well recorded, though Gordon Blower visited Gower on more than occasion and carried out valuable detailed studies with his students at several locations (see Blower, 1989). I also, when I was actively recording in the late 1980's, carried out some investigation of the fauna on Swansea's periphery at Loughor and occasionally on north Gower (Morgan, 1988). It might be of interest to readers that Caswell Bay was one of the three sites from where *Geophilus osquidatum* was first recorded in Britain and the second British record of *Chordeuma proximum* also came from Gower (Blower, 1961).

There is a wealth of habitat suitable for synanthropic species, with substantial areas of derelict land, urban-fringe habitats and gardens. The extensive gardens at Clyne (near Mumbles) and Singleton Park (near the University) both offer opportunities to record accidental introductions that would have come with exotic plants. There are heated greenhouses at Singleton where I had previously recorded, then new to Wales, *Oxidus gracilis* in 1985. This location was revisited during the March 2008 BMIG meeting. Gower, with its winter-mild, south-facing limestone cliffs and reddish 'rendzina' soils had already yielded exciting records for Gordon Blower (e.g. *Geoglossus subterranea*) but its general diversity of habitats (limestone cliffs, saltmarshes, arable, acidic soils to the north etc) and its position facing the ameliorative influences of the Gulf Stream all suggest a potentially rich fauna. The area, like other parts of coastal south-west Wales shows a similar climatic profile to Devon and Cornwall and the maritime fringes of Eire.

Although there were some visits made by the BMIG group during the 2008 meeting to the south Gower coast, it is my view that more intensive future recording may yield additional significant records. Certainly, Tony Barber draws attention to the fact that approaching half of the British 'outdoor' centipede fauna were recorded during the BMIG visit, with some 25 species found, and he remarks that the general South Wales area has a species richness comparable to the well-worked south-west of England. Of the remaining unrecorded British outdoor species, these tend to be rare, small or more or less restricted in their distribution such as *Stenotaenia linearis*, another synanthropic species which is commonest in the London area but which has been recorded in Devon (A. Barber, pers. comm.). It also may be worth mentioning that, very soon after having a little success in finding the Devonian speciality *Chalandea pinguis* on the 1988 BMIG meeting in North Devon, I enthusiastically went looking for this centipede in suitable habitat in coastal south-west Wales, but to no avail. There are other species that Tony suggests could additionally occur, such as the supra-littoral rock crevice specialist *Hydroschendyla submarina*.

Coalfield edge towns such as Neath and Port Talbot or settlements further up the valleys were mostly not visited due to a limited timetable. Coastal Neath and Port Talbot (the latter astride an extensive dune system) will also have their share of species but the smaller, inland Coalfield towns are likely to have a more

impoverished 'acidic ground fauna', though perhaps enlivened in places by synanthropes. Visits were, however, made by some of the group (the participants split up to cover more ground) to Pontardawe and the Clydach area in the Swansea Valley. The Pontardawe locality (Coed Cefnllan-isaf) yielded *Chordeuma proximum* a species that, in my experience, is primarily one that can be found quite commonly in rather acidic conditions (such as oak wood leaf litter) from autumn to spring. As noted above, Gordon Blower had the second British record (back in 1967) from Bishop's Wood, Caswell Bay on Gower. This locality in recent years has been over-run by the 'landhopper' *Arcitalitrus dorrieni* (though it has declined markedly recently, B. Stewart, pers. comm.), and it would be interesting to ascertain whether relative densities of potential competitors such as *C. proximum* have been affected by this incomer, which is now quickly colonising the area (with records from Llanelli (vc 44) and Swansea and Neath in vc41. *Arcitalitrus* has certainly survived the severe 2010-11 winter at the Llanelli site. Movement of potted garden plants is undoubtedly one way it is spread.

One of the first sites visited by the group was a lane behind Eaton Terrace in Swansea, where quite affluent properties with large gardens back onto a rather untidy lane and less prosperous properties now used as student bed-sits. This creates that admixture of semi-natural habitat and squalor so beloved by certain adventive invertebrates. Previous searching of this lane by myself had revealed a thriving population of the blind millipede *Cylindroiulus vulnerarius*, with its distinctive contrasting pale head and lack of ocelli. The group rapidly re-found this species under stones, wood etc with a rich humic layer and their expertise also led to the finding of all three species of British *Cryptops* (*C. anomalans* being new to me). In all, nine species of centipede were recorded here. This locality additionally yielded the woodlice *Trichoniscus provisorius* and the mortared wall-loving *Porcellio spinicornis*.

The first Welsh record of *Cylindroiulus vulnerarius* was also from Swansea, by Gordon Blower in 1979, when it was found in the 'Azalea beds' in the park/Botanic Garden behind Swansea University, and it gratifying to note that the 2008 meeting re-recorded it at or very near the same site. Another record of this millipede made by BMIG was at Limeslade Bay, Mumbles - perhaps suggesting a wider distribution in and around Swansea, though it is seemingly very localised in Wales. The centipedes *Henia brevis* and *Lithobius calcaratus* were recorded in the Mumbles area and *Geophilus electricus* at Caswell Bay.

Another local *Cylindroiulus* was found in the botanic garden at Singleton Park (and the nearby University Preseli Hall of Residence), *C. caeruleocinctus*, and the similarly very localised and large *C. londinensis* was recorded at Caswell Bay. Both are, once again, very scarce and localised in south-west Wales (I only had these species at one site each during intensive recording in the late 1980s).

Perhaps predictably, the heated 'tropical' greenhouses at Singleton Park yielded records of note: the millipede *Oxidus gracilis* was re-found, the centipede *Geophilus osquidatum*, the woodlice *T. provisorius* and (perhaps best of all) the alien *Cordioniscus stebbingi*, the latter a tiny (>3mm) species found elsewhere in the UK within glasshouses (Gregory, 2009). A *Cryptops* that I had collected was passed on (with some other centipedes) to Tony Barber who, noticing some unusual features, in turn forwarded it to John Lewis, which he pronounced as *Cryptops* cf. *hispanus*, full details of which are given elsewhere in this *Bulletin* (pg. 39).

On the other side of Swansea, we visited a site nowadays known as Pluck Lake (due to the presence of a water body of that name), an area once notorious as it was covered by copper slag and other industrial waste. The Lower Swansea Valley was once known as 'Copperopolis' due the dominance of that industry and the area was heavily polluted with the 'copper smoke' from smelting killing off vegetation (see Balchin, 1971). Over the years, much this area has been reclaimed for development or become tree-covered by deliberate planting or natural colonisation. It was here that the small *Choneiulus palmatus* was found in similar habitat to an old record of mine just across the county boundary at Bynea, Carmarthenshire (it was also seen at the University gardens at Singleton Park). The millipede *Craspedosoma rawlinsii* was also seen at Pluck Lake; in my experience it prefers rather saturated conditions, including woodland flushes.

En route to meet the group on the second field day, I was fortunate to find when, quickly searching some spring-tide detritus near Old Castle (North Dock) Llanelli, a solitary *Buddelundiella cataractae* (a woodlouse that I had sought unsuccessfully with vigour in my active episode of recording in the late 1980s). However,

Steve Gregory *et al* had ‘pipped me at the post’ by finding four specimens of this species at Bracelet Bay on Gower the previous day!

TABLE 1: List of sites from which isopod and myriapod records were made.

Records made by: TB Tony Barber; MBD Michael Davidson; SJG Steve Gregory; JH John Harper; PL Paul Lee; IKM Ian Morgan; ECP Eric Philp; HR Helen Read; JPR Paul Richards.

Site No.	Locality	Grid Ref.	VC	Date	Recorders
1	Swansea, Eaton Terrace	SS 642 926	41	28/iii/2008	TB,JPR,JH,IKM,ECP,SJG,MBD,PL
2	Swansea, Pluck Lake	SS 669 955	41	28/iii/2008	TB,JPR,PL,ECP,SJG,MBD
3a	Llanelli, Road	SS 548 985	44	29/iii/2008	HR,JH,PL,MBD,JPR,IKM,ECP
3b	Bynea, Llanelli	SS 544 988	44	28/iii/2008	JH
3c	Bynea, Llanelli	SS 543 987	44	27/vi/2007	JH
4	Penrhyngwyn	SS 517 974	44	29/iii/2008	TB,HR,JH,JPR,IKM,PL
5	Penclawdd, Marsh	SS 54 95	41	28/iii/2008	TB
6	Crofty, Marsh	SS 52 95	41	28/iii/2008	TB
7	Landimore, Marsh	SS 46 93	41	28/iii/2008	TB,PL
8	Bishopton Valley, Wood	SS 57 88	41	29/iii/2008	TB,PL,MBD
10	Oxwich, Rocky Shore & NNR	SS 503 852	41	29/iii/2008	TB,PL
11	Oxwich Churchyard	SS 504 851	41	29/iii/2008	TB,PL
12	Craig Cefn, Clydach	SN 684 026	41	28/iii/2008	JPR
13	Coed Cefnllan Isaf, Pontadawe	SN 719 049	41	28/iii/2008	JPR
14a	Botanic Gardens, Swansea	SS 628 924	41	29/iii/2008	MBD,JPR,ECP
14b	Singleton Park, Conifer	SS 629 921	41	29/iii/2008	JPR
14c	University Preseli Hall area	SS627 920	41	27/iii/2008	JPR
15a	Singleton, Park, Rhododendron	SS 631 922	41	29/iii/2008	JPR
15b	University Gardens	SS 630 920	41	29/iii/2008	SJG
15c	Oystermouth Castle	SS 613 884	41	28/iii/2008	JPR
16	Botanic Gardens, Hot House	SS 628 924	41	29/iii/2008	ECP,JPR
17	Clase, Swansea, Roadside	SS 654 979	41	29/iii/2008	JPR
18	WWT Grounds	SS 530 917	44	24/i/2008	JH,
19	Llangyfelach, Church	SS 647 990	41	28/iii/2008	IKM,
20	Bishops Wood, Caswell	SS 594 879	41	28/iii/2008	PL,MBD
21	Caswell Bay	SS 592 876	41	28/iii/2008	SJG
22	Mumbles Hill	SS 629 873	41	28/iii/2008	SJG,PL
23	Bracelet Bay	SS630 872	41	28/iii/2008	SJG
24	Mumbles Head	SS 633 872	41	28/iii/2008	SJG,MBD,PL
25	Pwll Du Bay	SS 574 872	41	27/iii/2008	MBD
26	Limeslade	SS 626 870	41	27/iii/2009	MBD
27	North Dock, Llanelli	SS 499 997	44	29/iii/2008	IKM
28	Burry Port , Harbour	SN 455 005	44	30/iii/2008	IKM
29	Pembrey harbour	SN436 002	44	30/iii/2008	IKM
30	Pembrey Burrows	SS 412 992	44	30/iii/2008	IKM
31	Cefn Sidan beach	SN 396 004	44	30/iii/2008	IKM
32	North of Horeb	SN 496 061	44	30/iii/2008	IKM
33	Llyn Llech Owain	SN 571 152	44	31/iii/2008	IKM
34	Kenfig NNR	SS 654 979	41	30/iii/2008	JPR

TABLE 2: Centipedes recorded (for locality details see Table 1)

Site No.	1	2	3a	3b	3c	4	5	6	7	8	10	11	12	13	14a	14b	15a	15b	16	17	18	19	20	21	22	24	25	26	27	28	33
<i>Stigmatogaster subterranea</i>	#	#	#			#			#	#		#		#																	
<i>Schendyla nemorensis</i>	#	#	#			#																									
<i>Schendyla dentata</i>			#																												
<i>Strigamia crassipes</i>		#	#																												
<i>Strigamia maritima</i>						#					#															#					
<i>Henia vesuviana</i>			#																												
<i>Henia brevis</i>																															
<i>Geophilus insculptus</i>	#								#	#				#																	
<i>Geophilus gracilis</i>								#																							
<i>Geophilus flavus</i>		#	#																												
<i>Geophilus truncorum</i>		#	#							#			#																		
<i>Geophilus osquidatum</i>															#																
<i>Geophilus easoni</i>			#																												
<i>Geophilus carpophagus</i>	#																														
<i>Geophilus electricus</i>																															
<i>Cryptops anomalans</i>	#																														
<i>Cryptops hortensis</i>	#	#				#				#		#							#		#										
<i>Cryptops parisi</i>	#	#								#			#																		
<i>Lithobius variegatus</i>										#																					
<i>Lithobius forficatus</i>	#	#				#				#			#						#												
<i>Lithobius microps</i>	#	#	#			#				#																					
<i>Lithobius melanops</i>	#																														
<i>Lithobius calcaratus</i>																															
<i>Lithobius crassipes</i>			#																												
<i>Lamyctes emarginatus</i>																															

TABLE 3: Millipedes recorded (for locality details see Table 1)

Site No.	1	2	3a	3b	3c	4	7	8	10	11	12	13	14a	14b	14c	15c	16	17	19	20	21	24	25	26	28	27	32	33	34
<i>Polyxenus lagurus</i>						#																							
<i>Glomeris marginata</i>			#					#			#	#										#	#				#		#
<i>Trachysphaera lobata</i>			#																										
<i>Craspedosoma rawlinsii</i>		#																											
<i>Nanogona polydesmoides</i>								#				#										#							
<i>Chordeuma proximum</i>											#																		
<i>Melogona gallica</i>											#							#											
<i>Melogona scutellaris</i>								#				#							#										
<i>Brachychaeteuma melanops</i>	#	#	#		#			#					#								#								
<i>Blaniulus guttulatus</i>	#	#					#	#				#		#					#										
<i>Choneiulus palmatus</i>		#															#												
<i>Proteroiulus fuscus</i>								#			#			#															
<i>Julus scandinavius</i>								#			#	#							#	#							#		#
<i>Ophiotulus pilosus</i>	#		#					#			#		#																
<i>Leptoiulus belgicus</i>			#																										
<i>Cylindroiulus caeruleoinctus</i>															#														
<i>Cylindroiulus londinensis</i>													#																
<i>Cylindroiulus latestriatus</i>						#			#			#										#				#			#
<i>Cylindroiulus punctatus</i>	#	#					#	#		#	#		#	#					#				#	#	#	#	#		
<i>Cylindroiulus vulnerarius</i>	#												#	#			#						#	#					
<i>Cylindroiulus britannicus</i>	#		#		#			#					#	#			#												
<i>Brachyiulus pusillus</i>			#				#														#								#
<i>Ommatoiulus sabulosus</i>																										?			
<i>Tachypodoiulus niger</i>		#	#		#	#		#	#	#	#		#		#				#	#	#	#							#
<i>Oxidus gracilis</i>													#		#														
<i>Brachydesmus supernus</i>			#		#			#	#	#	#	#	#		#	#	#				#	#							
<i>Polydesmus angustus</i>		#	#		#		#	#			#		#		#							#					#		
<i>Polydesmus coriaceus</i>	#		#		#		#					#																	
<i>Macrosterodesmus palicola</i>	#																												
<i>Ophiodesmus albanus</i>	#		#					#					#																

The second full day, saw the party assembled at a locality alongside the A484 near Bynea in Carmarthenshire, primarily to see the woodlouse *Oritoniscus flavus* and the millipede *Trachysphaera lobata* (see earlier notes). As noted earlier, John Harper has done much detailed work at this site (Harper, 2010) and we feel that both species may be long-standing introductions at this site, introduced possibly in dumped ship's ballast. Prior to land reclamation and the building of sea defences, the locality was close to a known shipping point for the export of coal to countries that regularly included Ireland and Spain; possible provenances for these invertebrates. Ships' ballast may well have been the vector in the transportation of several myriapod or isopod species to the British Isles that have very limited distributions and I have also

Inevitably, as well as seeing the targeted *Oritoniscus* and *Trachysphaera*, the concentration of myriapod and woodlice enthusiasts led to several more records of note; the centipedes *Henia vesuviana* and *Geophilus easoni* (in all 13 species of centipede were recorded here); the woodlice *Trichoniscus provisorus* (new to vc44, Carmes.) and *Porcellionoides cingendus* (in wetland habitat). *P. cingendus* was recorded on more typical coastal habitat on Gower and later at Burry Port (though I too have noted it in wet, rank pasture sites in Carmarthenshire previously). John Harper also recorded *Schendyla dentata* at the 'Oritoniscus-*Trachysphaera* site' earlier in February 2008.

TABLE 4: Woodlice recorded (for locality details see Table 1)

Site No.	1	2	3a	3b	4	8	10	11	16	19	20	21	22	23	24	25	27	28	29	30	31	32
<i>Ligia oceanica</i>					#							#			#	#		#	#			
<i>Androniscus dentiger</i>	#				#			#	#													
<i>Buddelundietta cataractae</i>														#			#					
<i>Cordioniscus stebbingii</i>									#													
<i>Haplophthalmus danicus</i>	#	#			#	#						#										
<i>Haplophthalmus mengii</i>	#		#	#	#							#	#	#	#							
<i>Oritoniscus flavus</i>				#																		
<i>Trichoniscoides saeroeensis</i>					#							#			#							
<i>Trichoniscus provisorius</i>				#																		
<i>Trichoniscus pusillus</i>	#	#			#				#	#	#	#			#			#			#	
<i>Trichoniscus pygmaeus</i>	#	#	#	#	#					#	#	#										
<i>Philoscia muscorum</i>	#	#	#	#	#	#						#	#		#	#		#			#	
<i>Platyarthrus hoffmannseggii</i>		#		#	#							#			#							
<i>Oniscus asellus sl</i>		#				#				#		#			#							#
<i>Oniscus asellus asellus</i>	#		#	#																		
<i>Oniscus asellus intermediate</i>			#	#																		
<i>Porcellio scaber</i>	#	#	#	#	#	#		#				#			#	#		#				
<i>Porcellio spinicornis</i>	#																					
<i>Porcellionoides cingendus</i>			#	#	#												#					
<i>Cylisticus convexus</i>					#																	
<i>Armadillidium album</i>																			#	#		
<i>Armadillidium depressum</i>	#	#															#	#				
<i>Armadillidium nasatum</i>		#									#	#					#					
<i>Armadillidium vulgare</i>				#	#			#			#	#	#		#			#				

After Bynea, some of us ventured, (in increasing, cold rain!) to the maritime shingle spit at Penrhynwgwyn (Machynys, Llanelli), primarily to search for *Thalassiosobates littoralis*, which I had seen in previous years under wood and discarded wet fabric etc on the finer, more arenaceous shingle on this ridge. *Geophilus fucorum seurati* was also previously recorded here, back in late September 1990. More recently, a visit by John Harper and myself had resulted in the collection of *S. dentata*. Sadly, the group failed to find these species, though we recorded the woodlice *Trichoniscoides saeroeensis*, and *Cylisticus convexus*, the centipede *Strigamia maritima* and the tiny millipede *Polyxenus lagurus* (all already known from this site). Strangely, *Polyxenus* was not found on Gower in spite of the concentration of BMIG specialists: it would be worth searching on old limestone churches, walls or under a thrift or fescue tuft or rock fissure. *Polyxenus* can be strangely fickle in its appearance as, although it can be found in most weather/conditions/time of year by a determined searcher, it is sometimes easily found but rare or absent on other occasions. I recall one warm, rather humid June afternoon when it literally swarmed over the walls of the old church at St Ishmael (south of Ferryside, vc44), whilst on other occasions I could not find any! The SS5-9- record in the millipede atlas (Lee, 2006) incidentally, refers to the afore-mentioned Penrhynwgwyn site and not north Gower. Saltmarsh habitat at Landimore and Crofty provided records of *Geophilus gracilis*, new to Glamorgan.

A list of all localities visited during the BMIG 2008 field meeting is given in Table 1. A summary of the centipede, millipede and woodlice records is given in Tables 2, 3 and 4.

FUTURE RECORDING

Greg Jones (Jones, 2008) with his finding of *Trachelipus rathkii* near Bridgend and John Harper's (e.g. Harper, 2004) exciting discoveries of several significant species have both shown that biogeographically important records remain to be made in South Wales. I have already mentioned the absence of *Polyxenus lagurus* records from the Gower coast (except for an unlocalised record given in Gillham, 1977), but there are also other absent contenders remaining to be refound or discovered, such as possibly *Thalassiosobates littoralis* on the natural shingle at Pwll Du Bay (west of Caswell). I am also surprised that the small pill woodlouse *Armadillidium pulchellum* has not yet been recorded on the south Gower cliffs, perhaps in association with ants' nests. Another possibility (this time in urban areas) would be *Nopoiulus kochii* on gritty wasteground. I used to collect this species quite frequently in the late 1980s in such habitat in adjacent south-east Carmarthenshire and it ought to be in similar situations in nearby urban Swansea. Whereas *Buddelundiella cataractae* was located twice, I also have a hope that *Miktoniscus patiencei* will, one day, be found somewhere on the supralittoral.

Are *Oritoniscus flavus* or *Trachysphaera lobata* lurking in the Swansea area, as undiscovered imports from past coal trade days? Were other aliens imported with the vast amounts of copper ore that entered the port? Copper was originally imported from Cornwall, Anglesey and Ireland, but subsequently from as far afield as Spain and Chile (Balchin, 1971) –did any invertebrates 'hitch a lift'?

When I finally retire in four years time, I hope to restart recording, both to see what changes may have taken place in the Carmarthenshire fauna some 25 years on and also to target the adjacent Swansea-Gower area. In the meantime, there is plenty of recording potential for other recorders.

ACKNOWLEDGEMENTS

Thanks are due to the respective national recorders of millipedes, centipedes and woodlice for collating the records of the participants and, of course, to the dozen or so participants themselves for their time, enthusiasm and effort. Tony Barber kindly sent some quite comprehensive notes on the centipedes recorded, much of which I have incorporated into this account. I would also like to thank Tony and also Helen Read for commenting and advising me on the draft of this text and to repeat my gratitude to Mark Winder for his lead in organising the 2008 BMIG meeting.

Importantly, I would like to offer sincere gratitude to the encouragement and assistance that was readily offered to me, in particular by Messrs Doug Richardson and Tony Barber, just as I embarked on active

recording in SW Wales in 1985 to 1990. Also, I received similar help from the late Gordon Blower and Steve Hopkin. Arthur Chater was also instrumental in encouraging me (with regard to woodlice) at that early stage and Adrian Fowles offered companionship and useful discussion in the field. Latterly, John Harper has provided much appreciated expertise and advice.

REFERENCES

- Balchin, W.G.V. (1971) *Swansea and its Region*. Published by University College of Swansea on behalf of the British Association.
- Blower, J.G. (1961) On some new and little known British centipedes. *Ann. Mag. Nat. Hist.* **13** (4): 183-187.
- Blower, J.G. (1979) The millipede faunas of two British limestone woods. In Camatani, M. (Ed.) *Myriapod Biology*. London. Academic Press: 203-214.
- Blower, J.G. (1989) The Myriapoda of Gower. *Bulletin of the British Myriapod Group* **6**: 14-21.
- Gillham, M.E. (1977) *The Natural History of Gower*. D. Brown & Sons, Cowbridge.
- Gregory, S.J. (2009) *Woodlice and Waterlice (Isopoda: Oniscidea & Asellota) in Britain and Ireland*. Centre for Ecology & Hydrology/Field Studies Council.
- Harper, J. (2004) On some Myriapods new to Wales. *Bulletin of the British Myriapod Group*, **20**: 40-41.
- Harper, J. (2010) Discovery of *Trachysphaera lobata* (Ribaut, 1954) in Wales. *Bulletin of the British Myriapod and Isopod Group* **24**: 45-47.
- Jones, G. (2008) *Trachelipus rathkii* (Brandt 1833): an Isopod new to Wales. *Bulletin of the British Myriapod and Isopod Group*, **23**: 17.
- Lee, P. (2006) *Atlas of the Millipedes (Diplopoda) of Britain and Ireland*.
- Morgan, I.K. (1988) Recent Recording of Myriapods in South-west Wales. *Bulletin of the British Myriapod Group* **5**: 11-23.

CENTIPEDES, WOODLICE AND WATERLICE COLLECTED AT THE BMIG HAWARDEN FIELD MEETING, APRIL 2010

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INTRODUCTION

The 2010 meeting was based at St. Deinol's Library (now the Gladstone Library), Hawarden, North Wales from 8th – 11th April and collections were made from sites in vice-counties 50 (Denbigh) and 51 (Flint). In the past there have been meetings where collections were made in the Bangor/Anglesey area and Cheshire with limited other records from North Wales in recent years. Localities visited included the Erdigg Estate (NT) including parkland, walled garden & greenhouses, Marford Quarry Nature Reserve (NWWT, SSSI), an abandoned sand & gravel quarry with grassland & scrub, Eyarth Rocks (BC,SSSI), limestone pavement, Y Ddol Uchaf Nature Reserve (NWWT, SSSI), disused tufa & marl quarry, Towyn churchyard, Kinmel Dunes, Talacre/Point of Ayr, coastal, Prestatyn, Dyserth (Moel Hiraddug), Cwn churchyard, Coed y Felin Nature Reserve (NWWT), ancient woodland on limestone, Y Graig Nature Reserve (NWWT), a small limestone escarpment, Hawarden area and Penmyndd (Bank Farm).

Table 1 is a list of sites and the centipedes recorded from them. A total of 18 centipedes species and 18 woodlice species and the waterlouse *Asellus aquaticus* were recorded. Initials of collectors/recorders are given for each site: HR (Helen Read), JPR (Paul Richards), ECP (Eric Philp), PN (Peter Nicholson), MD (Mike Davidson), PL (Paul Lee), AL (Angela Lidgett), DS (Duncan Sivell), GC (Glyn Collis), PTH (Paul Harding), JF (Jim Flanagan), Imogen Wilde (IW), TB (Tony Barber) and SG (Steve Gregory).

TABLE 1: List of sites from which records were made

Code	Locality	Details	Grid ref	VC	Date	Collectors
1a	Erdigg	gardens, etc.	SJ 3248	50	09/iv/2010	AL,SG,HR, JPR,ECP,PN, MD,PL,DS, JF,IW, TB
1b	Erdigg	greenhouse	SJ 3248	50	09/iv/2010	SG, IW, TB
2	Marford	sand pit	SJ 3555	50	09/iv/2010	AL,SG,HR, JPR,ECP,PN, MD,PL,DS, JF, IW, TB
3a	Eyarth	farm track	SJ 1254	50	10/iv/2010	TB
3b	Eyarth	reserve	SJ 1254	50	10/iv/2010	ECP,PN,DS,PL,TB,PTH
3c	Coed Cilygroeslywd		SJ 1256	50	10/iv/2010	PL
4	Y Ddol	reserve	SJ 1471	51	10/iv/2010	PN, TB
5	Kinmel Dunes	dunes	SH 9880	50	10/iv/2010	JPR,SG,JF
6	Towyn	churchyard	SH 9779	50	10/iv/2010	JPR,SG,JF
7	Talacre	Point of Ayr	SJ 1284	51	10/iv/2010	JPR,SG,JF, MD
8	Pt of Ayr	saltmarsh	SJ 1284	51	10/iv/2010	MD, DS
9	Prestatyn	Ffith Beach Dunes	SJ 0382	51	10/iv/2010	JPR,SG,JF
10	Dyserth	Moel Hiraddug	SJ 0678	51	10/iv/2010	SG,JF
11	Cwn	churchyard	SJ 0677	51	10/iv/2010	HR,MD,AL
12	Coed y Felin	woodland	SJ 1967	51	10/iv/2010	HR,MD,AL
13	Y Craig	nr Denbigh	SJ 0872	50	10/iv/2010	MD,AL
14a	Hawarden	area	SJ 3165	51	09/iv/2010	JPR,JF,TB
14b	Hawarden	churchyard	SJ 3165	51	10/iv/2010	SG, TB
14c	Hawarden	St Deimols L.	SJ 3165	51	08/iv/2010	JPR, TB
15	Penmyndd	Bank Farm	SJ 3162	51	11/iv/2010	JPR
16	Hope	White Gate Farm	SJ 3195		11/iv/2010	JPR

TABLE 2: Centipedes recorded

Locality:	1a	1b	2	3a	3b	4	5	6	7	8	9	10	11	12	13	14a	14b	14c	15
Grid Reference:	SJ 3248	SJ 3248	SJ 3555	SJ 1254	SJ 1254	SJ 1471	SH 9880	SH 9779	SJ 1284	SJ 1284	SJ 0382	SJ 0678	SJ 0677	SJ 1967	SJ 0872	SJ 3165	SJ 3165	SJ 3165	SJ 3162
<i>Stigmatogaster subterranea</i>	#	#	#	#	#	#	#	#	#				#	#	#	#	#	#	
<i>Schendyla nemorensis</i>	#		#	#					#								#		
<i>Strigamia acuminata</i>			#							#									
<i>Strigamia maritima</i>																			
<i>Geophilus electricus</i>	#		#																
<i>Geophilus easoni</i>											#								
<i>Geophilus flavus</i>			#								#		#						
<i>Geophilus insculptus</i>						#						#	#						
<i>Geophilus osquidatum</i>	#	#														#			
<i>Geophilus truncorum</i>			#						#										
<i>Cryptops anomalans</i>			#																
<i>Cryptops hortensis</i>	#	#	#			#	#	#	#	#	#		#	#		#	#	#	
<i>Lithobius calcaratus</i>															#				
<i>Lithobius crassipes</i>			#																
<i>Lithobius forficatus</i>	#	#	#			#	#	#	#			#	#	#	#		#	#	
<i>Lithobius melanops</i>	#	#	#				#	#	#						#	#	#	#	
<i>Lithobius microps</i>	#		#			#	#	#	#		#			#	#	#	#		#
<i>Lithobius variegatus</i>	#		#						#					#	#	#			
Number of species per site	9	5	13	2	5	5	5	5	8	3	4	2	5	5	5	5	6	3	1

CENTIPEDES

Centipede records are summarised in Table 2. The greatest species diversity noted was at Marford where 13 species were recorded in total in a diverse habitat including the generally synanthropic *Cryptops anomalans* and *Geophilus electricus*. The former is generally a more southern/south eastern species although it has been found in Sheffield by Paul Richards. The most commonly recorded species from the meeting were *Stigmatogaster subterranea*, *Cryptops hortensis*, *Lithobius forficatus* (not unexpectedly) and *Lithobius microps*. Erdigg and Hawarden both yielded *Geophilus osquidatum*, a westerly/south westerly species which has recently been recorded by Paul Lee from Shropshire so was not totally unexpected.

The Eyarth limestone pavement, not the easiest location to sample produced a range of species which, with the exception of *Geophilus truncorum*, were ones frequently associated with synanthropic sites (*S. subterranea*, *C. hortensis*, *L. forficatus*, *L. microps*) but not *Lithobius variegatus* which may tell us something about the characteristics of such sites. The normally common *L. variegatus*, surprisingly, was not found in all “rural” sites but this could reflect weather, suitable convenient microsites for sampling and level of collecting activity. Of the remaining species, *Lithobius melanops* was recorded from some of its typical habitats; gardens, churchyards, dunes and coastal; *Schendyla nemorensis*, *Geophilus flavus*, *Geophilus insculptus* and *G. truncorum* were found in several sites whilst collecting at the edge of a saltmarsh at Point of Ayr by Duncan Sivell yielded the littoral *Strigamia maritima*. There were single records of *Strigamia acuminata*, *Geophilus easoni*, *Lithobius crassipes* and *Lithobius calcaratus*.

WOODLICE AND WATERLICE

Of the 18 woodlice species recorded, the four most frequently record species were the usual suspects (Table 3). *Oniscus asellus* was recorded at all sites surveyed (all male specimens examined were *O. asellus* ssp. *asellus*), while *Philoscia muscorum*, *Porcellio scaber* and *Trichoniscus pusillus* agg. also proved common. Of this latter species aggregate, examination of male specimens revealed that *Trichoniscus provisorius* (identified from seven sites) was widespread across the survey area. Other frequently encountered species collected from a variety of synanthropic and semi-natural habitats were *Platyarthrus hoffmannseggii* (always associated with ant nests), *Armadillidium vulgare*, and the trichoniscids *Androniscus dentiger* and *Trichoniscus pygmaeus*.

The record for *Armadillidium depressum* at Erdigg is of note. This far north *A. depressum* is very thin on the ground and according to the updated atlas (Gregory, 2009), there are just two other records from North Wales and another known site from the Wirral to the east. It was found by the author (SJG) with difficulty beneath loose stones on walls at Erdigg gardens, in association with *Porcellio spinicornis* (which was more easily and widely found) and the ubiquitous *P. scaber*.

Paul Richards turned up two ‘manure heap’ specialists, first finding *Porcellio dilatatus* under pieces of manure inside stables at Erdigg gardens, and later collecting *Porcellionides pruinosus* from a manure heap at White Gate Farm. *Cylisticus convexus* was found by Duncan Sivell on the coast just above salt-marsh at Ayr Point. *Haplophthalmus danicus* was found in a variety of woodland and ‘garden’ locations at Erdigg, while *H. mengii* sensu stricto was recorded from among litter and beneath dead wood in secondary woodland in Marford Sandpit.

Finally, Eric Philp collected the waterlouse *Asellus aquaticus* at Y Ddol Uchaf nature reserve, which according to the atlas (Gregory, 2009) is the first record for this area; such is the extent of under-recording for the aquatic asellid species.

ACKNOWLEDGEMENTS

Paul Harding for organising the meeting and St. Deinol’s Library. Also to Butterfly Conservation (BC), National Trust (NT), North Wales Wildlife Trust (NWWT), RSPB and Woodland Trust for permissions to collect on their sites and to all who contributed records.

REFERENCE

Gregory, S.J. (2009) *Woodlice and Waterlice (Isopoda: Oniscidea & Asellota) in Britain and Ireland*. Centre for Ecology & Hydrology/Field Studies Council.

TABLE 3: Woodlice and Waterlice recorded from each locality (see Table 1 for locality details)

Locality code:	1	2	3b	3c	4	5	6	7	8	9	10	11	12	13	14a	14b	14c	15	16	No. sites per sp.
Grid reference:	SJ 3248	SJ 3555	SJ 1254	SJ 1256	SJ 1471	SH 9880	SH 9779	SJ 1284	SJ 1284	SJ 0382	SJ 0678	SJ 0677	SJ 1967	SJ 0872	SJ 3165	SJ 3165	SJ 3165	SJ 3162	SJ 3195	
<i>Asellus aquaticus</i>					#															1
<i>Androniscus dentiger</i>	#	#			#				#		#	#	#			#				8
<i>Haplophthalmus danicus</i>	#																			1
<i>Haplophthalmus mengii</i> agg.	#	#																		2
<i>Haplophthalmus mengii</i> seg		#																		1
<i>Trichoniscus provisorius</i>	#	#									#			#	#	#		#		7
<i>Trichoniscus pusillus</i> agg.	#	#	#	#	#	#	#	#	#	#	#	#	#	#		#		#	#	16
<i>Trichoniscus pygmaeus</i>	#	#	#								#			#		#		#		8
<i>Platyarthrus hoffmannseggii</i>	#	#				#	#	#		#	#	#	#	#		#				11
<i>Philoscia muscorum</i>	#	#	#	#		#	#	#	#	#	#	#	#	#		#		#		15
<i>Oniscus asellus</i>	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	19
<i>Oniscus asellus</i> ssp <i>asellus</i>	#	#				#	#	#		#	#	#	#	#		#	#			12
<i>Porcellio scaber</i>	#	#	#	#	#	#	#	#	#	#	#	#		#	#	#	#		#	17
<i>Porcellio dilatatus</i>	#																			1
<i>Porcellio spinicornis</i>	#															#				2
<i>Porcellionides pruinosus</i>																			#	1
<i>Cylisticus convexus</i>									#											1
<i>Armadillidium depressum</i>	#																			1
<i>Armadillidium vulgare</i>	#	#				#	#	#	#	#	#			#						9
Number species per site:	15	12	5	4	5	6	7	7	7	7	10	7	6	9	3	10	4	4	4	

REPORT OF THE BMIG FIELD MEETING AT CLAONAIG, KINTYRE, SEPTEMBER 2010: CENTIPEDES

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Thanks to the organisation & catering of Dawn and Glyn Collis, a small group of BMIG members spent a week at Coalfin House on the Claonaig Estate, Kintyre from 11th – 18th September 2010 with the aim of recording on the estate and adjacent areas both myriapods and woodlice and other identifiable organisms. Previous records of centipedes from this area were extremely sparse as may be seen from the map in the provisional atlas (Barber & Keay, 1988) where there is a record of *Lithobius variegatus* shown from what appears to be roughly the West Loch Tarbert area. Earlier in 2010 Duncan Sivell had recorded *L. variegatus* and an unidentified geophilomorph from Claonaig Wood (NR 861553; 26/vi/2010).

Much of the Claonaig Estate is grass and other moorland and pasture and conifer plantations but there are areas of coastal woodland including oakwood in the woodland SSSI around NR8655. Collections were also made in Skipness village and in Tarbert, on the coast and other areas off the estate as well as at Brodick Castle on Arran.

A total of 8 geophilomorphs and 6 lithobiomorphs were recorded during the meeting, mostly those that might be expected to be found on the western coastal areas of Scotland, although Steve Gregory's discovery of *Lithobius lucifugus* in Tarbert kirkyard certainly added interest. This appears to be the fourth record of this species from Scotland, having now been found at Cramond, Edinburgh (Gordon Corbet), Torosay, Mull (present author), Castelbay, Barra (Glyn Collis) and here in Kintyre.

Grass moorland yielded few species, only *Geophilus easoni* and *Lithobius variegatus*. Both *Lithobius borealis* and *Geophilus truncorum* are present in the area and might possibly have been expected in such a habitat and certainly sampling birchwood and felled or decayed conifer plantation yielded the former which must be presumed to represent the general "small rural *Lithobius*" of the area (neither *Lithobius crassipes* or *L. microps* were found). *Lithobius melanops* was found a number of times but this is not unexpected from the fact that both synanthropic sites (gardens, village, ruins, etc) and coastal ones were sampled. Not surprisingly, *L. forficatus* was mostly found in synanthropic sites whilst *L. variegatus* turned up in a number of "wild" and "semi-wild" sites. In areas of Britain where *L. variegatus* is absent, *L. forficatus* seems to have what seems have a slightly wider habitat spectrum.

Of the remaining species, *Lamycetes emarginatus* turned up only once, in the Tarbert kirkyard; searching for it amongst river shingle (a common habitat for it) on Whitehouse Burn was completely unsuccessful. *Geophilus flavus* was widespread in coastal sites and around ruins. There were several records of *Schendyla nemorensis*, *Geophilus truncorum*, *G. electricus* and *G. insculptus* from various habitats. *Stigmatogaster subterranea*, typically synanthropic, was found at Saddell Abbey and Brackley Burial Ground by Mike Davidson who also had more success than most of us in finding *Strigamia maritima* which seemed surprisingly elusive around Skipness and Claonaig shores.

A list of sites is shown in Table 1 and of species recorded from these in Table 2.

ACKNOWLEDGEMENTS

Glyn Collis and Dawn Collis for organising the meeting, the latter also for the excellent catering arrangements, Gordon Hunter of Gartavaich, Skipness who made us most welcome and aided us in our work in a variety of ways, the Claonaig Estate who allowed us the use of Coalfin House at a low rental, and all those who collected and recorded species.

REFERENCE

Barber, A.D. & Keay, A.N. (1988) *Provisional Atlas of the Centipedes of the British Isles*. Huntingdon. NERC.

TABLE 1: List of Sites

(TB = Tony Barber, MD = Mike Davidson, SG = Steve Gregory, GH = Gordon Hunter).

Site no.	Location	National Grid Ref.	Collectors	Date
1a	Brodick Castle, Isle of Arran: outdoor sites including gardens, woodland, etc.	NS0137	SG, TB	13/ix/2010
1b	Brodick Castle, Isle of Arran: greenhouse area	NS0137	SG, TB	13/ix/2010
1c	Brodick Castle, Isle of Arran: unheated greenhouse	NS0137	SG, TB	13/ix/2010
2	By West Loch Tarbert, Dunmore / Cnoc Eilid	NR7961 & 7962	SG, TB	14/ix/2010
3a	Tarbert town: waste ground and around harbour	NR8668	SG, TB	14/ix/2010
3b	Tarbert town: kirkyard	NR8668	SG, TB	14/ix/2010
4a	Skipness, woodland	NR8957	TB	11/ix/2010
4b	Skipness, woodland	NR9057	MD	17/ix/2010
5a	Skipness, shore, stones, wood, etc	NR8957	TB	11/ix/2010
5b	Skipness, shore, stones, wood, etc	NR9057	MD	17/ix/2010
6	Skipness Village, stone by community centre	NR8957	TB	11/ix/2010
7a	Skipness Castle	NR9057	MD	17/ix/2010
7b	Skipness: Kilbrannan Chapel	NR9157	MD	17/ix/2010
8	Claonaig estate, Whitehouse Burn. Grass Moorland & Conifers	NR8460	SG, TB	13/ix/2010
9a	Claonaig Shore	NR8856	MD	12/ix/2010
9b	Skipness River	NR8958	MD	12/ix/2010
10	Claonaig, Alt a Chreama, wet heath	NR8858	MD	14/ix/2010
11a.	Claonaig SSSI, Oakwood	NR8555	TB	14/ix/2010
11b	Claonaig SSSI, Oakwood	NR8655	SG,MD,TB	15/ix/2010
11c	Claonaig SSSI, beach shingle	NR8655	MD	15/ix/2010
12a	Claonaig, Gortaneorn, ruin	NR8957	SG, TB	16/ix/2010
12b	Claonaig, Old Chapel	NR8756	TB	15/ix/2010
13	Gartavaitch, old sheep walk	NR8558	GH/TB	15/ix/2010
14a	Claonaig, trackside by pasture, under stones	NR8756	TB	16/ix/2010
14b	Claonaig, Auchanmeanach Farm, under wood in pasture	NR8856	TB	16/ix/2010
14c	Claonaig, felled conifers	NR8957	TB	16/ix/2010
15	Claonaig, neglected conifers above Coalfin, under bark of standing wood	NR8958	TB	16/ix/2010
16a	Skipness, kirkyard	NR8957	SG	16/ix/2010
16b	Near Skipness, Sgier Bhuich, Pier House	NR9259	SG	16/ix/2010
17a	Claonaig, Cnoch Tigh Searmonaiche, pasture, under stones	NR8558	TB	17/ix/2010
17b	Claonaig, birchwood, under logs, bark, stones	NR8656	TB	17/ix/2010
17c	Claonaig, sheepfold	NR8656	TB	17/ix/2010
18	Claonaig Estate	NR8656	SG	17/ix/2010
19a	Saddell Abbey	NR7832	MD	16/ix/2010
19b	Carradale Harbour	NR8138	MD	16/ix/2010
19c	Brackley Burial Ground	NR7941	MD	16/ix/2010
20a	Crarae Gardens	NR9897	SG, TB	18/ix/2010
20a	Crarae Gardens, cool greenhouse	NR9897	TB	18/ix/2010
20a	Crarae Cemetery	NR9897	SG	18/ix/2010
21	Lochgailhead	NN1901	SG	18/ix/2010

TABLE 2: Species recorded

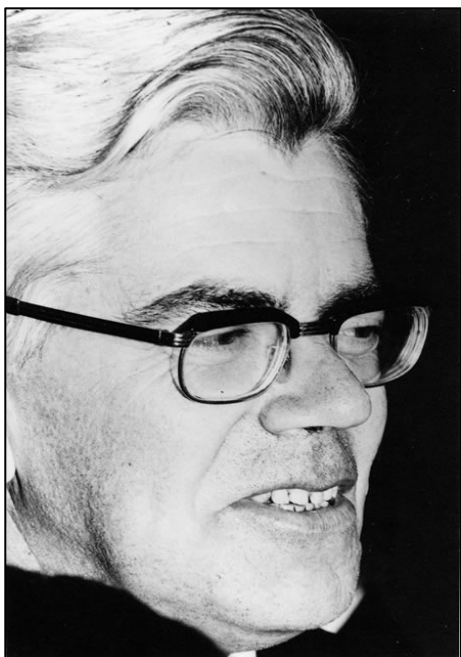
Site code:	1a	1b	1c	2	3a	3b	4a	4b	5a	5b	6	7a	7b	8	9a	9b	10	11a	11b	11c	12a	12b	13	14a	14b	14c	15	16a	16b	17a	17b	17c	18	19a	19b	19c	20a	20b	20c	21											
<i>Stigmatogaster subterranea</i>																																																			
<i>Schendyla nemorensis</i>																																																			
<i>Strigamia maritima</i>																																																			
<i>Geophilus easoni</i>				X			X							X																															X						
<i>Geophilus electricus</i>										X			X																																						
<i>Geophilus flavus</i>	X	X	X		X	X		X	X			X	X																																X						
<i>Geophilus insculptus</i>																																																		X	
<i>Geophilus truncorum</i>																										X																									
<i>Lamycetes emarginatus</i>																																																			
<i>Lithobius borealis</i>								X								X																																		X	
<i>Lithobius forficatus</i>	X	X			X				X	X		X																																							
<i>Lithobius lucifugus</i>																																																			
<i>Lithobius melanops</i>	X	X	X		X	X	X	X			X	X	X																																						
<i>Lithobius variegatus</i>	X			X																																															

Note: Since the meeting, Gordon Hunter has identified and sent to the author, further specimens:

Shore below Claonaig Wood (NR 862551) det. TB: *Geophilus easoni* (23/i/2011)

Garden at Gartavaitech (NR 859589) det. GH: *Geophilus insculptus* (06/ii/2011)

Garden at Gartavaitech (NR 859589) det. GH: *Geophilus truncorum* (18/ii/2011)



OBITUARY

CASIMIR ALBRECHT WILLEM (CAS) JEEKEL (1922-2010)

Casimir Jeekel passed away in 2010; he was author of a wide range and large number of papers on myriapods including his famous *Nomenclator generum et familiarum Diplopodorum* 1970(71) which is a bible to those of us working in millipede taxonomy.

He was appointed as Director of the Zoological Museum Amsterdam (University of Amsterdam) in 1968 and was an active member of the Centre International de Myriapodologie [the International Society for Myriapodologists] from the beginning and was elected as an honorary member during the Congress at Mtuzini (South Africa) in 2002.

I first met Cas Jeekel at the 6th International Congress of Myriapodology, Amsterdam, in April 1984 which he organised. As it was my first International Congress I was relieved to discover that he was very friendly and helpful to first timers and I greatly enjoyed the Congress, in no small part due to his encouragement. He made

sure that the Congress was notable scientifically but was also fun, I remember an evening where almost everyone won a pair of clogs in a 'raffle' and then had to wear them to dance in! My first paper was published in the proceedings of the Congress and he must have refereed it himself because I remember that he kind and constructive comments for improvements.

After many important scientific papers his output slowed significantly prior to 1999, but then picked up again as he started to produce his Myriapod Memoranda, a series of volumes including papers written by him; many being helpful taxonomic reviews. At the moment I am using one regularly which is an annotated catalogue of the Siphonophorida and which lists all the species described with their current taxonomic status, a typical example of his detailed work.

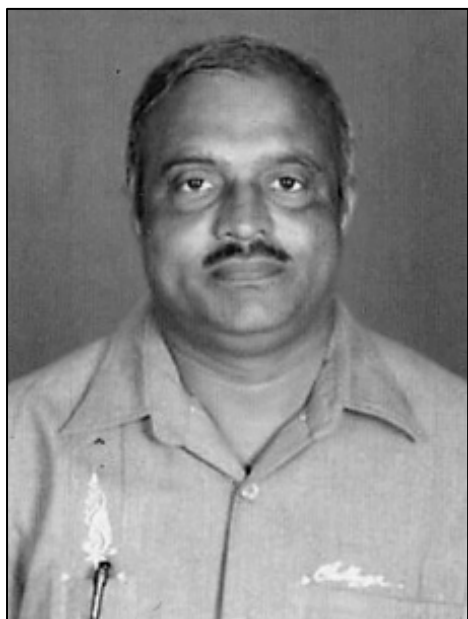
At a more recent Congress, I believe Bergen in 2006, I chatted to Cas and his wife Jeanne while on the excursion. He told me that it was the Bulletin of the British Myriapod Group that had been instrumental in encouraging him to start working on Myriapods again after a break of several years. He had read the article by Craig Slawson (1998) about the origins of the names of centipedes and wrote a response helping to fill in some of the gaps which was published in the 1999 volume. I was pleased to feel that the BMIG had contributed to stimulating Cas to continue his important work. He was active until the end, producing XI issues of Myriapod Memoranda in total.

We send our condolences to his wife Jeanne, his family and grandchildren.

Helen Read

Photograph taken during the International Congress in Manchester in 1972.

OBITUARY

**DR. BHASKAR EKNATH YADAV (12.12.1954 to 26.9.2010)**

Born in a modest family in Pune, Maharashtra, India, Dr. Bhaskar Eknath Yadav was working as Scientist at Western Regional Centre, Zoological Survey of India, Pune. He rose from a lowest post in the department with his sheer hard work.

Though Dr. Yadav did his Ph.D on Title: "Studies on Systematics, Zoogeography of the fishes of Western Ghats with observation on the status of endemic species", his main area of interest remained Taxonomy and Ecology of Scolopendrid centipedes, besides also he studied Scorpion behaviour and published more than 100 research papers in various journals of repute.

Dr. B.E. Yadav acted as co-guide for nine projects including seven on the fishes and two on centipedes for M.Sc. students under Pune University and extended guidance and suggestions for research leading to the award of Ph.D. to many lecturers and students in Maharashtra state.

He remained actively associated with me for many of his projects on centipedes and despite his tremendous experience he was in the habit of learning more.

He was a nice gentleman. His exodus is a personal loss to me, scientific fraternity, in the department, in India and outside and a great loss to Arachnomyriapodology.

Let's pray almighty God to rest his departed soul in peace.

Dr. Vinod Khanna

Zoological Survey of India
Northern Regional Centre
218 Kaulagarh Road, Dehra dun 248 001
INDIA

SOME MYRIAPOD RELATED PUBLICATIONS OF LATE DR. B.E. YADAV

- Yadav, B.E. (1993) Colour variation in the centipede *Scolopendra morsitans* Linn. (Myriapoda: Chilopoda) from Maharashtra. *Rec. zool. Surv. India*, **93** (1-2): 159-160.
- Yadav, B.E. (1993) .On a collection of centipedes (Myriapoda: Chilopoda) from Pune, Maharashtra. *Records of the Zoological Survey of India* **93** (1-2): 165-174.
- Yadav, B.E. (1993) Colour variation in the centipede *Scolopendra morsitans* Linnaeus (Myriapoda: Chilopoda) from Maharashtra, India. *Records of the Zoological Survey of India* **93** (1-2): 159-160.
- Yadav, B.E. (1994) The Scolopendrid centipedes. *Science and Culture* **60** (7-12): 77-79.
- Yadav, B.E. (1995) Scolopendridae (Chilopoda) of Western Ghat with some first records from the State of Maharashtra, India. *Records of the Zoological Survey of India* **93** (3-4): 321-328.
- Yadav, B.E. (1995) A report on some species of the genera *Digitipes* and *Ethmostigmus* (Chilopoda: Scolopendromorpha: Scolopendridae, Otostigminae) from Maharashtra. *Records of the Zoological Survey of India* **93** (3-4): 313-315.
- Yadav, B.E. (1997) First record of the giant centipede *Scolopendra gigantea* Linnaeus (Chilopoda: Scolopendridae) from India, *Zoo's Print*.
- Yadav, B.E. (1999) Colour pattern in Scolopendrid centipedes. *Zoos' Print Journal* **14** (8): 96.

- Yadav, B.E. (2001) Centipedes (Chilopoda: Scolopendridae). In: Director, Zoological Survey of India [Ed.]. Fauna of Nilgiri Biosphere Reserve. Zoological Survey of India, Kolkata. 2001: i-iv, 1-332: 39-44.
- Yadav, B.E. (2004) Chilopoda: Centipede. - In: Mahabal, Anil S. [Ed.]. *Fauna of Pench National Park (Maharashtra)*. [Conservation Area Series **20**]. Zoological Survey of India, Kolkata. 2004: i-iii, 1-312: 275-283.
- Yadav, B.E. (2006) Scolopendridae (Chilopoda). - In: Director, Zoological Society of India [Ed.]. *Fauna of Tadoba-Andheri Tiger Reserve (Maharashtra)*. [Conservation Area Series **25**]. Zoological Survey, Kolkata. 2006: 1-309: 279-282.
- Yadav, B.E. (2005) Chilopoda: Scolopendridae. - In: Mahabal, Anil. *Fauna of Melghat Tiger Reserve*. [Conservation Area Series **24**]. Zoological Survey of India, Kolkata. 2005: 1-500: 401-410.
- Thulsi-Rao, K.; Yadav, B.E.; Sudhakar, M.; Maqsood-Javed, S.M.; Siva-Rama-Krishna, I. (2005) A note on the tiger centipede *Scolopendra hardwickei* Newport from Nagarjuna Sagar Srisailem Tiger Reserve, Andhra Pradesh, India. *Bugs 'R' All* **8** (1): 6.
- Sureshan, P.M.; Yadav, B.E.; Radhakrishnan, C. (2004) An illustrated key to the identification of centipedes (Chilopoda: Scolopendromorpha) of Kerala. *Zoos' Print Journal* **19** (3): 1401-1407.
- Khanna, V.; Yadav, B.E. (2005) A taxonomic re-assessment of the centipede *Scolopendra gigantea* Linnaeus (Chilopoda: Scolopendridae) and confirmation of its occurrence in India. *Zoos' Print Journal*, **20** (9): 1988.
- Khanna, V.; Yadav, B.E. (1998) Indian species of genus *Scolopendra* Linn, (Chilopoda: Scolopendridae) with description of a new species. *Records of the Zoological Survey of India*, **96** (1-4): 211-220.

BOOK REVIEWS

KEY TO THE IDENTIFICATION OF BRITISH CENTIPEDES

Published by the Field Studies Council (FSC) Aidgap Series, Shrewsbury (2008)

ISBN 13: 9781851532421

and

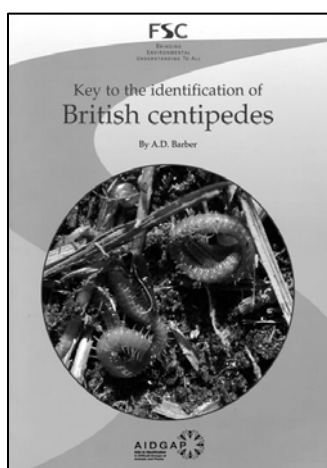
CENTIPEDES: Synopses of the British Fauna (New Series) No 58, 228 pp.

Published for the Linnean Society of London by FSC (2009)

ISBN 978 185153 272 8

Both by A. D. BarberBoth works are available from FSC Publications: <http://www.field-studies-council.org/publications/index>

Before the arrival of these two publications I had two options in trying to identify centipedes collected in the field. Ted Eason's *Centipedes of the British Isles*, published in 1964, was for a long time out of print and difficult to get hold of and I was vaguely aware that there were keys in various specialist journals, again not easily accessible at the time. In the mid 1990s Paul Richards published *Millipedes, Centipedes and Woodlice of the Sheffield Area*. I was fortunate to live in the Sheffield area and not long after signed up to attend a Myriapoda identification workshop led by Paul at the Sheffield Museum. The prospect of recording more reliably centipede specimens collected locally was given much impetus. Paul's publication dealt with the identification of a total of 21 species of Centipedes.

**KEY TO THE IDENTIFICATION OF BRITISH CENTIPEDES**

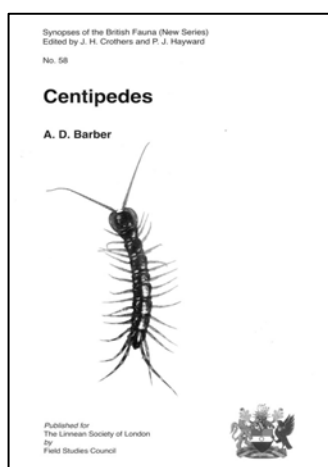
The Aidgap project was initiated in the late 1970s by the Field Studies Council with the aim to facilitate the production of user-friendly identification keys to the more difficult groups of the British fauna that could be used by both beginners and 'intermediates'. These are written by experts but tested for their usability among a wide range of volunteers. Centipedes, millipedes and woodlice were obvious candidates for this new approach but it was not until in 1991 that Steve Hopkin's *A Key to the Woodlice of Britain and Ireland* was published. After a long gestation period and repeated testing Tony Barber's *Key to the Identification of Centipedes* appeared in 2008. This marked a very major advance in the development of a readily available key and at a very affordable £8 price tag to boot. The key deals with all the 57 species recorded in Great Britain up to that time including those recorded indoors and is accompanied by species notes and a tabulated key to three of the four main

groups. As with the Aidgap Woodlice photos (sixteen) are included covering species from all the main groups. The introduction covers all the main aspects of centipede morphology (including diagrams, some replicated/adapted from Eason's book), biology and collecting and recording. Also featured is a systematic list of species as well as a page containing a list of centipedes typically found in a number of major habitat types. Interestingly there is a section on suggested English names for use where there is a need to promote their conservation to a wider audience. The names reflect size, colour, behaviour and place of abode, among others. Among some of the more pedestrian names of the commoner species there is Bagnall's hot-house centipede, one-eyed centipede (I prefer 'The Cyclops centipede', although at around 10mm it's not really much of a giant among centipedes) and Devonshire paradox!

So is this key the 'bee's knees'? I have used both the main and tabulated keys many times, particularly for the Geophilids, and I feel confident that it works well for me. I have a bit more knowledge of centipedes than the average beginner so I am concluding that for us intermediates it works fine, so far so good. So does it work for beginners? This is may be a difficult question to answer and depends on what you define as a beginner. Those with good familiarity in naming the parts of members of other groups of invertebrates (such as those used to identify other less popular invertebrate groups such as flies, bugs and beetles) will be much

less apprehensive about using this key than people who I would term absolute beginners. It has certainly proven difficult to avoid the need to use most of the established specialist terminology but there is a fairly comprehensive glossary to this included. Overall the keys, I suspect, may still look a bit daunting to beginners but if a good deal of time is invested in familiarisation with basic parts then some progress can be made

I hesitate to make a suggestion here but perhaps the development of an FSC 'fold out' edition (like the one produced for woodlice dealing with nine common species) might be a more appropriate tool for getting those beginners hooked where emphasis on the identification of every British species is less important than familiarisation of the main groups; the foldout could even include some simple basic keys (and photos) for the reliable identification of a few of the more common and widespread (outdoor) species. This could be tailored for use in both in the field and in a workshop situation.



CENTIPEDES

In 2009 Tony Barber's *Centipedes* in the Synopses of the British Fauna (New Series) series was published. This is the long awaited modern, up-to-date version of Ted Eason's 1964 publication. It includes a further nine outdoor species added to the British list since Eason's book appeared. The Synopsis, as is the custom with other publications in this series, is not inexpensive. At £35 it costs considerably more than the Aidgap.

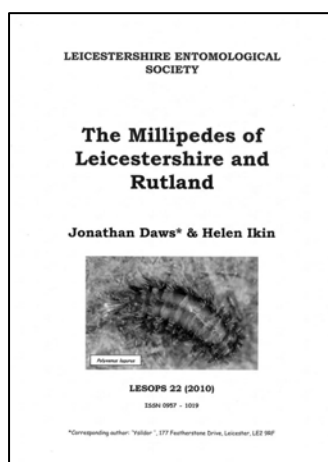
Is it value for money? Although it is in the usual smaller format of the Synopses volumes, there are two hundred and twenty eight pages containing a large amount of information supported by a huge number of diagrams. The first part comprises an introduction, chapters on morphology, collection and identification, a systematic checklist (with one additional species included) and the list of centipedes occurring in major habitats. This follows the Aidgap but

with some modifications to the diagrams and on the text covering layout and content. Like the Aidgap there is a key to the four major orders and these lead to keys arranged separately for three of the four major orders supported with tabulated keys – there is a four-page section for the distinctive single British representative of the Scutigromorpha ('house centipedes').

The species accounts come after each key and this is the meat of the work. The species are grouped under family (there are seven for Geophilids) with an introductory text for each describing family characteristics. Each species account is accompanied by a page of diagrams that include detailed close ups of the various relevant parts (occasionally there is an illustration of the complete animal included) showing the salient features. The accounts also include species of doubtful status in Britain. A useful tabular key covering species of continental *Lithobius* that have the potential to turn up in Britain in the future is included too. An improvement on the Aidgap is the inclusion of illustrations in the glossary. Another plus for the Synopsis is that the keys, having undergone continued testing and feedback, resulted in several improvements in content and format. Some superfluous text has been removed and bold text is used for couplet numbers (and for scientific names at the end of these) to facilitate easier progress through the key. The diagrams accompanying the keys have been enhanced with text using the relevant terminology to indicate the feature referred to in the key. I had no problem using the Geophilid and Lithobiid keys to identify a few common species collected from my garden and other local sites.

I think Tony Barber's years of dedication and hard work in the cause of centipede studies is fully reflected in these two milestone publications. He is to be congratulated on making the study of centipedes, through these publications, much more accessible to a range of enthusiasts from rank amateurs (like me) to professionals. I have to say that for the Aidgap there is scope for improvement for beginners and hopefully a new edition will include the improved keys and illustrated glossary of the Synopsis. For his 'hat-trick' Tony is currently preparing a distribution atlas for publication in the near future. I think all three will serve very well all those wishing to develop their own and others' knowledge of the centipede fauna of Great Britain.

Jim Flanagan



THE MILLIPEDES OF LEICESTERSHIRE AND RUTLAND

Leicestershire Entomological Society Occasional Publications Series 22 (2010), pp1-24

ISSN 0957-1019

By Jonathan Daws & Helen Ikin

Available from Jon Daws, 177 Featherstone Drive, Leicester, LE2 9RF, for the price of postage.

Every so often a review of the species of a county or other similar area is published with lists of species, maps, comments and other interesting information. Such a publication provides a most valuable “snapshot” of the local fauna in a much more detailed way than any national atlas can do and Jon and Helen are to be congratulated on doing this in such an approachable style.

A total of 34 species are listed (including two from greenhouses) and tetrad maps are shown for each. Others might possibly be found such as *Craspedosoma rawlinsii* but the list fits in very well with account in the Millipede Atlas (Lee, 2006).

Many years ago, the present author, having moved to Nottinghamshire, not only collected in that county but made some records from Leicestershire & Rutland. Contact with Ian Evans and later Jan Dawson at Leicester Museum in due course allowed access to records and specimens from there and a plan for the publication of a paper on the millipedes and centipedes of Leicestershire, Rutland, Nottinghamshire and Lincolnshire evolved but, for various reasons, no formal report ever saw the light of day. At the time, unaware of any species lists for Leicestershire (there was nothing in the Victoria History, a common older source for some counties), it looked like virgin territory for the county. Now, thanks to the present atlas, we know there were, in fact, at least two earlier lists (Quilter 1889; Hayward 1907). Meanwhile, Adrian Rundle and others added to the county lists and Jon Daws kept in touch. Then, in recent years, Steve Woodward and Helen Ikin became interested and made contact and now we have a vice-county millipede atlas.

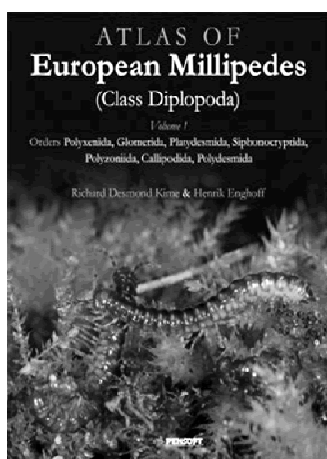
The accounts refer to the apparent nomenclatural confusion surrounding the two species which we now refer to as *Cylindroiulus londinensis* and *C. caeruleocinctus*. This reflects the emerging recognition at the time that we were dealing with two quite distinct species. The original Linnean Society key (Blower, 1958) described a single species *Cylindroiulus londinensis* (Leach, 1814) with three forms, *typica* Leach, 1815, *finitimus* Ribaut, 1905 and *caeruleocinctus* Wood, 1864. *Typica* were the large forms with a blunt caudal process whilst *caeruleocinctus* were the commoner, smaller forms without such a process (*finitimus* were somewhat in-between). In 1900, Pocock had described *caeruleocinctus* as *Iulus teutonicus*. By the second edition of the key (Blower, 1985) this had been sorted out and the names we use now became standard. However, in the intervening period we sometimes referred to *C. londinensis* form *caeruleocinctus* or to *C. teutonicus* to distinguish the species from *C. londinensis* (*typica*).

In the present vice-county atlas, the authors refer to *C. caeruleocinctus* listed by Horwood in 1907 as *C. londinensis* which seems likely (although there were no specimens available); the first mappable records of it (as *C. teutonicus*) date from 1978. For *C. londinensis* there are older records from 1960-61, likely to be *C. caeruleocinctus* but not available for checking; available 1978 specimens were confirmed as that species. The first record of the “true” *C. londinensis* was made by Adrian Rundle in 1985 and there would seem to be little room for doubt given the recorder concerned even though there were no specimens available for checking.

Tony Barber

REFERENCES

- Blower, J.G. (1958) British Millipedes (Diplopoda). *Linnean Society Synopses of the British Fauna* **11**. London, Linnean Society.
- Blower, J.G. (1985) British Millipedes (Diplopoda). *Linnean Society Synopses of the British Fauna (NS)* **35**. London, etc., E.J.Brill/Dr W.Backhuys.
- Lee, P. (2006) *Atlas of the Millipedes (Diplopoda) of Britain & Ireland*. Sofia-Moscow, Pensoft



NOTICE OF PUBLICATION: ATLAS OF EUROPEAN MILLIPEDES VOLUME 1

Orders Polyxenida, Glomerida, Platydesmida, Siphonocryptida, Polyzoniida, Callipodida and Polydesmida

By R.D. Kime and H. Enghoff (2011). Published by Pensoft Publishers under the Pensoft Series Fauna Europaea Evertbrate No. 3.

Available to buy online via the website (www.pensoft.net) or via email (orders@pensoft.net).

ISBN-13: 9789546425782

Price €80 plus P&P*

* Please note that details of a reduction in price for BMIG members is given in the Autumn 2011 BMIG Newsletter.

MISCELLANEA

CENTIPEDE ROBOT

This was featured as one of the National Geographic best science pictures of 2010.

A photograph of a centipede-inspired robot won an honourable mention in the photography category. The bug-size robot's design may inspire better models for movement, according to Harvard University experts. The multisegment millirobot offers insight into how flexibility and body undulations can enhance movement, and whether there is an ideal number of legs for efficient and stable walking.

All the winning entries in the 2010 International Science and Engineering Visualization Challenge are posted at www.sciencemag.org/site/special/vis2010/



Image courtesy Katie L. Hoffman and Robert J. Wood, Harvard University



Any resemblance to living naturalists purely coincidental.....

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